

**SERVICE QUALITY IN PUBLIC BUS TRANSPORT
SYSTEM IN KERALA:
A Comparative Study of State-Owned and Privately
Owned Bus Transport Services**

*Thesis
submitted to the University of Calicut
for the award of the degree of*

Doctor of Philosophy in Commerce

PRAVEEN M.V.

Under the Supervision of

Dr. K. SRAVANA

Associate Professor
Central University of Kerala, Kasaragod

**Post Graduate and Research Department of Commerce
Govt. College Madappally, Kerala
(Affiliated to the University of Calicut)**

April 2023

DECLARATION

I, Praveen M.V., hereby declare that the thesis entitled “**SERVICE QUALITY IN PUBLIC BUS TRANSPORT SYSTEM IN KERALA: A Comparative Study of State-Owned and Privately Owned Bus Transport Services**” submitted to the University of Calicut in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy in Commerce is a record of the bonafide research work done by me, under the supervision and guidance of Dr K. Sravana, Associate Professor, Central University of Kerala, Kasaragod (Research Supervisor, Post Graduate and Research Department of Commerce, Govt. College Madappally). It has not formed the basis for the award of any degree, diploma, associateship, fellowship, or other similar titles of recognition in any University before.

Govt. College Madappally

Praveen M.V.

Date:



Post Graduate and Research Department of Commerce
Government College Madappally
(Affiliated to the University of Calicut)
Madappally College P.O. PIN – 673102, Kerala, India

Dr. K. Sravana

Associate Professor,
Central University of Kerala.
Research Supervisor,
PG & Research Dept. of Commerce,
Govt. College Madappally

Mob No.: 9846272728
Email: drksravana@gmail.com

Certificate

This is to certify that the thesis entitled “**SERVICE QUALITY IN PUBLIC BUS TRANSPORT SYSTEM IN KERALA: A Comparative Study of State-Owned and Privately Owned Bus Transport Services**” submitted to the University of Calicut in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy in Commerce, is a record of original work done by **Mr. Praveen M.V.**, under my supervision and guidance and the thesis, has not formed the basis for awarding any degree, diploma, associateship, fellowship, or other similar titles of recognition. He is allowed to submit the thesis to the University for evaluation.

Madappally College,

Dr. K. Sravana
Supervising Teacher

Date:

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For

*My beloved father
who could have been here...*

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ABBREVIATIONS

ABS	-	Ambiance of the Bus Station
APMS	-	Advanced Parking Management System
APTA	-	American Public Transportation Association
APTIS	-	Advanced Public Transport Information System
APSRTC	-	Andhra Pradesh State Road Transport Corporation
ASMSTC	-	Assam State Transport Corporation
ASRTU	-	Association of State Road Transport Undertakings
BEST	-	Bombay Electricity Supply and Transport
BI	-	Behavioural Intention
BOND	-	Bus On Demand
BMTC	-	Bangalore Metropolitan Transport Corporation
BRTS	-	Bus Rapid Transit System
BSRTC	-	Bihar State Road Transport Corporation
CAGR	-	Compound Annual Growth Rate
CNI	-	Continual Intention
CLN	-	Cleanliness
CNG	-	Compressed Natural Gas
CON	-	Convenience
COVID	-	Corona Viral Disease
CPPR	-	Centre for Public Policy Research
CSTC	-	Calcutta State Transport Corporation
DGCA	-	Director General of Civil Aviation
DMRC	-	Delhi Metro Rail Corporation
DTC	-	Delhi Transport Corporation
DTU	-	Departmental Transport Undertaking
ECN	-	Economy
EMP	-	Empathy
ER	-	Economic Review
FP	-	Fast Passenger
FYP	-	Five Year Plan
GDP	-	Gross Domestic Product
GHG	-	Green House Gases
GOI	-	Government of India

GPS	- Global Positioning System
GRS	- Grievance Redressal System
GSRTC	- Gujarat State Road Transport Corporation
GTC	- Government Transport Company
HO-HO	- Hop On -Hop off
HRTC	- Himachal Road Transport Corporation
IMMTS	- Integrated Multi-Model Transit System
INAE	- Indian National Academy of Engineering
INQ	- Information Quality
ITS	- Intelligent Transport System
IWAI	- Inland Waterways Authority of India
JCM	- Journey Comfort
JKSRTC	- Jammu & Kashmir State Road Transport Corporation
JNNURM	- Jawaharlal Nehru National Urban Renewal Mission
KnSRTC	- Karnataka State Road Transport Corporation
KPBOF	- Kerala Private Bus Operators Federation
KSPB	- Kerala State Planning Board
KSRTC	- Kerala State Road Transport Corporation
KURTC	- Kerala Urban Road transport Corporation
LNG	- Liquefied Natural Gas
LPTB	- Landon Passenger Transport Board
LS	- Limited Stop
MEGTC	- Meghalaya Transport Corporation
MITRA	- Mysore Intelligent Transport
MMTS	- Multi-Model Transport System
MORTH	- Ministry of Road Transport and Highways
MSRTC	- Maharashtra State Road Transport Corporation
MRTS	- Metro Rail Transport System
MTU	- Municipal Transport Undertaking
MVA	- Motor Vehicle Act
NBSTC	- North Bengal State Transport Corporation
NEKnRTC	- North Eastern Karnataka Road Transport Corporation
NHAI	- National Highway Authority of India
NMT	- Non-Motorized Transport
NTD	- Network and Time design
NTSB	- National Transportation Safety Board
NWKnRTC	- North Western Karnataka Road Transport Corporation
PBTS	- Public Bus Transport System

PRC	- Passenger Complaint
PRI	- Passenger Involvement
PRTC	- Pepsu Road Transport Corporation
PRS	- Passenger Satisfaction
PSB	- Post Service Behaviour
PSRTC	- Puduchery State Road Transport Corporation
PRT	- Perceived Trust
PRV	- Perceived Value
REL	- Reliability
RTC	- Road Transport Corporation
RTCS	- Remote Traffic Control System
RTIWS	- Realtime Incident Watching System
STB	- Staff Behaviour
SCRB	- State Crime Records Bureau
SETC	- State Express Transport Corporation
SFT	- Safety
SQ	- Service Quality
STC	- State Transport Corporations
STU	- State Transport Undertaking
SUSTRAN	- Sustainable Transport
TDMS	- Travel Demand Management System
TERI	- The Energy and Resources Institute
TSTD	- Telangana State Transport Department
TT	- Town to Town
TTF	- Transport Technology Forum
UIDAI	- Unique Identification Authority of India
UITP	- Union International Transports Publics
UPSRTC	- Uther Pradesh State Road Transport Corporation
WDI	- World Development Indicators
WOM	- Word-of-Mouth

CHAPTER 1

BACKGROUND AND METHODOLOGY

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CHAPTER 1

BACKGROUND AND METHODOLOGY

1.1 INTRODUCTION

“Ever since man’s emergence on earth, conditions under which he lives have been largely shaped by the ease and speed with which he is able to transport himself” - Planning Commission, 1988.

It is widely acknowledged that the transport system is crucial in strengthening a country’s economy. For the last three decades, the modes of transport have expanded with an exponential rise in infrastructural facilities. Along with remarkable progress in other sectors, the transport system is becoming an integral part of our country's economic growth. Still, at the same time, we are facing a traffic crisis of heavy congestion, noise and air pollution, road accidents, injuries, etc. The rapid growth of Indian cities with moderate income, scarcity of transport infrastructure, sprawling suburban development, booming vehicle ownership and use, the decline in bus services, and widening road shares by motorised and non-motorised transport modes have created a crisis for Indian road traffic. Inadequate and butterfingered land development and transport planning are the additional factors that exacerbated those transport crises. In a developing country like India, travel costs, ease of accessibility, and convenience are the primary reasons for the excessive use of road transportation. Road transportation in India daily carries almost 85 per cent of total passenger traffic and around 70 per cent of freight traffic (MoRTH, 2018).

As per the latest statistics, 295 million vehicles had got registered in India till 2019, with an average growth rate of 10 per cent per year (Statista, 2022). Out of these, about 80 per cent belong to personalised vehicles and about 10 per cent to public transportation (MoRTH, 2021). Our nation’s monthly diesel and petrol consumption is estimated at 79 and 28 million tonnes respectively. Due to this vast quantity of fossil

fuel consumption, transportation is the third most source of Green House Gas (GHG) emissions in India, in which the major contributor is road transportation (Singh et al., 2018).

i. Public Bus Transportation

As bus transport is the backbone of urban mobility in India, buses are the most widely-used public transport, serving cities, suburban and rural areas. Bus transportation is also the most economical and flexible mode of public transport, which requires only minimum capital investments to launch new schedules or routes. Buses transfer people across short as well as long distances comfortably and affordably. Bus transport has the least carbon footprint per passenger among all forms of motorised transportation, and, it is a safe transport mode that accounts for the lower rate of road fatalities in the Indian context. With one bus capable of replacing 25 to 30 cars on the road, buses help ease traffic congestion. Although, the share of bus transport is significantly less in most Indian towns compared with personalised vehicles: two-wheelers and cars contribute more than eighty per cent of the vehicle population in most cities (Singh, S, K, 2015). Compared to public bus transport share of 70 per cent of passenger trips in the 90s in India, it has been reduced to 30 per cent and the main perpetrator seems to be the public transport bus infrastructure and the rapid growth of ownership and usage of personalised vehicles like motorbikes, scooters, and cars (Times of India, 2018). In India, the public transport system has been dormant without vast improvements, especially in bus transport, while people hold dear private vehicles (Welle B et al., 2022).

ii. Why is Public Bus Transport Crucial?

Bolstering sustainable public (bus) transport alternatives, particularly in low-income or vulnerable sectors, is an effective measure for nations to enhance their human development and ensure social inclusion, hence sustainable public transport has a crucial role in fostering inclusive growth, widening access to essential services, and compatible for climate condition (World Bank's Transport Overview, 2022). The metro and rail-based modes of public transportation are too expensive for the poor community (Mohan, 1997; Badami, 2005). Bus transport is essential in every city in

India irrespective of their size, as the metro rail system, owing to matters like its coverage & affordability, can only satisfy a limited number of commuters (Tiwari, 2013). Owing to the support and accessibility, the bus transport provided as part of the journey may be done by walking, cycling, or by rickshaws, therefore, the public bus transport system must be the priority in urban transport planning (Tiwari, 2013).

Public bus transportation is one practical alternative to commuting as it creates employment, reduces GHG emissions, and promotes safety in travel (APTA Factbook, 2012). In the words of Delhi IIT Prof. Geetam Tiwari, “An efficient bus system will not only reduce congestion but also curb pollution levels.” The bus transport system is beneficial to a nation from economic, social, public health, and environmental perspectives. The advanced thinking is that people should use public transport like buses for a better future and better nature. Following are the multifaceted benefits of public bus transport for a densely populated and developing country like India and a state like Kerala.

a. Bus transport benefits: Economic Perspective

Using bus transport can save up to four times the money spent on commuting through private or personal vehicles like bikes and cars. The regular use of personalised transport modes requires the cost of operating (fuel cost) and maintenance (taxes, insurance, interest, repair, and servicing cost) and other additional charges such as parking fees, toll charges, and sometimes fines for disobeying rules (Rodrigue, J. P & Notteboom, D. T., 2017). As urban rail transport is economically not viable, whereas, bus transport is the most cost-effective means of public transport, and it should be fostered in all urban areas and cities (Badami & Haider., 2007).

Table 1.1

Average Increase in fuel cost in the last four years (2018-2022)

Fuel Type	Average Price /Litre (April 2018) Rs.	Average Price /Litre (April 2022) Rs	Average Hike %
Petrol	63.09	105.41	67.07
Diesel	53.33	96.67	81.27

(Source: Own estimate based on secondary data)

During the last four-year period, the cost of commutation by personalised transport modes has increased by 67 per cent (petrol vehicles) and 81 per cent (diesel vehicles) owing to the fuel price hike as shown in table 1.1, whereas the bus fare hike reported in an average 28.50 per cent (Table 1.2). Besides, the increase in vehicle insurance premiums, road tax, and servicing costs have intensified the operating cost of private transport modes.

Table 1.2

Bus fare hike in Kerala during the last four years (2018-2022)

Bus Type	Old fare (2018) Rs.	New fare (2022) Rs.	Increase	% Increase
Ordinary bus	8	10	2	25.00
Fast Passenger	11	15	4	36.36
Super-Fast	15	22	7	46.67
Super Express	22	28	6	27.27
Super Deluxe	30	40	10	33.33
Airbus	28	35	7	25.00
AC luxury	44	60	16	36.36
Multi Axile	80	100	20	25.00
Non-AC low floor	10	10	0	0.00
Volvo AC	20	26	6	30.00
The average increase in minimum bus fare				28.50

(Source: Kerala RTC Website)

Those who now use personalised vehicles for their work-related and other trips will be able to significantly reduce their transit expenses once they become a public bus transport service user. Moreover, the reduction in travel expenses can be converted into savings or used for other productive purposes. Thus, from an economic perspective, turning towards public bus transportation seems to be more attractive, especially in India where a majority of the population cannot afford to buy their vehicles and struggle with their operation and maintenance.

Likewise, bus transport services acclaimed their better position in terms of fuel economy. Transport fuel economy or energy efficiency is always described in terms

of fuel consumption. Fuel economy is defined as a measure of how much distance a vehicle will operate with a specific volume of fuel; it is expressed in kilometres per litre. In passenger transport, energy efficiency and fuel economy are often measured in terms of passengers' times' distance per unit of energy, i.e., distance per vehicle per unit of fuel volume per passenger (NAP-NRC, 2011). With one litre of fuel, a transport bus can carry 40 passengers comfortably up to 4 km. So, the fuel consumption per passenger is 6.25 litres for 1000km. In the case of two-wheelers, which normally carry only one passenger, the rate is doubled to 12.5 litres per 1000 passenger km. It is exactly five times in the case of the personal car which carries two persons on average as shown in Table number 1.3 below.

Table 1.3

Road Space & Fuel consumption by modes per 1000 passenger kilometres

Transport mode	The average number of passengers	Average road space occupied (sq. m)	Average fuel intake (km/litre)	Space occupied/passenger (sq. m)	Fuel per 1,000 passenger-km (litre)
Bike	1	1.5	80	1	12.5
Car	2	4.8	16	3.2	31.25
Bus	40	30	4	0.75	6.25

(Source: Own estimation on secondary data)

Economic quantification of improper public transportation in India.

Considering both direct and indirect causes, an estimate of the cost to the nation on account of inadequacies in public transportation facilities in medium to large cities is, of the order of, and more than 1.5 lakh crore per annum (INAE Forum on Civil Infrastructure -Traffic & Transportation, 2020). An example of quantification of monetary loss due to traffic congestion is; the residents of Bengaluru lose 600 million man-hours per annum due to the traffic congestion on roads, which accounts for Rs. 23.5 billion (Times of India, January 2017). As per the report of DMRC,2018, there is a heavy cost to our nation in terms of the time of travel (delay due to road congestion), the operating cost of vehicles, cost of fuel, road crashes and ecology degradation, etc., due to the incomplete and absence of sustainable public

transportation. The projected annual loss on account of proper public transportation in Indian cities is given in Table 1.4.

Table 1.4

Total Estimated Annual Loss Due to Inadequate Public Transport System

No.	City Characteristics	No. of cities	Estimated loss (Rs)
1	Cities with a population of more than 5 million	8	94,601 crores
2	Cities having a population between 2-5 million	12	21,671 crores
3	Cities having a population between 1-2 million	33	26,136 crores
4	Cities with a population of more than 1 million	53	1,42,408 crores

(Source: DMRC Report, 2018)

b. Bus transport benefits: Environmental Perspective

While compared to the personalised mode of transportation, public bus transportation is better in the matter of fuel efficiency. Table 1.3 shows less fuel is consumed when we use public bus transportation. Less fuel burning means improved air quality for the cities that adopt public transit. Nearly 85 per cent of the emissions that turn out from the transport industry are due to day-to-day commutation. By avoiding private cars on road, we can free up to twenty pounds of carbon dioxide emissions per day. Buses and trains can release up to a fifth of emissions per passenger kilometre than ride-hailing and about a third that of private vehicles (International Transport Forum, 2020). Commuting by public transportation modes rather than private vehicles will reduce greenhouse gas emissions by approximately 16.2 million metric tons per annum (Environmental and Energy Study Institute- Report, 2019).

Cars commuting with two to four people emit 96 g to 192 g of carbon footprint, while a bus carrying about 40 passengers weighs only 105 g. If considering GHG emission per passenger kilometre, a car that carries two passengers emits around twenty times more than buses (Table 1.5). A clean environment can foster living

standards and deliver immense benefits to the economy. As the impacts of global warming become more apparent, world leaders encouraging bus transportation is one of the easiest ways to deal with the impact of global warming as it can reduce the number of vehicles on the road and the rate of greenhouse gasses produced.

Table 1.5

Transport Mode wise Carbon Footprint per kilometre

Means of Transport	CO ₂ equivalent emissions per passenger km
Medium Car (Petrol)	192g
Medium Car (Diesel)	171g
Bus	105g
Medium Motorcycle	103g
Petrol Car (Two Passengers)	96g
Medium Electric Vehicle	53g
Rail Transport	41g

(Source: UK Department for Business, Energy & Industrial Strategy. Greenhouse gas reporting: conversion factors 2019).

c. Bus transport benefits: Community Health Perspective

Other community health challenges are also curtailed through public bus transport: Urban Cities with better public transport systems have lesser traffic fatalities. Commuters tend to have improved active lifestyles by walking from home to bus stop, bus stop to work, etc., and cleaner buses carrying many times and number of passengers than a private car will improve the air quality and reduce the threat of harmful pollutants (Welle, B. et al.,2022). As per the recent report of the US-NTSB (National Transportation Safety Board, 2017), while the bus passengers' average fatality rate is 45 deaths per one lakh accidents, it is 251 deaths of passenger car occupants. Thus, clean, and cost-effective public transport promotes public health and saves passengers' lives. The effect of the longitudinal growth of cities is more and more dependent on private vehicles and two-wheelers (2-W) and may aggravate congestion and accidents in the cities (Pucher & Korattyswaroopam., 2004; Electricwala & Kumar., 2013). After the free bus service was allowed to the elderly

in England, the use of bus service has increased and hence the obesity of such passengers has come down substantially (Webb, E. et al., 2012). Research shows that every hour spent driving increases the chance of obesity by nearly 6 per cent. People who switch from personalised motor transport means to more active modes like bus transport could contribute to a reduction in Body Mass Index (BMI) (Martin, A et al., 2015).

As the bus is the safest means of road-based transport, it is noted that the encouragement of public bus transport has benefited the health of the local community by the provision of the social arrangement of additional travel with the lower additional health cost (Nicholl, J. P et al., 1987). A study on the health effect of traffic reduction policy revealed that the induction of a traffic calming policy (increasing public bus transport and reducing the number of private vehicles on the road) is significantly associated with the improvement in physical and mental health and the health-oriented behaviours (Arredondo, E. M et al., 2016). Road crashes kill over 1.35 million people every year, 93% of them claimed by developing countries (World Bank, 2022).

It is a serious fact that India accounts for about 10% of global road crashes with an annual growth rate of nearly two per cent (Statista, 2019). The promotion of public bus transport gifts a significant opportunity to arrest the growing trend of road crash rates, especially on urban roads. Bus transportation eliminates overcrowding of vehicles on the road and thereby reduces drivers' stress, anger, distress, and consequential risky driving due to slow motion and being stuck in congested traffic (Hennessy, D. A & Wiesenthal, D. L, 1997). According to INAE Forums (Traffic and Transportation) Report, 2020, two-wheelers and four-wheelers (cars and jeeps) are 5 times and 3.6 times more likely to cause accidents on Indian roads than caused by buses as depicted in Table 1.6 below.

Table 1.6*Accident rates in India by vehicle types*

<i>Vehicle type</i>	<i>Accident caused</i>
Two Wheelers (bikes and Scotties)	34 per cent
Four-wheelers (cars and jeeps)	25 per cent
Commercial vehicles	20 per cent
Buses (including omnibuses)	7 per cent
Non-Motor Vehicles	1 per cent
Other vehicles	7 per cent

(Source: Report of INAE Forum, 2020)

About 4.5 lakhs to 5 lakh road accidents have taken place in India every year during the last 5 years. Of these, about thirty per cent have died and the rest were seriously injured. Studies have shown that 60% of road accidents are caused by personal means of transportation; two-wheelers and four-wheelers. Notably, less than 7% of accidents are caused by bus transport. The total loss to the nation due to road crashes is estimated to be around 3 per cent of the GDP, which is quite alarming (INAE Forum, 2020). An efficient bus transportation system massively reduces the number of private vehicles on the road, which results in less air pollution and minimises the respiratory diseases caused by the fumes elicited by fuel burning. Few cars on the road mean a reduction in the possibility of these health hazards.

d. Bus transport benefits: Social Perspective

The bus transport system will be an effective means of contributing to social inclusion if wider accessibility transport planning is used (Qamhaieh, A & Chakravarty, S, 2017). For every ten minutes of additional travel time by car, social connections are reduced by 10 per cent (Putnam, R. D, 2004). Millennials proved that public bus transportation is the best alternative for digital socializing and the best for connecting with people (APTA, n.d). While bus transportation offers mingled sociable transit, a personalised mode of transit makes people isolated. More specifically, they state that aiming for increased accessibility to services and key locations by the transport services is essential in preventing social exclusion (Preston & Raje, 2007).

For many, public bus transportation has several social benefits, even if transit by bus is not as convenient as using a car. It plays a key role in the reduction of traffic congestion, minimises emissions and, from the angle of passengers, they get ample time to interact with various co-passengers. Besides, public bus transportation allows the passengers to relax, read newspapers or books and take a nap during transit rather than confronting the stress that arises from self-driving on congested roads. Public bus transportation allows social mobility to go to workplaces, schools, colleges, shopping, health, and entertainment centres, or visit friends and relatives, without having any self-driving stress.

“It is obligatory to make public transport accessible to persons with disabilities so that they can participate in society “on an equal basis with others” (UN Convention on the Rights of Persons with Disabilities, n.d.). One of the most important challenges of public transport confronted today is how to make it socially inclusive and easily accessible for people with all levels of abilities (UITP Public Transportation Trend Report, 2019). “Tackling mobility issues of commuters, whether it is related to physical, geographical and or social conditions, is one of the main concerns of public transport authorities and governments, as mobility is the key factor for the economic and social integration” (UITP Public Transport Trend Report, 2019). Bus transport is an easily accessible and cost-effective mode of transport for people, particularly who is at risk of social isolation such as old age people, low-income people, unemployed people, and those who are incapable or unable to drive (differently abled).

Hence, bus transport ensures social inclusion as they provide equitable, economical, productive, social, and eco-friendly commuting experiences to all cohorts. Equality of access to education, employment, and health services, increased social cohesion and decreased isolation were the significant social benefits offered by bus transport (Tourism & Transport Forum- Australia, 2010).

The Provision of bus services with the highest levels of quality is indispensable for promoting public bus transportation by customising the users of the services, and for reducing traffic congestion by attracting people away from private modes of transport. The perceived quality of public bus transport is a vital determinant

of perceived accessibility along with safety, usage frequency, and commuters' age. Understanding the determinants of perceived accessibility is useful while planning and developing a socially inclusive and sustainable bus transport system soon (Lättman, K et al., 2016). One major consequence of insufficient and poor service quality in public transport especially bus transport has lost its market share and the dissatisfied commuters of public transport are massively moving towards the private car and two-wheelers and which have resulted in a boom in ownership and usage of vehicles in the last decade (Pucher, J. et al., 2004).

According to the present Hon'ble chief minister of Tamilnadu, M.K. Stalin, "Public bus transport is for the people and the profit and loss account must be looked at after the service has been provided. There is no need for public bus transportation if it is not able to provide the service required by the people. The loss of free services to women, children, and other deserving people is not a loss to us."

iii. Public Bus Transport in Kerala.

Due to the geographical features of the State, there are four major modes of transport in Kerala-road ways, railways, airways, and waterways. Rail transport and Airlines are mostly used by the Keralites for their long-distance travel or business purposes. Similarly, in Kerala, inland water transport is restricted to 1890 KMs and they are only available in districts having backwaters like Alappuzha, Kottayam, Ernakulam, and Kollam. Kerala has a total road length of 2,38,773.02km. Therefore, in Kerala, road transports are the most popular as it is a flexible mode of transport to carry people and goods with the extreme advantage of last-mile connectivity. Bus transport is the most suitable option of transport for Keralites while considering many factors such as travelling cost, accessibility, network, flexibility, etc.

iv. Components of Public Bus Transport in Kerala

Public bus transport in Kerala has mainly two components, one is state-owned Transport buses, i.e., KSRTC buses and the other is privately owned buses. Nationalization of passenger bus transport services has been only partial in Kerala, which is too slow to the extent that about one-third of the total bus routes and private

bus, operations are dominant in the north and central districts. As of March 2021, Kerala has a total fleet of 17983 (pre-revised) buses, of which 66 per cent are private buses and 34% are KSRTC buses. Both public bus transport systems complimenting each other to avoid chaos for the public (Economic Review, 2021).

a. Privately Owned Bus Services in Kerala

In Kerala state, the bus transport industry is dominated by private bus service operators. Private Buses are the major mode of public transportation in Kerala (CPPR, 2020). Now, there are around 12,500 private buses are operating in the state (KPBOF, Feb.2022). Twenty years ago, there were about thirty-five thousand private stage carriage buses, but today only a third of them are active on the road. Private buses have been playing a very crucial role in the socio-economic development in Kerala and the State had a unique and enterprising model in the past for providing public bus transport services. But unfavourable policy measures taken by the Kerala government against private bus operators have resulted in a drastic reduction in their number. It is reported that Private buses are reasonably efficient and add value to the Government's exchequer by saving from the liabilities of providing transport. The Government is gaining estimated earnings of 1.4 lakhs from each private bus per year in the form of road tax. The Kerala Government gets around 750 crores from private bus operators every year (Sivaraman, M, 2016). Private bus services employ more than one lakh daily-wage workers as drivers and conductors especially belong to low or middle-income groups and reduce unemployment to a great extent.

b. State Owned Bus services in Kerala

Kerala State Road Transport Corporation (KSRTC) is the single largest public sector undertaking in the state carrying out passenger bus transport services. KSRTC is one of the oldest state-owned public bus transport services in India. The Kerala State Road Transport Corporation (KSRTC) commenced its operation as the Travancore State Transport Division in 1937 and it was transfigured into an autonomous corporation, KSRTC in the year 1965 by the Kerala Government by notification. Currently, the corporation has three zones South, Central, and North, and is headquartered in Thiruvananthapuram. As of March 2021, KSRTC has a fleet size

of 5483 buses and the average fleet operated is 1842 which comes to only 33.5 per cent. Nearly 28100 staff are employed in KSRTC. The share of the KSRTC fleet is around 30 per cent of the total stage carriages in Kerala. However, KSRTC has bus transport dominance in five districts in Kerala; Thiruvananthapuram, Kollam, Alappuzha, Kottayam, and Wayanad. But, KSRTC has a fair monopoly on routes of more than 150 km in Kerala with its express and fast passenger services which charges relatively higher fare than ordinary services. Currently, the KSRTC is met with huge losses due to its operational and managerial inefficiencies and the extent and impact of that loss can be seen to be increasing day by day. KSRTC is fighting to keep itself on road and it has been hit by the financial crisis, defaulting on pension payments, struggling to pay the salary of those on rolls, and failing to meet other financial exigencies (The Hindu, 18th May 2016). Apart from KSRTC, two other state-owned transport bus corporations have recently been formed in Kerala in association with the KSRTC; KURTC and SWIFT services.

v. Road Traffic Profile in Kerala

The total road length of Kerala is 2,38,773.02km which consists of both classified and non-classified roads as per the stipulation by the Indian Road Congress. In Kerala, road density is 548km per 100 sq. km, which is nearly 3 times the national average. When comes to the length of road per lakh people, it is 993.54km, and around ninety per cent of the road network in Kerala is single-lane. As per Kerala State Economic Review, 2021, the National highway, state highway, and major district roads constitute only 12 per cent of the total road network of Kerala carries 80 per cent of road traffic in the state. Till March 2021, 148.47 lakh motor vehicles have been registered in the Kerala state. Over the past two decades, it has experienced an annual growth rate (CAGR) of approximately 9 per cent. As on March 2021, the number of vehicles in Kerala is 445 per 1,000 population. According to the World Development Index (2015), the average number of vehicles per 1,000 people in India is 18, in China is 47 and in the United States is 507, which means that the vehicle population in Kerala is far ahead of China, which is on par with developed countries (Economic Review, 2021).

Table 1.7

Growth of Vehicles in Kerala for the period 2011-2021

Year	Number of Motor vehicles	Growth rate
2011	6072019	12.48
2012	6870354	13.15
2013	8048673	17.15
2014	8547966	6.20
2015	9421245	10.22
2016	10171813	7.97
2017	11030037	8.44
2018	12042691	9.18
2019	13334984	10.73
2020	14184184	6.37
2021	14847163	4.67

(Source: Economic Review, 2021)

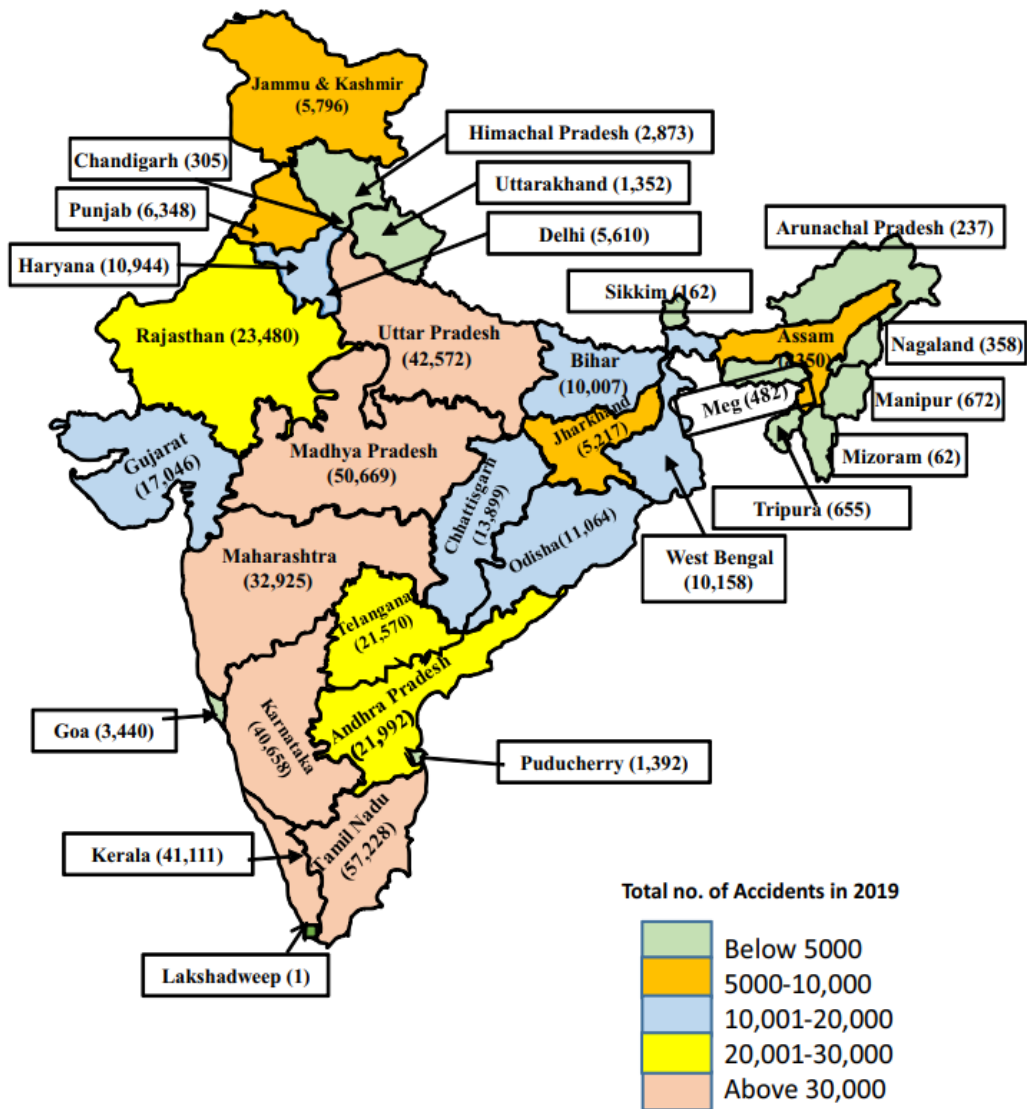
Though the last two years the growth of the number of motor vehicles in Kerala was found relatively lower due to the Covid pandemic impact, the increase in vehicles mainly consists of private vehicles; cars, and two-wheelers. Distribution of types of motor vehicles registered in Kerala in the year 2020-21 shows that. Out of the total vehicles registered in Kerala in the year 2021, two-wheelers claim lion portion (65%), followed by four-wheelers (22%), autorickshaws and goods vehicles (5% each) and others (2%) and the least claim belongs to buses, one per cent. While we examine the growth of private vehicles and buses during the period 2012 to 2021, the growth of private cars & jeeps, and two-wheelers are thrice and twice respectively the growth rate of buses. The mismatch between motor vehicles' upswing and road capacity augmentation has effectuated increased traffic congestion and road crashes throughout Kerala. (Motor Vehicles Department, Government of Kerala, 2021)

vi. Road Crashes in India and Position of Kerala

Road crashes are the indicator of bottlenecks and hindrances in smooth traffic flow. Traffic crashes resulted in 4,51,361 injuries to persons and 1,51,113 deaths in India during the year 2019 (MoRTH, 2021). Road traffic in Kerala is gradually increasing at an average rate of 12 to 14 per cent per annum, putting pressure on the state road network. Augmenting the capacity of existing roads is fraught with issues related to limited road ownership and land acquisition. According to the Kerala State Crime Records Bureau Reports, 2,979 people were killed and 30,510 injured in 27,877 road accidents in Kerala by 2020. As of August 2021, 20,818 accident cases have been reported. As we all know, the reason for the reduced rate of road accidents in Kerala in 2020 and 2021 as compared to previous years is that more vehicles are not on the road due to Covid Pandemic. So that we can consider the accident rate in the year 2019. Road traffic crashes are mainly attributed to reckless driving, bad road conditions, bad vehicle conditions, and climate and natural changes. Although the Motor Vehicles Department and the police have taken several steps to enforce the rules and regulations for enforcing road discipline and mitigation of crashes, road accidents are on the rise. The trend of increasing road accidents is worrying. The details of state wise number of accidents in India collected and compiled by the Ministry of Road Transport and Highways (MoRTH) in the year 2019 are given in Figure 1 below:

Figure 1

Road Accidents in India (2019)-State-Wise



(Source: MoRTH, 2019)

Kerala is the fourth most accident-prone state in India in 2019 where road accidents exceed 40,000 numbers. Rajasthan, the largest state in India and nine times the size of Kerala account for about 57 per cent (23,480 in number) of all road accidents in Kerala. Karnataka, which is 5 times the size of Kerala and has a metro city (Bangalore), has a lower number of road accidents (40,658 number) in 2019 than Kerala. West Bengal, a densely populated and giant city like Calcutta, accounts for

only a quarter of all road accidents in Kerala. It is conceivable that Kerala's position in terms of road accidents is close to that of Uttar Pradesh (42,572 crashes in 2019), which has about eight times the population of Kerala and has large cities like Lucknow, Allahabad, and Varanasi. The fact is that even in Maharashtra, which has a busy road network and metro cities like Mumbai and Pune, road accidents are less than in Kerala.

Table 1.8

Road Crashes per lakh population (2019)

State	Population in lakh	Total accidents	Rank in terms of the number of accidents	Accidents Per lakh population	Rank as per the number of accidents per lakh population
Tamilnadu	778	57228	I	74	II
Madhya Pradesh	854	50669	II	59	IV
Uttar Pradesh	2378	42572	III	18	VII
Kerala	357	41111	IV	115	I
Karnataka	676	40658	V	60	III
Maharashtra	1231	32925	VI	27	VI
Rajasthan	810	23480	VII	29	V
West Bengal	996	10158	XII	10	VIII

(Source: UIDAI, 2019 & MoRTH, 2020)

Though Tamil Nadu, Madhya Pradesh, and Uttar Pradesh have the highest number of road accidents in India in the year 2019, they are far behind Kerala in terms of the number of road accidents per population. Road accidents per lakh population are highest in Kerala, with 115 accidents per lakh (Table 1.8). Undoubtedly, the rate of road accidents in Kerala is much higher than in other states. It is noteworthy that states like Maharashtra, West Bengal, and Uttar Pradesh, which lag far behind Kerala in terms of population-based traffic accidents, rely heavily on public transport and it should be read in conjunction with this fact that in the metropolitan cities, Mumbai (Maharashtra), and Kolkata (West Bengal) 78.2 and 77.1 per cent of the population respectively depend on public transport systems (The Economic Times, 6th Oct-2018).

According to the report of the State Crime Record Bureau, Kerala, most road accidents in the state were caused by two-wheelers which constitute around 65 per cent of total vehicles registered. Motor cars and jeeps caused 30 per cent of road accidents and claim the second position in the State. In the year 2020, 10 per cent of road accidents in Kerala are caused by goods vehicles, 9 per cent by autorickshaws, and 3 per cent by other vehicles. In the same year, only 5 per cent of road accidents involving buses were reported. It should be noted that only one per cent of the accidents are caused by KSRTC buses and 4 per cent are caused by private buses (Economic Review, 2021). It can be inferred from the reports of SCRB and KSPB that the number of accidents due to bus services in Kerala is relatively low. The current situation in Kerala is that the number of dangerous transport modes is increasing and the number of modes of transport such as low-risk bus service is decreasing.

vii. Decline in Public Bus services in Kerala

There is a sharp decline in the number of private stage carrier buses in Kerala, which dropped from about 35,000 in 2000 to 12500 in 2020. The decline in the number of buses by more than 26,000 (as of march 2022) in two decades is worrying, especially in a small state like Kerala where public transport buses provide low-cost and low-carbon footprint transit (Dhanuraj, 2021). Due to the pandemic situation, the number of private buses operating has dropped from 12,500 (early 2020) to 8,400 in 2022. Contrary to the public expectations and announcement of the government, KSRTC has not extended its services either. As the state government notification of 2020 states that only KSRTC buses will be allowed to operate on routes of more than 140 km, even the existing number of private buses will not be plying. This steep decline in public transport buses in Kerala has resulted in the availability of buses even less than 0.50 per 1,000 people, compared to the national average of 1.33 (The Hindu, 1st August 2021). The sharp drop in this rate of bus transport in Kerala is even less than that of Bangladesh, which has 0.97 buses per 1,000 people. In developing countries like Thailand, the number of buses per 1,000 people is 8.42 buses, in Malaysia, it is 5.90 buses, in Mexico, it is 2. 87 buses, and in South Africa, 6.50 buses.

Before COVID, KSRTC's revenue was through its 29 lakh passengers per day. When all the buses stopped running due to the COVID pandemic situation, a large portion of the regular passengers left the KSRTC. Currently, transport arrangements have been restored but about one million passengers have not returned to KSRTC. Most turned to alternative modes of transportation, such as cars and two-wheelers. Examples and evidence of this move are the scarcity of second-hand cars and bikes in the automotive market, the doubled sales of new private vehicles, and the high vehicle registration rate (22 per cent growth over the previous year). It is a very relevant question whether those 10 lakh passengers who fell behind can be brought back. In Kerala, which used to have up to 35000 private buses, now only 8400 private buses and 4880 state-owned buses are actively plying on the road (Kerala MVD report, 2022). Recently, it was reported that more than 80 AC and low-floor buses have been lying idle for a long time and biting dust and rust at the KURTC depots (Indian Express, 20th Nov-2021). In this situation, attractive service quality, more services, and implementation of concessional fares are essential to bringing lost passengers back to public bus transport.

Public bus transport plays a vital role in urban, suburban, inter-city, and rural passenger transport and reaches every nook and corner, State Road Transport Undertakings in the country provides an organized, safe, economical, and reliable bus service but at the same time, they are facing severe financial crisis due to some external factors (Rao, S, 2013). Bus-based public transport is the backbone of the country which carries people across India in a very economical and efficient manner to reach every nook and corner of the country and there is an urgency to strengthen the bus passenger transport in the country to overcome pollution, traffic congestion, and road crashes which are the paramount concern to the society” (Rao, S, 2013).

1.2 SIGNIFICANCE OF THE STUDY

Passenger bus transport is a public utility service and hence it becomes the responsibility of a welfare state to ensure the most inexpensive and comfortable transport arrangements for the public. This must have been the inspiration for His Highness Chithira Thirunal Balarama Varma to start the first public road bus transport

service in the old state of Travancore in 1938. The revised Travancore State Manual (Velupillai, 1940) states that as public transport is one of the basic needs of the state, the government has decided to inaugurate a state transport scheme to provide efficient and smooth transportation. Since then, KSRTC has been connecting the state by road and acting as a link to villages, cities, and neighbouring states. It expanded its facilities and services, introduced state-of-the-art buses, and remains the most visible public sector entity in the state. On the other hand, the private bus service sector, a large segment of the public transport system in Kerala, has been serving ‘ordinary passengers’ without creating any single pie liability to the government, while contributing crores of rupees to the government exchequer in the form of road tax, insurance, permit fee, etc., and providing livelihood to lakhs of people directly and indirectly.

Service quality measures how well a service provider delivers services to their customers’ expectations. It is extremely important for a service organization as it helps to understand and fulfil the needs and expectations of customers. The service quality definitions affirm that each customer has certain expectations and standards about how organizations should provide services to meet their needs. An organization with high service quality meets or exceeds customers’ expectations whereas, organizations that fail to meet customers’ expectations attract ill-repute due to poor service quality. Service quality is widely recognized as an antecedent of customer satisfaction, complaints, value, trust, involvement, loyalty, and behavioural intention and as a predictor of goodwill and the competitive edge of an organization.

In the modern era, public bus transport services, being the most essential, help people with mobility. Every human being or passenger wants to take advantage of the best and most comfortable journey. Now, everyone is weighing the value of the services they receive, especially paid services. Kerala is now witnessing a massive decline in users of public bus transport, most of whom rely on private/individual vehicles such as cars and bikes, which is relatively detrimental to the state economically, socially, and environmentally. There is an urgency to examine whether these passenger dropouts are due to insufficient service quality or satisfaction levels. Also, it is generally believed that the services of private transport agencies are better

than those of public sector operators (STUs). Therefore, a comparative study is attempted to find out the service performance of state-owned and privately owned bus transport in Kerala, to assess the belief of the people, find out the factors responsible for such opinions, and investigate whether there is any possibility for improving public bus transport services to call back lost passengers and attract new passengers, which will be multifaceted benefits offering to the state. The results of this study may be applied in almost every state in India as there are STUs and private sector bus operations across the country. Also, it may provide insight to the transport policymakers and the government to implement the ‘*traffic calming*’ policy that promotes sustainable transport development.

1.3 RESEARCH PROBLEM

Inadequate transport infrastructure and poor-quality services are seen as major impediments to economic development ((T E R I, 2015). “Public bus transport is the backbone of the country which carries people across India in a very economical and efficient manner to reach every nook and corner of the country and there is an urgency to strengthen the bus passenger transport in the country as to overcome pollution, traffic congestion, and road crashes which are the paramount concern to the society” (Rao, S, 2013). While many developed countries have adopted the path of sustainable transport and are widely turning away from private vehicles to public transport means, Kerala, which is comparable to developed countries in many indices, is widely turning away from public transport, especially bus transport. Kerala State Road Transport Corporation (KSRTC), a state-owned bus transport service was established with a mission- “to provide effective and safe commuter-friendly travelling solutions to the public.” When many STUs in India glared with benchmark performance, KSRTC has been in a performance crisis due to manifold reasons. On the other hand, privately owned bus services were fulfilling the travel needs of the people of Kerala without costing a single penny to the government but contributing a huge amount to the exchequer and providing employment opportunities to lakhs. Recently, massive passenger dropout has been witnessed in both the bus service sectors. In the last decade, more than 22,000 privately owned buses have disappeared from the roads. In the case of state buses, it is recently reported that they have lost around 10 lakh passengers. The impact of this reduction in buses and passengers on the Kerala exchequer is around 400 crores per year. Now the state of Kerala is 0.50 buses per

1000 passengers as compared to the national rate (1.33 buses). At present, the narrow roads of Kerala are crowded with two-wheelers and private cars, accounting for 70 per cent of road accidents in Kerala. It is alarming that Kerala has the highest number of road accidents in India per lakh population, 115 per lakh (MoRTH, 2021).

In the present turbulent service business environment, service quality is a crucial concept that every service operator should manage to survive and gain a competitive edge. Several studies have shown that service quality is a factor that affects perceived value, passengers' trust, passengers' satisfaction, involvement, and intention to use the service again. Though the commuters in Kerala depend heavily on private transport modes which are both costly and risky as compared to public transport, the public bus transport system is found to have failed miserably in prompting these commuters to occupy their empty seats. Is the failure of the bus transport system in Kerala to draw the commuters in large numbers due to its deficient service quality? Whether it is possible to bring back passengers who fell behind by enhancing service quality? Do bus ownership and passenger satisfaction affect service quality and passengers' behavioural intentions in any way? To answer these questions, it becomes essential to render an answer to the key question that how commuters perceive the service quality of KSRTC and privately owned transport services in Kerala and if there are any service quality differences between these two.

Research Questions

Based on the preliminary research conducted on the topical issues and the proposed research problem, this study seeks to answer the following research questions.

- Is there any significant difference between the state-owned and privately owned bus transportation services in Kerala regarding their service quality dimensions?
- How far do passengers of the state-owned and privately-owned bus transportation services differ in their post-service behaviour?
- What are the effects of service quality of the state-owned and privately-owned bus transportation in Kerala on passengers' post-service behaviour and how

far do these effects differ from the state-owned and privately owned bus transportation services?

- Is there any mediating role of passenger satisfaction in the relationship between service quality of the bus services and the behavioural intentions of the passengers?
- How do passengers' perceived safety moderate in the relationship between bus network and schedule design and the behavioural intentions of the passengers?

1.4 OBJECTIVES OF THE STUDY

The present study is conducted with the broad objective of evaluating and comparing the service quality of bus services provided by state-owned and privately owned sectors in Kerala and its impacts on passengers' behaviour intention. The specific objectives of the study are:

1. To investigate and compare the service quality offered by the state-owned and privately-owned bus transportation services in Kerala
2. To examine the level of post-service behaviour of passengers of the state-owned and privately-owned bus transportation services in Kerala
3. To explore the effect of bus ownership on the relationship between bus service quality and the post-service behaviour of passengers in Kerala.
4. To examine the mediating role of passenger satisfaction in the relationship between bus service quality and behavioural intentions.
5. To extract the moderating effect of safety in bus services on the influence of bus network and time design on passengers' behavioural intentions.

1.5 HYPOTHESES FORMULATION FOR THE STUDY

In practice, service quality has many significant outcomes proven by various researchers. It includes perceived value, customer satisfaction, customers' trust, involvement, complaint habits, continuance attitudes, and WoM intentions. Various

scholars support the relationship between **Service quality and perceived value** (Zeithaml, 1988; Allen Klose & Todd Finkle, 1995; Andreassen & Lindestad, 1998; Chang and Wang, 2011; Chang, Y. H., & Yeh, C. H, 2017; Bellizzi et al., 2020 etc.), **Service quality and customers trust** (Morgan and Hunt, 1994; Sirdeshmukh et al., 2002; Singh, S, 2010; Zubair et al., 2019; Purwanto et al., 2020; Yusef et al., 2020), **Service quality and customer satisfaction** (Allen Klose & Todd Finkle, 1995; Nandakumar Mekoth, 1997; Cronin et al., 2000; Yang & Peterson, 2004; Fallenson, M & Friman, M., 2008; Lai et al,2009; Roig et al,2009; Singh S, 2010; Chang & Wang, 2011; Edward & Sahadev, 2011; and Bellizzi et al., 2020), **Service quality and continual intention** (Zeithaml, V, A et al., 1996; Lee H et al., 2000; Newman, K, 2001; Caruana A, 2002; Yuvas U et al., 2004; Wen et al., 2005; Saha, GC, 2009; Saha & Theingi, 2009; Minser, J., & Webb, V., 2010; Van Lierop & EI-Geneidy, 2016; Chang, Y. H., & Yeh, C. H, 2017; Yuan et al., 2019; D' Ona J, 2020 and many more), **Service quality and Word-of-mouth intention** (Murray, K., 1991; Repo, KL., 1999; Mazzarol, T et al., 2007; Theingi, 2009; Leonard S.E, 2017; and Chih-Hsing Sam Liu & Tingko Lee, 2016). The relationship between service quality and post-service behaviour constructs and the interrelationship among different post-service behaviour constructs have been highlighted in the above-mentioned key studies. For further details, paragraphs 4.7.1 to 4.7.7 and Table 4.1 of Chapter 4 may be referred to.

Many studies of similar and other sectors have established that organizational ownership and loyalty act as a **moderating factor** between service quality and customers' behavioural intentions (Tao, S., He, S. Y & Thøgersen, J, 2019; Rohani, M. M., Wijeyesekera, D. C., & Karim, A. T. A., 2013; Adeinat, I. M., & Gregg, C., 2018, and Shmykova, E., 2007). A few studies have also indicated that customer satisfaction acts as an **intermediary (mediating factor)** between service quality and customers' behavioural intentions (Mahamad, O., & Ramayah, T., 2010; Andreani, F., Taniaji, T. L., & Puspitasari, R. N. M., 2012; Srivastava, M., & Rai, A. K., 2013; Tandon, U., Kiran, R. & Sah, A. N, 2017; and Budur, T., & Poturak, M, 2021). Few studies have documented the role of perceived **safety** and **network design** in improving customer loyalty, particularly for transport services (Lee, M. S., Chun, S. B., Park, C., Suh, K. B., & Lee, C. W, 2017; Irtema, H. I. M., Ismail, A., Borhan, M.

N., Das, A. M., & Alshetwi, A. B., 2018; Shankar, A., & Jebarajakirthy, C., 2019; and Zhang, X., Liu, D., Wang, Y., & Du, H., 2021).

The present study's research hypotheses are formulated based on the above-mentioned studies and observations.

1.5.1 Hypotheses of the study (combined form)

Hypotheses No.	Hypotheses statements
H1	Private and KSRTC bus services in Kerala offer average level service quality to their passengers
H2	There is no significant difference between private and KSRTC buses with respect to the factors of service quality
H3	There is no significant difference among various categorical factors of private and KSRTC bus transportation with respect to factors of service quality
H4	Service quality of bus transportation services has a positive effect on passengers' trust and perceived value, and ownership of the bus moderates this relationship
H5	Passengers' trust and Perceived value have a positive effect on passengers' satisfaction and ownership of the bus moderate this relationship
H6	Passenger satisfaction has a positive effect on continual intention and word-of-mouth intention, and ownership of the bus moderates this relationship
H7	The continual intention has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship
H8	Passenger satisfaction has a mediating role between service quality and behavioural intentions, and ownership of the bus moderates this relationship
H9	Safety in the bus service has a moderating effect on the strength of the relationship between network and time design, and continual intention and word-of-mouth intention

1.6 SCOPE OF THE STUDY

This research is limited to only one state i.e., Kerala. This study covers a detailed survey among commuters in Kerala who rely on State Owned Bus services

(Kerala State Road Transport Corporation) or privately owned bus services for their personal, and or work-related (intra- district or intra-state, or inter-state) trips at least once a month. This survey covers the assessment of passengers' perception of bus service quality using a newly developed model incorporating twelve important dimensions (Network and Time Design, Cleanliness, Comfort, Convenience, Safety, Staff behaviour, Grievance Redressal System, Economy, Empathy, Information quality, Ambiance of stations, and reliability) and how does the perceived service quality affect Passengers' perceived value, trust, satisfaction, complaint, involvement and Behavioral intention (continual and WoM intentions). KURTC bus Services and SWIFT bus services are not covered under this study.

1.7 RESEARCH METHODOLOGY

This segment outlines the methodological approach adopted to answer the research questions and test the related hypotheses. An overview of the chosen research design, frame and method of sampling, the procedure of data collection and measurement, and methods of data analysis and interpretation for the present study are briefly described in this chapter. It is believed that the adopted methodology corresponds to the objectives of the study. The basic nature of the present study's research design is descriptive as well as analytical. The important dimensions of the research design of the study are as follows.

1.7.1 Research Philosophy

Philosophy of qualitative research is “interpretive, humanistic, and naturalistic” (Creswell, 2007). The present study adopted the ‘Interpretive-Humanistic-Naturalistic’ research philosophy as the core basis of this study is the passenger survey and the passengers’ perception (humanistic interpretation) towards bus service quality which may vary due to various factors. As the study is not relying on any scientific or laboratory experiment, it is purely a naturalistic one.

1.7.2 Research Approach

The present study adopted the inductive approach as it infers service quality, passengers' perceptions, satisfaction, post-service behaviour and intentions by taking a survey of the sample passengers.

1.7.3 Research Choice

This study follows a mixed method as it combines qualitative elements (perception, trust, value, involvement, satisfaction, and behavioural intention of passengers) and quantitative research elements (for collection, coding, analysis, and interpretation) for the wider purposes of understanding and confirmation, breadth, and depth.

1.7.4 Research Strategy

Research Strategy describes how a researcher intends to carry out work. Determining the impact of service quality on the perceived value, trust, satisfaction, involvement, and behavioural intention of passengers is important to understand but it is very difficult to observe. Surveys are recognized to be a quick, economical, and efficient data collection form for qualitative research (Khalid, K et al., 2012; Zikmund et al., 2013). Based on the above findings, a passenger survey is felt to be a more suitable methodological alternative to use in the study for collecting required data. Hence, a public passenger survey is conducted among different categories of passengers who can understand and answer the questions in the questionnaire.

1.7.5 Time Horizon

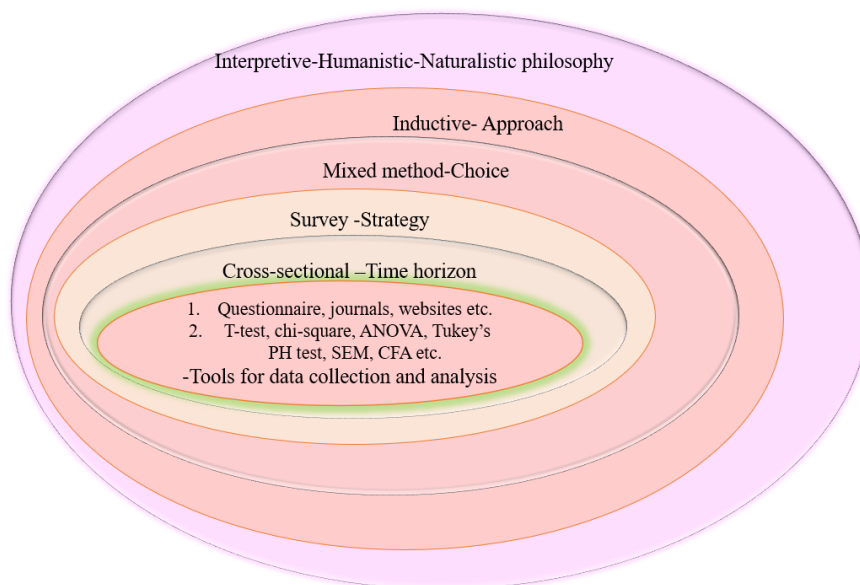
This research follows a cross-sectional research design as the researcher measures the behavioural outcomes and the exposures of the bus passengers at the same time. The present study is descriptive in nature as it portrays the existing state of service quality and the relationship between service quality and other important attributes.

1.7.6 Data Collection Method

Two sets of data have been collected for this study. The first set is primary data, which has been collected for investigating the passenger's perception regarding the service quality provided by both states owned and privately owned bus services. In this interest, a well-structured questionnaire was developed. The other set of data is secondary data which has been collected from important secondary sources that include the annual report of KSRTC, Annual reports and publications of other STUs, Economic Review of Kerala State Planning Board, Budget Reports, Reports of Bus Owners Association, Bus Operators Federation, Reports and publications of NITI AYO, Planning Commission, Ministry of Road Transport and Highways, The Energy and Resources Institute (TERI), publications of International organizations and forums like APTA, TTF, World Bank, etc. Research papers, Books, Journals, Articles, and data from transport-related websites like KSRTC, MoRTH, INAE, pioneer bus transport, Intelligent Transport, etc. Data analysis tools are detailed in 1.7.11.

Figure 1.2

Research Onion of the study



(Source: Saunders' Research Onion, 2007)

1.7.7 Population of the Study

This study aims to carry out a systematic examination of bus passengers' perception of service quality and its association with their demographics and travel attributes, perceived value, trust, overall satisfaction, complaints, involvement, and behavioural intention while using KSRTC buses or privately owned buses in Kerala. Hence, the population of this research is the bus passengers in Kerala who use state-owned and/or privately owned bus services to meet their transit requirements. It is not possible to determine the exact size of the population as this study considers passengers who use any of the two types of bus services for their intra-state or interstate travel at least once a month.

1.7.8 Sampling Design and Procedure

Sample Size determination: As the exact population of bus passengers in Kerala is not available or infinite, the minimum sample size for the study is determined by applying Cochran's formula, as given below.

$$n = Z^2 \times \frac{p(1-p)}{e^2}$$

Where,

n = Sample size

Z = Z score

p = Population proportion and

e = margin of error (Confident interval).

$$n = 2.58^2 \times \frac{0.50(1-0.50)}{0.05^2} = 666 \text{ samples}$$

Z score is taken based on the confidence level. Here the researcher considers a 99% confidence level and hence the Z score is 2.58. The population proportion for this study is assumed to be 50%, i.e., 0.5. The confidence interval is the small amount

allowed in case of miscalculation or change of circumstances. 5% (0.05) is taken as the margin of error.

In proportion to the state-owned and privately-owned active bus ratio (36.7:63.3), 666 samples were bifurcated into 244 passengers of KSRTC and 422 passengers of private bus services. But the actual samples collected were 686 of which 252 were KSRTC passengers and 434 private bus passengers.

Sampling procedure: An on-site survey was carried out at the fourteen selected major bus stands/stations of the Kerala state. It took eight weeks to administer the passenger survey. To meet the requirement that respondent passengers must have travelled by bus at least once a month, purposive sampling is used for the selection of sample passengers at the pre-selected bus stands. For this, districts in Kerala were listed in the order from south to north. The researcher chose 50 per cent districts for conducting the passenger surveys. With the help of the ‘RAND’ function of MS Excel (=INT [14* RAND (7)] +1), 7 districts such as (Kannur)13th, (Kottayam) 5th, (Trivandrum)01st, (Kozhikode)11th, (Ernakulam) 07th, (Malappuram)10th, and (Trissur) 8th were selected. The major private and KSRTC bus stands of each district were orderly listed separately and lottery random sampling was used to select two bus stations (1 private and 1 KSRTC) from each sample district. Details of the bus stand selected and the number of passengers surveyed are given in the table No.1.9

Table 1.9

List of Selected Bus Stands/Stations for Passenger Survey

No	Bus stand/Station	Random No. (Dist.)	District	Samples
1	KSRTC Central bus station	01674	Trivandrum	36
2	East Fort Bus station			62
3	Nagampadam private bus stand	05070	Kottayam	62
4	KSRTC bus station, Kottayam			36
5	Kalur Bus station	07274	Ernakulam	62
6	KSRTC Bus station, Ernakulam			36

No	Bus stand/Station	Random No. (Dist.)	District	Samples
7	ST bus station, Trissur (for KSRTC)	08747	Thrissur	36
8	Kunnamkulam Bus stand			62
9	KSRTC Bus Terminal Up-hill	10751	Malappuram	36
10	Tirur Bus station			62
11	Mofussil Bus Stand, Mavoor Road	11666	Kozhikode	62
12	KSRTC Bus Stand, Thamarassery			36
13	Thavakkara Bus station, Kannur	13019	Kannur	62
14	Payyannur Bus Stand (KSRTC)			36

1.7.9 Questionnaire Design and Variables

The research questionnaire is designed mainly into three sections.

Section 1: The first part of the questionnaire consists of 14 questions that present respondent passengers' demographic information and travel particulars such as district, gender, age, region, education, occupation, income, regular bus travel mode (KSRTC or Private bus), the purpose of travel, the distance of travel, class of bus, types of travel (interstate, intra-state, or intra-district) and frequency of travel.

Section 2: The second part of the questionnaire was designed with the constructs of service quality dimensions. Instead of traditional SERVQUAL (RATER) dimensions, based on extensive previous literature, more comprehensive service quality dimensions specifically applicable to transport services have been considered for the second part of the questionnaire. A questionnaire was designed for testing the actual scale. The final questionnaire included 65-item statements on 12 important service quality dimensions. Each of these items was evaluated using a five-point Likert scale; "Strongly Disagree," "Disagree", "Neutral", "Agree" and "Strongly Agree". The details of service quality dimensions used as constructs are given in Table No.1.10

Table 1.10*Details of SQ variables chosen as Constructs.*

Sl. No	Dimensions (Constructs)	Variables (Items)	Related References
1	Network and Time design (NTD)	<ol style="list-style-type: none"> 1. Adequacy of service 2. Connectivity 3. Remote/rural access 4. Route/stop display 5. Waiting time 	Agyeman. (2020); Basha, K, A. (2013); Borhan et al. (2019); Cheng, X.et al (2018); Islam. (2014); Manikandan, B., & Vanniarajan, T. (2016); Morton, C., Caulfield, B., & Anable, J. (2016); Murambi, D. N., & Bwisa, H. M. (2014)
2	Cleanliness (CLN)	<ol style="list-style-type: none"> 1. Visual appeal of the bus 2. Attire of staff 3. Interior of bus 4. Bus facilities upkeep 5. Exterior of bus 	Andreassen, T. W. (1995); d' Ovidio, F, D et al. (2014); Eboli, L., & Mazzulla, G. (2012); Manikandan, B., & Vanniarajan, T. (2016); Quddus, M et al. (2019); Van Lierop, D.et al.(2018).
3	Journey Comfort (JCF)	<ol style="list-style-type: none"> 1. Sitting on the bus 2. Standing on the bus 3. Entry and Exit 4. Speed 5. Operating Condition 6. Luggage carrying 	Dab, S., & Ali Ahamed. (2018); Felleson. (2008); Hanson, J. (2019); Nandakumar Mekoth. (1997); Quddus, M et al. (2019); Van Lierop, D.et al.(2018) Weng, J et al. (2018).
4	Convenience (CON)	<ol style="list-style-type: none"> 1. Operating hours 2. Location of the ticket counter 3. Ease of reservation 4. Simplicity in information 5. Location of bus parking 6. Variety of bus service 	Andreassen, T. W. (1995); Basha & Wills. (2013); Borhan et al. (2019); Bakti & Sumaedi, S. (2015); Felleson. (2008); Gunarathna. (2017); Weng, J.et al. (2018)
5	Safety (SFT)	<ol style="list-style-type: none"> 1. Safety on the bus 2. Careful driving 3. Prevention of troublemakers 4. Luggage safety 5. First-aid facilities 6. Emergency Exit visibility 	Agyeman. (2020); Basha, K, A. (2013); Borhan et al. (2019); Cheng, X.et al (2018); Fonseca, F. (2010); Islam. (2014); Manikandan, B., & Vanniarajan, T. (2016); Weng, J et al. (2018).

Sl. No	Dimensions (Constructs)	Variables (Items)	Related References
6	Staff Behaviour (STB)	<ol style="list-style-type: none"> 1. Willingness to help 2. Politeness 3. Use of standard language 4. Mutual relationship 5. Return of ticket and balance 	Eboli, L., & Mazzulla, G. (2012); Isibor, O, F., & Odia, O, E. (2014); Gajendran. (2015); Kumar, M et al. (2016); Manikandan, B., & Vanniarajan, T. (2016); Nandakumar Mekoth. (1997).
7	Grievance Redressal (GRS)	<ol style="list-style-type: none"> 1. Awareness of GRS 2. Approachability of GRS 3. Ease of GR procedure 4. Quickness of GR 	Borhan et al. (2019); Friman, M et al. (1998); Houria, B., & Fares, B. (2019); Ravi Prakash et al. (2016); Srivastava, G. N. (2017).
8	Economy (ECO)	<ol style="list-style-type: none"> 1. Bus fare 2. Reservation/luggage charges 3. Ticket Cancellation charges 4. Special concession 5. Occasional/Festival charges 6. Student concession 	Andreassen, T. W. (1995); Chowdhury, S et al. (2018); Cunningham, L et al. (2000); d'Ovidio, F. D et al (2014); Kumar, M et al. (2016); Murat, Y. S., & Cakici, Z. (2017); Weng, J et al. (2018)
9	Empathy (EMP)	<ol style="list-style-type: none"> 1. individual care and attention 2. Protection of passengers' best interest 3. Empathetic waiting 4. Provision good experience 5. Understanding special needs 	Eboli, L., & Mazzulla, G. (2012); Fellesson. (2008); Houria, B., & Fares, B. (2019); Sanchez-Perez et al. (2007); Sudhakar, G., & Rao, R. S. (2019); Quddus, M et al. (2019)
10	Information Quality (INQ)	<ol style="list-style-type: none"> 1. Error-free display 2. Stop alert 3. Visibility of type of service 4. Innovative facilities 5. e-reservation/ e-card facility 	Cheng, Y. H., & Tseng, W. C. (2016); Fan, Y et al. (2016); Fellesson. (2008); Hernandez, S et al. (2016); Manikandan, B., & Vanniarajan, T. (2016); Murambi, D. N., & Bwisa, H. M. (2014); Sorensen, L et al. (2021);

Sl. No	Dimensions (Constructs)	Variables (Items)	Related References
		6. Online schedule/ PNR status	
11	The ambiancethe of Bus station (ABS)	1. Adequate shelter and chair 2. Infrastructure Maintenance 3. Toilet/clock room upkeep 4. Security measures in the station 5. Food/parking provision	Agyeman. (2020); Bakti & Sumaedi, S. (2015); Fan, Y et al. (2016); Felleson. (2008); Hu. (2006); Manikandan, B., & Vanniarajan, T. (2016); Sudhakar, G., & Rao, R. S. (2019);
12	Reliability (REL)	1. Arrival at destination 2. Problems with treatment 3. Timely and efficient service 4. Alternative arrangements 5. Peak/late night service 6. Picking and dropping points	Agyeman. (2020); Andreassen, T. W. (1995); Basha & Wills. (2013); Felleson. (2008); Fonseca, F. (2010); Gajendran. (2015); Manikandan, B., & Vanniarajan, T. (2016); Murambi, D. N., & Bwisa, H. M. (2014); Rahman, F et al. (2016); Snežana Filipovic et al. (2009);__Van Lierop, D.et al.(2018); Weng, J et al. (2018)

Section 3: The third part of the questionnaire includes seven additional parameters viz. Perceived value, Perceived trust, Passenger satisfaction, Passenger Complaint, Passenger involvement, Continual intention, and Word of Mouth intention to broadly discuss the effect of service quality on these attributes. The ‘Five-point Likert scale’ is used for this part also to evaluate the statements under these constructs. The relationship among these variables is presented in Table number 1.11.

Table 1.11*The Hypothesized Interrelationship among Constructs*

No.	Dependent Constructs/ Variables	Independent variables	Mediator/Moderator
1	Perceived Value	1. Service quality	---
2	Perceived Trust	1. Service Quality 2. Perceived value	
3	Passenger Satisfaction*1	1. Perceived Value 2. Perceived Trust	*1. Mediator role between SQ and BI
4	Passenger Complaint	1. Perceived Value 2. Perceived Trust 3. Passenger Satisfaction	
5	Passenger Involvement	1. Passenger complaint 2. Passenger Satisfaction	
6	Continual Intention	1. Passenger involvement	
7	WoM intention	1. Passenger involvement 2. Continual intention	
8	Ownership of buses *2	1. Service quality 2. Post service Behaviour	*2. Moderator between SQ and PSB
9	Safety in Bus services*3	1. Network & Time Design 2. Behavioural Intention	*3. Moderator between NTD and BI

The construct, *Perceived value* includes six items (statements) viz. Worth, equipment and facilities, relative fare, adequacy, risk, and value-added services. *Perceived Trust* consists of five items viz. trust in bus charges, availability of service, accessibility of service, staff behaviour, and safe driving. *Passenger satisfaction* includes six items viz. satisfaction in the frequency of service, comfort, punctuality, security, crews' attitude and behaviour, and Cost of travel. *Passenger complaints* consist of six items; complaints regarding operating conditions, behaviour, timeliness, driving style, traffic rules violation, stopping and boarding, and sufficiency of the information. *Passenger involvement* includes seven items such as willingness to pay

more, proud feeling, loyalty, willingness to promote, quiet knowledge of the service, feeling as an essential service, and regular provision of feedback. *Continual intention* consists of six items; intention for all future use, daily use, first choice consideration, usage extension to private trips, usage extension to work trips, and unwillingness to switch services. *Word-of-Mouth intention* (behavioural outcome) consists of four items; the intention to share a positive experience, recommend to others, propagate the benefits, and convince and persuade others.

1.7.10 Data Validity and Reliability

A particular item or group of items is said to have reliability if it gives similar results under consistent conditions. In this study, the researcher used Cronbach's alpha to test its reliability. Cronbach's alpha helps to measure the strength of consistency. Results range from 0 to 1. In the case of no correlation/covariance, $\alpha = 0$ and α approaches 1 if there is high variance. Thus, the higher the α , the higher the covariance. An alpha value of 0.70 or above indicates strong internal consistency, and an alpha value of 0.60 or above is considered significant (Cronbach & Meehl, 1995).

a. Pilot Study: In this study, by taking 60 sample sizes, the reliability of 18 constructs and items was tested and validated with the help of Cronbach's alpha.

Table 1.12

Internal consistency analysis of the eighteen constructs by Cronbach's alpha for sample size 60 based on the pilot study

SI No.	Constructs	Cronbach's Alpha	No. of Items deleted
1	Network and Time design	0.876	Nil
2	Cleanliness	0.909	Nil
3	Journey comfort	0.919	Nil
4	Convenience	0.910	Nil
5	Safety	0.918	Nil
6	Staff behaviour	0.844	Nil
7	Grievance redressal system	0.900	Nil

SI No.	Constructs	Cronbach's Alpha	No. of Items deleted
8	Economy	0.822	Nil
9	Empathy	0.911	Nil
10	Information quality	0.911	Nil
11	The ambience of the bus station	0.823	Nil
12	Passengers' trust	0.912	Nil
13	Perceived value	0.921	Nil
14	Passengers' satisfaction	0.834	Nil
15	Passengers' complaints	0.912	Nil
16	Passengers' involvement	0.932	Nil
17	Continual intention	0.897	Nil
18	WOM intention	0.899	Nil

Cronbach's Alpha values of the pilot study show that all constructs are reliable in terms of internal consistency. Generally, reliability coefficients of 0.70 or higher are considered good (Nunnally, 1967). The coefficients 0.60 to 0.70 are considered desirable. Therefore, the researcher proceeded with full-scale data collection.

b. Reliability and Validity of full-scale data

The reliability and validity of the full-scale data have been established rigorously and comprehensively in this study. This detail is clearly stated in section B of Chapter No.7 as a prerequisite for Structural Equation Modelling. Confirmatory factor analysis (CFA) requires establishing both Construct validity (convergent and discriminant validity) and reliability (Composite reliability) used for the said purpose. Overall construct reliability is established by using Composite reliability (CR) and the construct validity (convergent and discriminant validity) is measured by applying AVE.

1.7.11 Data Analysis Tools and Software/Applications

1. To investigate and compare the service quality offered by the KSRTC and privately-owned bus transportation services in Kerala, mean, standard deviation, one sample t-test, independent t-test, and one-way ANOVA with Tukey's HSD post hoc analysis are used with the help of IBM SPSS 21 software package.
2. To examine the post-service behaviour of passengers of the KSRTC and privately-owned bus transportation services in Kerala, quartile deviation, percentage analysis, chi-square test for goodness of fit and chi-square test for independence are employed with the help of IBM SPSS 21 software package.
3. To explore the effects of service quality of bus transportation services in Kerala on the post-service behaviour of passengers using ownership of the bus as a moderating factor, co-variance based Confirmatory Factor Analysis and Structural Equation Modelling (CB-CFA & SEM) techniques are employed for testing the hypothesized model and for examining the significance of the moderation effect in the model, chi-square difference test is used at model level and critical ratio differences are adopted for path level with the help of IBM SPSS AMOS graphics 21 software package.
4. To examine the role of passenger satisfaction and ownership of the bus in the relationship between service quality of bus transportation service and behavioural intentions using moderated mediation analysis, Structural Equation Modelling is adopted and testing the significance of the mediating effect in the model, bootstrapping procedures are employed and testing moderation effect in the model, chi-square difference test is used at model level and heterogeneity test is utilized for the purpose of testing the significance of the moderated mediation effect in the model with the help of IBM SPSS AMOS graphics 21 software package.
5. To extract the moderating effect of safety in the private and KSRTC bus services on the effect of network and time design on continual and word-of-

mouth intentions of the passengers, Structural Equation Modelling is used and testing the significance of the moderation effect, two-way interaction graphs employed with help of IBM SPSS AMOS graphics 21 and MS Excel.

1.7.12 Concepts and Operational Definitions

- **Public Bus Transport**

Public bus Transport means the stage carriage bus services owned and operated by both Kerala State Road Transport Corporation (KSRTC) and Private parties and regularly scheduled for transport of the general public.

- **State-owned Bus Transport services**

State-owned bus transport services are those intra-state and inter-state stage carriage bus services owned and operated by the Kerala State Road Transport Corporation (KSRTC).

- **Privately owned bus transport services**

Privately owned bus services are those intra-state and inter-state stage carriage bus services owned and operated by a private person.

- **Passenger**

An individual who travels in KSRTC buses or private buses at least once a month by paying a full or concessional fare.

- **Service Quality**

Passengers' judgment on bus services where they compare their expectations with the actual bus services delivery in various service dimensions; network and time design, cleanliness, journey comfort, convenience, safety, staff behaviour, grievance redressal system, economy, empathy, information quality, ambience, and reliability.

- **Service quality factors**

Twelve important dimensions/factors that passengers consider while assessing the bus service quality.

- **Network and time design**

It refers to the bus operating frequency, connectivity to other transport modes, bus accessibility to various regions, and display of routes and stoppage information.

- **Cleanliness**

It refers to the visual appeal and cleanliness of the bus's interior and exterior, the attire and neatness of the bus staff, and the good maintenance of bus utilities and amenities.

- **Journey comfort**

It refers to the passengers' comfort while sitting and standing in the bus, luggage carrying, entry and exit, speed, and operating conditions (jerk/smoke-free) of the buses.

- **Convenience**

It refers to the passengers' convenience relating to bus operating hours, location of bus parking and ticket counters, reservation process, information clarity, and the variety of bus services according to the requirements of passengers.

- **Safety**

It refers to the safety of bus passengers and luggage in the vehicles, the safe driving style of drivers, prevention of anti-social passengers, maintenance of first-aid facilities, surveillance systems, emergency windows, etc.

- **Staff behaviour**

It entails the bus staff's helpfulness, politeness, cooperation among themselves and with the passengers, use of standard language, and accurate balance refund to the passengers.

- **Grievance redressal system**

It entails the availability of a well-known and easily approachable passenger grievance redressal system and its easy procedure and fast action.

- **Economy**

It refers to the affordable bus fares, reasonable reservation-baggage-ticket cancellation charges, no overcharging on special occasions, and provision of fare concessions to deserving passengers like students, the disabled, etc.

- **Empathy**

It refers to providing personal care and attention to deserving passengers, waiting for passengers to board the vehicle, safeguarding passengers' best interests, understanding their specific needs, and providing them with a good travel experience.

- **Information quality**

It refers to error-free and clear displays of bus types, time schedules, and PNR status, timely alerts given by the staff, innovative IT utilities like GPS, Wi-Fi, charging ports, mobility cards, etc., and fast and efficient information provision.

- **Ambiance of the bus station**

It entails quality shelter and chairs in the bus station, well maintenance of infrastructure, toilet, clock room, etc. in the station, availability of adequate security measures, food and beverages, and parking facility for private vehicles.

- **Reliability**

This Service quality dimension refers to the on-time arrival of buses at the boarding station, sincere efforts of the staff to solve the problems of passengers related to the journey, quick provision of alternative travel arrangements in case of breakdown, etc., provision of adequate services during rush hours and night hours, and stopping of buses at the exact boarding points. Simply, this dimension indicates the reliability of buses and bus staff.

- **Perceived trust**

Perceived trust is the perceived belief a passenger has in the bus service in terms of its affordability, availability, accessibility, amicability of staff, safety, and comfortability.

- **Perceived value**

The economic, social, and safety worth of the bus services is perceived by the passengers while matching it with their cost of travel.

- **Passenger complaint**

Complaints of passengers regarding operating conditions of buses, the behaviour of staff, punctuality of bus service, driving style, the safety of passengers, and boarding at stops.

- **Passenger satisfaction**

Satisfaction of passengers in frequency, punctuality, and regularity of bus service, comfort, convenience, safety in the buses and stations, staff behaviour, and in bus fare.

- **Passenger involvement**

Passenger involvement is the mental state (disposition) that motivates a passenger to use the bus service or the importance a passenger places on a particular bus service or loyalty towards a bus service even if higher fare.

- **Continual intention**

Passengers' intention to use or re-use continually a particular bus service includes seeing the bus service as the first choice, making it a part of daily life, extending it to personal and work needs, and reluctance to switch to other modes of transport.

- **Word-of-Mouth intention**

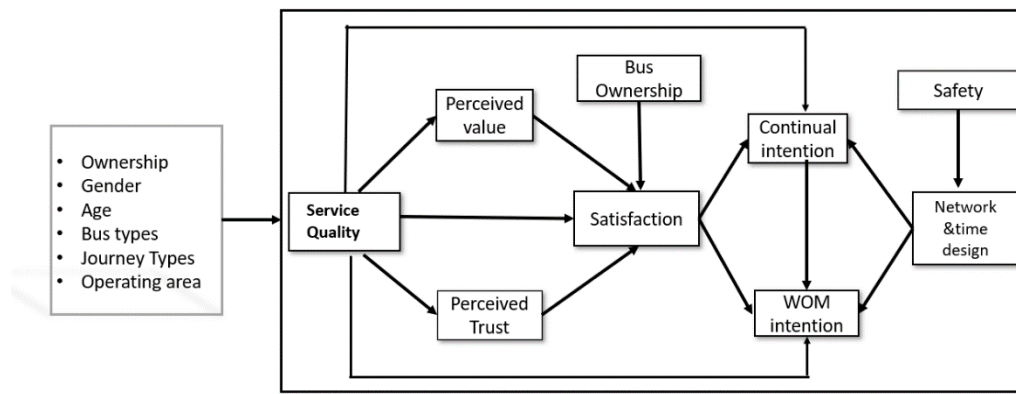
Word-of-Mouth intention means the passengers' expressed likelihood of making positive remarks or comments regarding the bus service which convince and persuade others to use and re-use such bus service.

1.8. CONCEPTUAL FRAMEWORK OF THE STUDY

A conceptual model visually represents theoretical constructs and variables. It shows the relationship among the variables. A review of previous studies helps to a great extent in the development of the conceptual framework for the study. The constructed conceptual model of the study is depicted below:

Figure 1.3

Conceptual Model of the Study



1.9 DEMOGRAPHIC PROFILE OF RESPONDENTS

A summary of the demographic profile of 686 sample passenger respondents is tabulated as follows:

Table 1.13

Demographic Profile of Respondents

		Frequency	Per cent
Gender	Male	374	54.5
	Female	312	45.5
	Transgender	0	0
	Total	686	100.0
Age	21 to 40	412	60.1
	41 to 60	233	34.0
	Above 60	41	6.0
	Total	686	100.0

		Frequency	Per cent
Region	Rural	306	44.6
	Semi-Urban	248	36.2
	Urban	132	19.2
	Total	686	100.0
Education	SSLC and below	85	12.4
	HSC	73	10.6
	Graduate	216	31.5
	Post Graduates	266	38.8
	Others	46	6.7
	Total	686	100.0
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
	Total	686	100.0
Monthly Income (Rs)	Below 25,000	328	47.8
	25,001 to 50,000	173	25.2
	50,001 to 75,000	88	12.8
	75,001 to 1,00,000	58	8.5
	Above 1,00,000	39	5.7
	Total	686	100.0
Bus ownership	Privately owned bus service	434	63.3
	KSRTC	252	36.7
	Total	686	100.0
Purpose of travel	Personal	183	26.7
	Work-related	181	26.4
	Personal & Work related	236	34.4
	Education	86	12.5
	Total	686	100.0

		Frequency	Per cent
Distance of travel	Up to 5 Km	54	7.9
	6 to 20 Km	315	45.9
	21 to 50 Km	191	27.8
	Above 50 Km	126	18.4
	Total	686	100.0
Type of Journey	Within District	496	72.3
	Between Districts	169	24.6
	Interstate	21	3.1
	Total	686	100.0
Frequency of journey	Daily	360	52.5
	Once a week	173	25.2
	Once every two weeks	48	7.0
	Monthly	105	15.3
	Total	686	100.0
Type of buses	Ordinary	390	56.9
	Limited stop	125	18.2
	Fast Passenger	87	12.7
	Semi sleeper non-AC	84	12.2
	Total	686	100.0

(Source: Primary Data)

The profile of various sample passengers is analysed before initiating a detailed analysis of the service quality and post-service behaviour variables.

From Table No. A, it can be inferred that 54.5 per cent belongs to males and 45.5 per cent belong to females. Thus, this survey satisfies the approximate female-male proportion of bus passengers in Kerala. It can be observed that the majority, 60 per cent of the sample passengers belong to the age group 21-40, 34 and 6 per cent belongs to 41-60 and above 60 respectively. From this, it can be understood that a good portion of the young generation still depends on the bus service.

From the table, 44.6% of the sample passengers are rural passengers and 36.2% are semi-urban passengers. This means that almost 80 per cent of the

passengers depending on bus service are rural and semi-urban populations. Looking at the educational level of the sampled passengers, 70 per cent have either a degree or PG. It can be assumed that the more educated people are also more dependent on bus service. In the case of the occupational status of passengers, though all occupational groups travel by bus, the majority belong to the salaried class (Government and public sector employees, 26.7% and private employees, 25.8%), followed by others, 20.7% (consists of students and labourers). In the sample passengers, the least bus commuting category is businessmen.

In terms of monthly income, most of the bus passengers have a monthly income of fewer than Rs.25,000 (47.8%), followed by an income level between Rs.25000 and Rs.50000 (25.2%). This show that bus transport services are the primary mode of transportation for low and middle-income people in Kerala. Considering the purpose of travel, 26.4% of respondents use bus transport for work purposes, 26.7% for personal travel and 12.5% for their educational purposes.

While considering the ownership of bus services, 63.3 per cent of sample passengers commute through private buses and 36.7 per cent through state-owned KSRTC buses. This proportion reflects the bus population proportion in Kerala. Majority of the passengers (45.9%) travel from 5 km to 20 km. Then the second most travelled (27.8%) between 21 and 50 km. Most of the sample respondents are intra-district commuters (72.3%). More than half (52.5%) of the passengers travel by bus daily. Then mostly seen by those who travel once a week (25.2%). In terms of bus types, most of the passengers (56.9%) travel in ordinary buses. The next largest group (18.2%) is those travelling in limited-stop/ town-to-town buses.

Analyzing the demographic profile of the sample respondents, it is revealed that bus transport services are used by commuters in Kerala irrespective of gender, age, income, occupation, and region. More specifically, bus transport is the mode of transportation for ordinary people.

1.10 LIMITATIONS OF THE STUDY

- An unavoidable limitation of this study is that it compares the quality of bus services run by a relatively large public sector organisation in Kerala (KSRTC) with the quality of private bus services run by one or two individuals or a small firm.
- KURTC and SWIFT services which are also coming under public sector (state-owned) bus services are not considered for the study. The study is limited to only bus service quality and passengers' behavioural aspects in public bus transport.
- Though there is ample evidence of a high correlation between behavioural intentions and actual behaviour, the use of post-service variables such as "behavioural intention" can be considered problematic
- Inconsistency in the responses and personal bias of the respondents may occur while answering some of the questions in the research questionnaire and thus it becomes a limitation of the study. The inherent limitation of a questionnaire-based survey may also occur in the study.
- Another limitation is that the study is based on cross-sectional data rather than longitudinal to test the causal relationship among variables.

1.11 CHAPTERISATION OF THE STUDY

The whole research report is divided into 11 chapters consisting of an introductory chapter, briefing literature, two chapters portraying the theoretical frame, five chapters discussing analysis and the tenth chapter briefing findings and the last is recommendations.

1. Background and Methodology

This introductory chapter covers a brief background for initiating the topic under study, its significance, research problem, research questions, objectives and hypotheses, research methodology and design, variables, operational definitions,

conceptual framework, and limitations of the study.

2. Review of Literature

The second chapter consists of reviews of previous literature on the problem and writings on service quality, post-service behaviour and behavioural intentions.

3. Public Bus Transport System in India and Kerala: A Panoramic View

The theoretical framework of the study is bifurcated into two chapters, 3rd and 4th chapters. The third chapters cover public bus transport's meaning, importance, evolution, types, forms, emerging trends etc., in India as well as Kerala.

4. Service Quality: Models, determinants, and consequences

The 4th chapter covers the meaning and concept of service quality, its antecedents, important models, dimensions, and its behavioural consequences.

5. A Comparison of Service Quality of State-Owned and Privately Owned Buses in Kerala

This analysis chapter deals with the statistical analysis and discussion of the service quality differences between KSRTC and Private bus services in Kerala.

6. Analysis of Post-Service Behaviour of Bus Passengers in Kerala

This chapter discusses the differences and similarities in the passengers' post-service behaviour levels. This section has a close look at the level differences in passengers' trust, perceived value, satisfaction, complaints, involvement, continual intention and WOM intention.

7. The Effects of Bus Ownership in the Relation Between Service Quality and Passengers' Post-Service Behaviour.

The seventh chapter covers a detailed analysis of the relationship between service quality and passengers' post-service behaviour and the effect of bus ownership in such a relationship.

8. The Role of Passenger Satisfaction and Bus Ownership in Service Quality-Behavioural Intention Relationship.

The eighth chapter covers the results and discussion of moderated mediation effect of bus ownership and passenger satisfaction between the service quality and behavioural intention of passengers.

9. The Moderating Role of Safety in Bus Service on the Effect of Network & Time Design on Behavioural Intention.

This chapter discusses the effect of perceived safety in bus services on strengthening the relationship between the network (route) & time design and passengers' behavioural intention.

10. Summary, Findings and Conclusion

This chapter presents an overall summary of the study, chapter-wise findings drawn from the study, conclusion and implications of the study.

11. Recommendations and Scope for Further Studies

This chapter presents relevant recommendations and scope for further studies.

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CHAPTER 2

REVIEW OF LITERATURE

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CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

A review of literature is the inevitable part of all research studies, which is intended to search and observe what has been done by various researchers in the past related to the research topic in question and it helps the researcher to design the research framework. A review of related literature further helps to eliminate the duplication of work in the specific research area. It also provides insight into the various dimensions of the research problem and allows the verification or correction of past studies. In this chapter, a serious attempt has been made to discern the existing theories, hypotheses, and methodologies on this subject. The research gap that prevails in the area of study has also been traced through this attempt.

The literature review of this study is divided into two parts: Part 1: Studies focusing on the importance of public (bus) transport, Part 2: Studies dealing with the quality of public transport services, its determinants, and consequences. Both parts of this review follow a thematic approach.

2.2. Public (Bus) Transportation: Importance

Under this part, the various studies which highlight the social, economic, and environmental implications of retaining and operating public/bus transportation are reviewed and briefed.

Jain, R. K. (1969) has compared the road transport policies of nationalised road transport corporations with the other road transport operators in Rajasthan and Punjab. The study examined important financial attributes like fare structure, operation cost, staff pay package etc., along with their investment and human resource management policies. The study observed that though the investment and operational

management policies of nationalised transport corporations are not much more flexible than that of other transport operators, their fare structure fixation is far better and affordable to laymen.

Bell, G. J. et al. (1984), in the study named 'Business of Transport', emphasize the key role of public transportation in sustainable transport development. The study affirms that public transport modes, especially bus transport, are more efficient and effective than private cars and other similar vehicles as it carries approximately 20 times of commuters carried by cars, particularly in peak hours. The study substantiates the importance of public transport systems in terms of energy conservation, traffic safety, reduced pollution, environmental protection, lower accident occurrence etc. The study conclusively recommends that public transportation should be subsidized on account of its role as an efficient and economic user of scarce road space, and energy and in reducing traffic congestion and pollution.

Khan, R. R. (1987) observes that the road transport sector is an indispensable component of the transport system in India. The study opined that the policy formulation regarding the curtailment and expansion of road transport coverage should be done according to the evidenced choice of the stakeholders of road transport.

Nair, K. G. & Parameswaran, N. N. (1992), in their study titled 'Management of public road transport system in Trivandrum City' carried out a detailed analysis of operational features of urban road transportation. The purpose of the study is to evaluate the performance of city bus services and to determine public urban transit requirements and for this study considered significant factors like travel demand assessment, location and distance of depots, fleet utilization and allocation and bus routes and schedule management. Their study states an efficient road transport system is the result of the combined effort of various agencies like transport operators, town planners, commuters, local bodies, and the government. For the active improvement of the bus transport system, the study came up with some suggestions: self-transportation arrangement by schools and educational institutions, rail-road connectivity and co-ordination, adequate town planning and proper road network

design, specific point-wise minibus operation, replacement of outdated vehicles and proper maintenance and timely repair etc.

Ciuffini, F, M. (1995) emphasises the importance of maintaining appropriate balance among various dimensions: a) the environmental dimension which minimises pollution and congestion, b) the economic dimension which offers adequate value for money expended by the users provides financial resources, and promote investments, and c) the social dimension which ensures proper mobility system to the citizen to satisfy their transit needs. The study opines that since there is no perfect transportation system, it is better to have proper trade-offs among these dimensions by adhering socio-economic- cultural factors particular to the transport environment. The study also suggests synchronisation among various means and modes of transport.

Maca' Rio, R. (2001) focuses on the quality enhancement of urban transport and states since transportation is a system, interaction between different interactive components is essential for its quality upgradation. Macario opines that to cater for the mobility requirements of citizens efficiently and adequately, any transport operators must interact and interfere with all the important stakeholders across different levels of transportation planning and control such as transport and traffic policymakers, transport operating agents, suppliers and other stakeholders including clients and customers.

Padam, S & Singh, S, K. (2001), in their working paper on 'Urbanization and urban transport in India', conclusively stated that ideal public transportation policies or strategies should emphasize the crucial objectives which ensure:

- a. Provision and development of sustainable and qualitative connectivity for people, goods, and services.
- b. Increase in efficiency and effectiveness of city/ urban transport.
- c. Reliability in the transportation system.
- d. Integration of transportation with regional and economic growth and development policies.

- e. Systematic development with promotion of public transportation and reduction of personalised transportation.
- f. Reduction in the consumption of limited energy resources and pollution control.
- g. Upgradation of the public transportation system.
- h. Improvement in transport options and quality
- i. Refine air quality and reduce the emission of greenhouse gases.
- j. Optimum utilization of prevailing transport infrastructure, especially related to bus transport.
- k. Enlargement of the public transport system in such a way as to protect and improve the natural and artificial environment.

Nandakumar, M & George, B, P. (2005) assesses the present practices of passenger transport services from the angles of old and emerging perspectives. The study suggested that there should be a novel symmetry between equity and economic consideration in the rendition of public transport services instead of leaving market forces to play. The study discoursed various alternate state policies relating to transport sectors to provide cues for improving public transport services to cope with the evolving service practices.

Pucher, J. et al. (2005) observes that Indian towns are facing a transportation crisis featured by massive congestion, noise and air pollution, road accident, and fatalities. The study found the causes for this transport crisis are owing to the massive rapid growth of big cities with low-income people, limited and obsolete transportation infrastructure, widespread residential sprawl, expeditious increase in vehicle ownership and usages, occupancy of a wide variety of motor and non-motor vehicles in narrow roads and inaccurate and awkward spatial and transport policies. The study highlighted the basic trends in the Indian transport sector and commuters' behaviour. The study conclusively recommends the strengthening of quality and reliability in public transportation to minimize the traffic and transport crisis in India.

Srinivasalu, Y. (2006) has conducted a case study of the marketing affairs of Andhra Pradesh State Road Transport Corporation and states that even though a huge fund is pumped into the road transport sector, no attention has been given to the marketing side of road transport. For justification of judicious marketing management of public road transport, the study substantiates that the road transport system, by its intrinsic ability to reach and connect hinterland, ensures a balanced socio-economic and cultural development of a region or nation. The study recognises that the lack of an efficient marketing system is the major hindrance before road transport operators properly satisfy the needs and wants of passengers and to prioritizing them.

Joyish Kumar, G. (2007) stated that Private bus services are the strength of Kerala's public transport system but its affairs are pitiable. Reckless driving, immature and inexperienced drivers and other staff, quarrels, arguments between the timekeepers of rival buses, manhandling by bus staff etc., make the situation worse. He also hinted that if it continued, it will question the existence of this sector and this unhealthy competition provides nothing to the owners and passengers of private bus transport. The increased costs of fuel and spare parts also put hurdles on the operators of bus services. To tackle this, he suggested combining (merging) private bus services to form a single company and the owners be the shareholders. So, they can have bulk purchases of materials and fuel at lower costs and thereby can reduce their cost of operation. To strengthen his suggestion, he quoted the example of the public transport system in Singapore where just two companies, TIBS and SBS Transit are efficiently operating the bus transport system by catering to all the transit and transport requirements of the country.

Ravi, C, S, et al. (2007), in their study titled "Transport pivotal role in Indian economy development", states that as agricultural and industrial sectors were the body and bone system of the economic development of the nation, the transportation and communication sectors add up to the blood and nerve system because it facilitates the mobility of men and materials across the region.

Aworemi. et al. (2008) conducted a study of the effect of promotional tools on the performance of the public transport system in Nigeria and confirmed the

relevant effect of an advertisement, publicity, public relations, and sales promotion tools on the profitability of the transport sector. The study affixed that while the advertisement acclaims a favourable effect on profit, fare reduction creates a negative effect. Moreover, the researcher placed publicity as a highly relevant tool for retaining existing customers and attracting new customers and concludes that the attainability of input resources at the cheapest cost will enhance the profitability of the transport system.

Walker, J. (2008) states in his study regarding public transport goals that while social inclusion, the public transport system faces a severe conflict between the patronage goals which aim to enhance the patronage of all kinds and the coverage goal which intends to maximise service coverage despite less patronage. The study suggests that there should good balance between these two goals and then only public transport service providers can influence the users' choice.

UK Transport Dept. (2009) carried out a study relating to users' requirements for public transport operations in the United Kingdom. The study revealed that high service frequency, dependable service provision and modest travel fare which guarantees value for money spent, is the major demand of the users of the public transport system. The report suggested that the authority should broaden the route network to satisfy the travel-related and destination-related needs and there should be the provision of information relating to the schedule of services at easily accessible points like bust stations, newspapers etc., so that facilitates the commuters to know the prevailing available service. The study also suggested the maximum simplification of the ticket reservation system.

Schmocker, J. D. et al. (2010) remarked that the demand of the ever-growing mobility requirement of the populace can only be satisfied with an efficient public transport system and without an increase in present servicing hours and operating network, no such demand can be met. The study pointed out that high-density towns often motivate commuters to use public transport system as the use of private cars and vehicles create mainly three negative effects on the environment such as noise pollution, air pollution and land separation. The study concludes that there should be

a carrot-and-stick approach to promoting public transport uses and curtailing the usage of private cars and vehicles.

Wilkie, C. (2010) intended to examine public transport patronage and benefits in Australia. His study observed that public transports offer economic advantages such as reducing the cost of congestion and increasing economic productivity. The social and environmental benefits offered by public transportation are equal access to employment and service, increased cohesion, decreased isolation and reduced carbon emission. The study strongly suggested a coordinated expansion of investment by the government in the public transport sector.

Molander, S. et al. (2012) stated the need of using the concept of market orientation in the field of public transport. The study views market orientation as the derivation and dissemination of market intelligence and the proper response to it. The study observes even though, a lot of research has been conducted about market intelligence which covers passengers' behaviour, service quality perception, passenger satisfaction, transport priority etc., no serious studies have been carried out on the topic of market orientation; dissemination and application of market intelligence, factors influencing market orientation, the general concept of market orientation etc., especially in the area of public transport. The study suggests without having market orientation, it is a tough assignment for service marketers to understand the pulse of the market and customers.

Saroja, T. (2013) reminds us that transportation has gained the status of an independent and essential sector for economic development. Transport establishes a crucial link in increasing the national produce and income, employment opportunity and providing mainstream support for sustaining several ancillary industries. The researcher has an opinion that the interlink between the transport infrastructure and economic growth and development is a significant justification for providing vital inputs to a functioning system.

Liu, Tao, et al. (2016), at the outset of their study, researchers give out the environmental and traffic threats emanated by the usage of private vehicles, particularly in cities. To minimise these issues, the study contemplates a novel

passenger travel mode i.e., a “Customised Bus (CB) Transit System” which provides modern, individualised, and flexible demand-driven mini bus services having sophisticated amenities like internet, smartphone apps etc. The study, with the help of a methodological analysis framework based on an overall performance matrix that consists of variables like cost of travel, time of travel, fuel consumes etc, compares the travel performance of private cars, customised buses, and traditional public transport bus service in two major cities of New Zealand and France. Results of the study reveal that though private cars seem to be a swift commuting mode, their cost of travel is more than twice of the other two travel alternatives and found customised bus (CB) services are more efficient and profitable in both cities. As a concluding remark, the study states that ‘Customised Bus’s service must be offered by the service operators to cater for the emerging travel needs of the public, especially youth commuters.

Madhu Siva Raman. (2016). In his study by citing ‘Killing of golden goose’, he censured the Kerala Government’s notification in 2012 which limits the inter-district transport schedules of private transport operators. He states that it is a government effort to create a monopoly for KSRTC in public transport services in Kerala. The study emphasises the need for the presence of private transport services in Kerala alongside KSRTC. To help this contention, the study expressed a few realities that private transports uphold Kerala exchequer by contributing roughly ₹1.2 lakhs per bus every year adding up to 750 crores as road tax. Moreover, every private transport bus earns inexact 20 crores each year which goes the work of transport has a place with the low-income and self-employed populace portion in Kerala. Further, the operation of private transport buses satisfies the livelihood of surmised 20000 bus proprietors owning one or two buses. The study remarked that private transport operation underpins GOK sparing from the monetary burden of guaranteeing transport to the public.

Singh, J. (2016), in his article titled ‘City public transportation development of India’, opines whilst private vehicle ownership and usage are rapidly growing and resulting in massive congestion and pollution in Indian cities, there are left sufficient

plans and policies for refurbishing public bus transport services. The article found that public bus transport is the most comfortable travel mode in urban regions. For augmenting his opinion, the study exhibits vital statistics of NSSO that: there are approximately 16 lakh registered buses in India, which carry 700 lakh people per day and out of these nearly 10 per cent are operated by public sector units. By quoting NSSO statistics, the article establishes that bus transport is the most desirable means of transport for rural and suburban people.

Soehodho, S. (2017) carried out a comprehensive study of the transportation system, discrepancies in traffic control and the increased road accident rates in Indonesia. The study pointed out that road accidents are caused by mainly three factors such as human-related factors, vehicle-related factors and other external factors like road conditions, traffic faults etc. The study stated that motorbike accidents take the lion's portion in the total accident occurrences due to the inaccessibility of an efficient public transportation system in Indonesia. The study concludes by stating the importance of developing a better public transportation system.

Ingvardson, J, B & Nielsen, O, A. (2019) examined the driving forces of travellers' satisfaction with public transport and their linkage with the frequency of travel and users' dispositions to suggest public transport to their acquaintances. A mass survey was conducted in six European towns to analyze the effect of social norms on transport usage. The study observed that transport user satisfaction is emphatically related to mainly three forces; accessibility measures like coverage of road network, speed of vehicles, frequency of service provision, then the perceived cost of service i.e., ticket charge and finally socio-environmental norms. The study noticed a remarkable difference in transport user satisfaction across the socio-economic cohort; young aged travellers are relatively less satisfied. The study concludes that transport planners and policymakers should pay additional attention to placing public transport as a socio-eco-friendly means of transport, especially in cities suffering congested traffic.

Melakhsou, A & Bhourri, N. (2019) conducted a case study on the bus transport network in New Delhi and opined that the main prompters of service users to service providers are the capability of providers to deliver regular service. The study states the essentiality of assessing service regularity from the side of service users for creating and implementing a strategy that maintains and enhances the reliability score of bus transport and hence the increase in the number of bus transport users. With the help of the Lorenz curve on the Gini index, the study described the relevance of the concepts of headway regularity, headway adherence, transit time variance etc.

All the aforesaid previous literature highlighted the importance of the public (bus) transport system and the need for improvement for a better nature and future.

2.3 Service Quality and Passenger Satisfaction: Determinants and Consequences.

The relevant studies carried out at the international and national levels regarding service quality with its various dimensions, antecedents, and outcomes particularly passenger satisfaction, trust, involvement, complaint, and behavioural intention, were undertaken for review for this section. These studies were classified under two heads such as international studies and national studies (carried out in Indian public transport scenario), detailed and discussed below:

2.3.1 Foreign/International Studies

Perry, L, P & Babitsky, T, T. (1986), in their study titled “Comparative performance in Urban bus transport: Assessing privatisation Strategy”, seek the viability of strengthening privatisation in the urban bus transport sector by quoting the desire of ruling politicians for cost reduction and quality improvements in public transport. Their study critically examines the strength, weaknesses, opportunities and threats of prevailing ownership and management patterns of public bus transport: public transport owned and operated by private parties, contractors, government, special agencies etc, and reveals that service owned and operated by private parties produces and earns more revenue than others and services operated by contractors are less productive than that of government. However, the study does not favour intensive

privatisation in public transportation on account of the existence of various socio-demographical factors influencing passengers' choices.

Bell, C. R & Zemke, R. (1990) studied the importance of the complaint process from the angle of customers and stated that it is essential for a service user to complain after facing an unfavourable or inadequate service experience because the complaining allows the service user to receive an apology from the service providers for the inconvenience met in service, to get the problem (service failure) fairly resolved, to be considered in a right manner where the service providers appreciate the service users problem and to fix it and to be offered some value-added thing or compensation or damage for the inconvenience encountered by the service users.

Lewis, B. R & Entwistle, T. W. (1990) described encounters and complaints between service operators and customers. The study highlighted that the perception of customers towards the quality of the service is significantly affected by the number and quality of complaint redressal between the service operators and customers.

Savas, E, S & Cantarella, A. (1992) compared the operational performance of public and private bus services in New York City to find a solution for the optimal portfolio of both services and fair competition between these services. The study observes cost-effectiveness, efficiency, safety, and quality of service as important variables of the study and the analysis reveals that private bus services in the city are relatively superior in terms of cost-effectiveness, lower rate of accident and service failure. The study suggests transport authorities should make competitive bidding and encourage private service when it is justified.

Pullen, W, T. (1993), in his study related to the local public transportation services in the United Kingdom, observe the public transport sector facing severe challenges due to private sector operators and deregulated transport market so there should be a quality focus on retaining the market share and profitability. The study states that the use of existing methods singly for assessing commuters' satisfaction and service quality may not serve the purpose and not covers all aspects of quality. So, this study suggests a novel method that integrates 'relevant performance

measures' and 'psychometric measures' as reasonable indicators of specific quality attributes for the evaluation of service satisfaction and quality.

Andreassen. (1995), in connection with his study entitled "(Dis) satisfaction with public services; a case of public transportation" conducted in Norway, marked that while public service provider considers the 'equity' principle in service provision, it is 'differentiation' in the case of private service. The study opined that the level of satisfaction and dissatisfaction of commuters on public transport services are generally based on the variables like fare, flexibility in fare structure, neatness and conditions of the vehicles and other related facilities like platforms, bus stops etc. the study opined that among the public services, public transport service is the area which has more gap between users' expectation and experience. The study concludes that the major factors influencing users' satisfaction levels are convenience and reliability, especially in the category of commuters who use public transport services for professional purposes.

Zeithaml, V. A et al. (1996) argued that if the quality of service relates to retaining customers at the complete level, as pointed out by numerous studies, then evidence of its influence on customers' behavioural outcomes should be detectable. The researchers offer a conceptualised model of the effect of service quality on specific customers' behaviours that reflect whether customers remain with or depart from a service provider. The results of their multiparty empirical study investigate the relationships from the model regarding customers' behavioural intentions and reveal firm evidence of their being affected by service quality. The findings also show differences in the various nature of the quality- intentions link across different dimensions of service quality.

Tax, S. S. et al. (1998) consider effective redressal of passengers' complaints and relationship marketing to be closely related in terms of their mutual sake in accomplishing passenger satisfaction and passenger retention. The complaint-redressing strategies are significantly relevant in managing customer relationships, especially in the service sector. The study opines that passenger complaint handling

is a “critical moment of truth” for fostering passengers’ loyalty or behavioural intention and developing good passenger-service operators’ relationships.

Blodgett, J. G & Anderson, R. D. (2000) found that a customer who has encountered a negative service experience will spread negative word-of-mouth (WoM) comments on the service. With a proper understanding of the complaint process and complaint behaviour of service users, the service providers will get an idea about how to minimise the effect of a negative or unfavourable service experience and complaint. Unsatisfied service users always voice their displeasure and inconvenience the means of negative WoM to present and potential users of service. On the other side, if the complaint is properly redressed the concerned service users may raise their positive or favourable WoM.

Cunningham, L et al. (2000) posit in their study titled, ‘Methodological triangulation in measuring public transportation quality’, to frame a triumphant transport marketing policy, service marketers should acquaint with users’ disposition towards their service provision but the ‘users’ evaluation of the quality of service’ is an evasive concept to deal with a single evaluation method. So, their study advocates for the ‘triangulation method’ to provide more reliable data. The study also describes the modus operandi of the triangulation method which combines multiple methods. In this method, data from both the users or public and service officials are obtained, along with the focus group interview. Data collected from both groups of respondents are analysed and talked through from a managerial perspective. The study concludes, the triangulation method enables us to ascertain the areas of transportation in which users are satisfied and dissatisfied, their relative importance and to determine financial priority among various transport service areas and aspects.

Edvardsson & Roos. (2003) observed that understanding users’ or passengers’ complaint behaviour is very important for transport service providers as it facilitates the service provider to develop and maintain a sustainable transport service business, to reduce the impact of the unfavourable (negative) word-of-mouth (WoM) and to retain the profitability position in future. The study further hints that a complaint offers an opportunity for service correction (recovery) and in turn, has the

potential to convince and educate the passengers or commuters, strengthening loyalty and behavioural intention (BI) and induces positively their word-of-mouth (WoM) comments on the service.

Hu, K, C & Jen, W. (2006), in their study on ‘Passengers perceived service quality of city buses in Taipei’ opines that transport managers and government transport authority should use an appropriate scale that produces respondents’ opinions perfectly to acquire a complete understanding of commuters’ expectation and experience (perception) of service bus transport service quality. They proposed a new service quality model consisting of four major dimensions with 20 items across these dimensions; tangibility dimension (quality of service equipment), Service convenience, support of operating management and interaction between passengers and service operators.

Park, J. W. et al. (2006) investigated how perceived price or cost of travel, service quality, perceived value, passengers’ satisfaction, and the corporate image defines passengers’ behavioural intentions. To verify the conceptualised mode, the structural equation modelling was applied and data were collected from international air passengers (Australia). It was found that the study variables are significantly related except for three. The three insignificant relationships were ‘perceived price or cost of travel and passengers’ satisfaction,’ ‘service quality and corporate image’ and ‘perceived value and corporate image’. Perceived price or cost, perceived value, passengers’ satisfaction, and the corporate image were each observed to have a direct effect on the passengers’ behavioural intentions and WoM.

Beirao, G & Sarsfeld Cabel, J, A. (2007). The results of their qualitative analysis on public transport users and car users in San Francisco, state that to strengthen public transport usage and to attract potential commuters, services ought to be customised as per the current and evolving requirements of the users. The study observes the choice of service is significantly influenced by various factors such as lifestyle, nature, and traits of individuals, features of various travel modes, perceived service quality of each mode and other situational attributes. The study highlights the need for the segmentation of commuters based on their attitude and behaviours to

provide customised services to users. The conclusion of the study remarks on the demand for an adequate policy framework to reduce personal travel modes by offering attractive and flexible public travel choices.

Sanchez P et al. (2007) investigate the relationship between service quality and behavioural purchase intention in the public transport system in Spain using the SERVPERF adapted scale. The new scale “QUALBUS” was used to assess the local bus services in Spain. For their study, five distinctive research streams in service quality were identified. This empirical analysis resulted in the confirmation of a correlation between the five dimensions of service quality and the users’ purchase intentions.

Chen, C. F. (2008) investigates the relationships among service quality, perceived value, air passengers’ satisfaction, and their behavioural intentions by using a structural equation model (SEM). The major findings of the study reveal that the service expectation of passengers has a significant positive effect on the perceived performance but it does not affect directly the perceived value and satisfaction and the perceived performance has a positive influence on perceived value, but not on the satisfaction and the perceived value having a significant direct positive effect on passenger satisfaction. Further, perceived value, as well as satisfaction, have a significant positive influence on the behavioural intentions of the passengers and the perceived performance reflects the indirect impact on passengers’ satisfaction moderated by the perceived value. The study concludes that perceived value has a greater effect on behavioural intentions than overall satisfaction.

Fellesson, M & Friman, M. (2008) compared public transport users, and their perceived service satisfaction level among eight major cities in Europe and the study describes the common factors which reflect in commuters’ comfort and pleasant transit experience: traffic on roads, reliability of operation, information provision, vehicle, station or stop design. Their study appends that crews’ knowledge and competency, positive attitude of service users, safety measures in vehicles, and waiting for stops and stations are supplementing factors that magnify users’ satisfaction. It is observed that any changes in transport service technology and

infrastructure facilities follow changes in the commuters' attitudes and behavioural intentions. There found a variation in the perceived satisfaction level of commuters in major cities due to the changes in perception of safety, staff, and comfort of service.

Tronvoll. (2008) has stated in the study titled "Customer Complaint behaviour in Service" that it is important for service providers to obtain proper and timely feedback from their service users. This is particularly vital when a service user has experienced an unfavourable service experience. One common way to obtain feedback from these service users is to encourage and support the complaint process. The researcher opined that understanding service users' complaint behaviour gives the service operators a precious insight into many service areas; for identification of general service problems, improvisation of service design and service delivery process, knowledge of service users' perceived service quality and thereby facilitates the formulation of strategic service planning.

Filipovic, S. et al. (2009) conducted a comparative study on the fundamental features of expected and perceived service quality of the passenger public transport system in Belgrade city. The study has provided important observations; the customer expectation of public transport services is dominantly affected by the features like reliable functioning and vehicle comfort. Other features of service are less relevant for the commuters., passengers' satisfaction levels and seasons are related: in summer passengers are less satisfied., and suburban passengers are more satisfied with the service than urban passengers., service quality perception is varying according to the group of passengers like students, retired, etc., Every small improvement in the features of service quality can reflect the increased level of passenger satisfaction. The study concludes by attracting the attention of transport authorities towards the need of reducing the influence of negative features of SQ on the public passenger transport system.

Ismail, A. et al. (2009) aimed to explore the relationship between service quality attributes (Responsiveness, Assurance and Empathy), perceived value and customer satisfaction in the Malaysian context. The results of the study put forth three major findings:1) the interchange between the perceived value and responsiveness

was not have a significant correlation with customer satisfaction, 2) the interchange between the perceived value and assurance also does not significantly correlate with customer satisfaction and 3) the interchange between the perceived value and empathy significantly correlated with the customer satisfaction. Thus, the study outcome states that the perceived value had heightened the impact of empathy on customer satisfaction, but it does not increase the impact of responsiveness and assurance dimensions on customer satisfaction. In conclusion, the study establishes that the perceived value play as a partial moderating variable in the service quality models.

Saha, G. C. (2009) examined and established the relationships among the constructs such as service quality, passengers' satisfaction, and behavioural intentions regarding airline services in Thailand. The hypothesised relationships among the above said constructs of analysed by using the structural equation modelling (SEM) and the analysis reveal that the order of importance of the dimensions of service quality tested were: transit schedules; attendants' behaviour; tangibles or physical facilities; and ground staff behaviour. Passengers' satisfaction in these service-quality dimensions is observed to be vital in explaining passengers' behavioural intentions. Satisfied passengers were mostly influenced by the travel schedule and such passengers engage in positive word-of-mouth (WoM) communication and have high reuse intentions. The dissatisfied passengers prefer to switch to other transit modes, rather than provide feedback or complaints to the transport operators.

Wijaya, D, H. (2009) studied passengers' complaint handling of Trans Jakarta Busway. The researcher examined twenty types of complaints from passengers and these complaints were spread into the five dimensions of traditional service quality. The study concludes that all the complaints could not be handled due to the mass number of complaints given by the passengers. The study remarked that efforts should be made to minimize the number of complaints and this can be done by providing a website to the passengers or a customer care cell to post their complaints. The study also states that complaint handling is a systematic way to hear the problems of the passengers and it helps to redress the problems and to enhance the assurance and confidence among passengers about the service operators.

Fonseca. et al. (2010) conducted an exploratory case study relating to public transportation service quality and its impact on commuters' satisfaction in respect of Metro transport companies in Europe. The study revealed that the quality dimensions such as security, comfort, punctuality, and speed have more influence on customers' satisfaction with public transport services. The study also observed that in the view of customers as well as non-customers, there is no significant difference felt between quality and satisfaction and more over non-customers are comparatively less tolerant of service failure than regular customers.

Awasthi, A et al. (2011), through their study for evaluating service quality of Metro services in Montreal, introduced a hybrid approach that is built on SERVQUAL and fuzzy TOPSIS for analysing the service quality in urban transportation. Users' linguistic ratings were combined through Fuzzy TOPSIS and Sensitivity analysis is done on the highest score alternatives to assess the criteria weightage on the user's decision-making. The study argued that the said model is applicable in studies where quantifiable data are not available or limited.

Lai, W. T & Chen, C. F. (2011), in their study relating to a passenger survey from the Kaohsiung Mass Rapid Transit (KMRT), Taiwan, it is stated that understanding the behavioural intentions of passengers of public transport is important as the customer loyalty is evident as a significant determinant of enduring financial performance. Their study was intended to highlight such passengers' behavioural intentions and to investigate the relationships between passengers' behavioural intentions and their various determining factors. Apart from the service quality, perceived value, and passengers' satisfaction, the study also highlights the importance of passenger involvement in public transport services in passengers' behavioural intentions. By applying the SEM technique to the conceptual relationship model the study established causal relationships among Service quality, perceived value, passengers' satisfaction, and behavioural intentions in public transport and proved such relationship as statistically significant.

Wu, J. H. C. et al. (2011) aimed to fill the conceptual gap through the identification of the dimensions of service quality and to examine empirically the

interrelationships among the service quality and its various dimensions, perceived value, the image of the company, passenger satisfaction and the behavioural intentions, to gain a more refined understanding of passengers' behavioural intentions, particularly in the transport industry. The vital dimensions of service quality are constructed based on formative indicators, as well as a multilayer hierarchical model was used as a structural framework to harmonize the impact of service quality, perceived value, the image of the company and customer satisfaction onto the behavioural intentions of passengers of the transport sector. The study made use of multiple regression analyses to test the variables and concluded that there were 3 primary dimensions and ten subdimensions of service quality in the transport industry.

Delbosc, A & Currie, G. (2012) opines passengers' fear of crime-related personal safety in the public transport services could have an important influence on public transport patronage. Though a lot of studies have explored various factors that affect risk(crime) perception, this study applied SEM to examine the influences on perception towards safety in public transport and the effect of this perception on patronage using a sample survey from Melbourne, Australia. The study noticed that the major direct influences on feelings of public transport safety were perceived trust in others and safety feeling in one's own home or similar places. Although the gender and age of passengers were the commonly traced influencers in the former literature, in their model those factors' influence on the feelings of safety was found to be indirect. The indirect influence of the age of passengers was more than that of gender. They demonstrate that safety feelings are a small variable but it has a significant positive impact on the frequent and repeated usage (continual intention) of public transport and it was slightly lower than the negative influence of household car usage but more than the negative influence of distance from the city/town. The study concluded that the perceived trust of passengers had the biggest influence on feeling safe in public transit and continual intention.

Eboli, L & Mazzulla, G. (2012), in their study regarding the service quality of rail operators in Northern Italy, put forward a new structural equation model for analysing the perception of rail transit users and exploring the influence of

interrelation between the customer satisfaction and service quality attributes especially safety and cleanness, primary and extra services, information and personnel variables. The study classified the service attributes into three categories according to their level and depth of effect on service quality: punctuality, regularity, frequency of operation and cleanliness of premises are high effects transit Service Quality. While comfort and information attributes moderately affect service quality, safety and personnel variables have the least influence. The study concludes by stating the applicability of this model to transport planners to analyse the interrelation among service quality attributes and to improvise the transit service provision and commuters' satisfaction.

Khurshid, R. et al. (2012) The purpose of the study was to spotlight the difficulties of the public transport system in Pakistan and to study the influence of service quality on passengers' satisfaction. The study observed a direct positive correlation between public transport service quality and passenger satisfaction. Analysis of the study revealed that as a lion portion of the public transport system in Pakistan is not owned and operated by the government, the quality of services under the public transport system is compromised by the greed and misbehaviour of service operators and personnel.

Sumaedi, S. et al. (2012) examines the public transit passengers' behavioural intentions in Jakarta city, especially paratransit users. The study explores the interrelationship between passengers' behavioural intention and other latent factors such as passengers' satisfaction, perceived value, perceived sacrifice, and service quality. SEM technique was applied to the conceptual relationship model and the empirical outcome reveals that passengers' perceived value and service quality have a significant effect on the behavioural intentions of public transit passengers in turn, the study observed that perceived sacrifice and service quality are the major determining factors of perceived value. The study concluded by discussing the implication of results in the field of transport management.

Adeola, M. M & Adebisi, S. O. (2014) opined in their study that the success of air transport heavily depends on the operator's ability to identify passengers' wants

and needs, and the factors in the service quality that would satisfy customers' expectations. The paper investigates service quality, perceived value, and customer satisfaction as the determining factors of choice of service providers by air passengers in Nigeria. 250 duly filled questionnaires were analysed with the help of descriptive statistics, correlation analysis and linear regression through SPSS 17. The study shows that income level/social status, poor conditions of roads and the lack of security lead to the sudden hike in air transport passengers and the service quality, and perceived value affects their satisfaction on air transport mode. The study remarked that airline transport providers are required to improve the service quality as many passengers of air transport demand it and they want to make sure that the travel fare paid should be commensurate with the service provided to maximise their patronage.

D' Ovidio, F.D, et al. (2014) have conducted a study to examine the various visible and invisible factors which influence commuters' satisfaction with the passenger public transport system with special attention on localised transport services in Bari. A dimensional multivariate analysis of the quality of public transport services revealed that comfort and cleanliness, accessibility of service, and availability of information are the most important factors which are to be focused on by the service provider to enhance the overall satisfaction of passengers. The study also remarked that the cost of fare was not found as a dissatisfying factor in commuters' perception of transport service quality.

Isibor & Odia. (2014) carried out a comparative study of service quality and customer satisfaction between the transport and restaurant sectors in Nigeria and the study noticed that in both service sub-sectors; customers were justly satisfied with the service provision. The study states that the causes of dissatisfaction are purely related to the key business of these service providers. The study concludes with a proposal for sufficient training and empowerment of arena staff which will ensure prompt and ready services to customers and service recovery and thereby minimise customer response time and improvise staff attitude and all as a combined result in better service quality and customer satisfaction.

Islam, R. et al. (2014) explores the factors influencing public transport commuters' satisfaction, particularly the impact of bus service quality. The study was conducted on 300 samples collected from a university town in Malaysia and analysed the results with help of correlation and regression tools. A model which consists of five dimensions such as service design, accessibility, availability, time, and bus environment, is applied in the study and establishes the relationship between these five dimensions and commuters' satisfaction with public transport services. Study results show that service features, accessible stops and tickets, availability (connectivity, network, frequency etc.), time (waiting, travelling) and environment (bus aesthetics, pollution) are closely and positively related to commuters' satisfaction.

Liou, J.J. et al. (2014), through their case study carried out in Taipei bus companies, proposed a new information-based model (Fuzzy integral-based model) for efficient and accurate evaluation and enhancement of service quality in transport sectors. They applied the model in the Taipei bus company to demonstrate the utility of the model and suggested the application of this model in similar city bus services for analysing and improving the service quality.

Murambi, D. N & Bwisa, H. M. (2014) in their study about service quality and commuters' satisfaction in the public transport system in Kenya with a special focus on shuttle travellers, found that most commuters' satisfaction issues described by independent variables; the significant variables which affect service quality and customers satisfaction were travel time, information provision and route changing frequency. Timeliness and fewer stoppages during the travel bring relatively more commuters' satisfaction of shuttle travellers.

Bakti, IGMY & Sumaedi, S. (2015) intended to test the validity of a new model of service quality, P-TRANSQUAL in para-transit services in Indonesia. With the application of confirmation factor and exploratory factor analysis, the study identified important four dimensions of para-transit service quality; comfort, tangibles (physical features), personnel attributes and reliability of services. The study opines

that public transport authorities can apply the P-TRANSQUAL model for the analysis, evaluation, and enhancement of public transport service quality.

De Vos, J et al. (2015) have applied the ‘Satisfaction with Travel Scale’ (STS) for measuring travellers’ satisfaction with leisure trips in Belgium. The results of the study reveal a single underlying dimension of affective components of ‘satisfaction with travel scale’ gives more accurate results when comparing with two dimensions. The study also suggests an adaptive model of STS which omits a few items or replaces a few alternatives to minimise the burden of respondents and to maximise the STS’s internal consistency.

Mouwen, A, (2015), in the paper titled ‘Drivers of customer satisfaction with public transport services’ (Netherlands), intends to strengthen the understanding of the factors of customer satisfaction in public transport. The methodology of the study appends a significant contribution to the prior studies as it brings forth the complex interrelation between drivers of satisfaction such as Negative Social Safety Experiences, urban settings, and the Public Transport mode used. The study observes, generally, public transport users consider the service attributes; timely performance, speed of travel and frequency of service as the most important, then the crews’ behaviour and vehicle neatness. The paper concludes a transport policy that is aimed at achieving such attributes may attain a favourable result regarding satisfaction in the public transport system.

Ponte, E. B. et al. (2015) analysed the influence of assurance on trust antecedent relating to the transport sector. Studies revealed that perceived trust is determined by perceived information quality and perceived security and perceived security is primarily affected by the service providers’ reputation, investment, and third-party assurance. Customers’ purchase intention is affected by perceived value and trust. The study proposes a model for the construction of a customer’s purchase intention which is contingent on perceived value, perceived trust and the antecedents of security and privacy perceived, followed by the model proposed by Ray et al. (2011) with some extended constructs and examined the influences on the trust of customers' perceived information quality, privacy, and security.

Sukwadi, R & Teofilus, G. (2015) conducted a passenger survey in Jakarta for examining and highlighting the interrelationship between passengers' behavioural intentions and its various determining variables such as service quality, perceived value, passengers' involvement, and their satisfaction in public transport services. The findings of the study reveal that service quality has a positive effect on the perceived value and the perceived value along with passenger satisfaction has a positive effect on the involvement. The study remarked that the service quality along with involvement significantly determines the behavioural intentions of passengers in public transport services.

Ambak, K. et al. (2016) have done a questionnaire survey has been conducted to identify the important factors that constitute and influence passengers to use public transport bus services and to determine the most dominant factor by using the 'Theory of Planned Behaviour model'. The study results show that the passengers' attitude towards public bus transport is the most dominating factor compared with other factors like subjective norms and perceived behaviour control that influence passengers to use public transport bus and most of the respondents were ready to use the public bus transport system as it is cheap to commute compared to other choices of transport modes.

Amponsah, C, T & Adams, S. (2016). Their study presents an evaluation of the interconnection between service quality and commuters' satisfaction with public transport services in British Columbia. The study was conducted in the urban populace of the Translink system by applying the powerful SERVQUAL model for assessing commuters' satisfaction. The dimensions of the study were portrayed on the lines of tangible and intangible for commuters to assess the service quality. The study identified that there is a significant binding between service quality and commuters' satisfaction, overcrowding in buses and overall satisfaction with the service. Besides, the study added that delayed services lead to a remarkable negative effect on overall satisfaction, perceived fair value and overall services of the providers.

Chen, H. K. (2016) explores the interrelationship of group-level service quality (GSQ), passengers' satisfaction (CS), and the passengers' behavioural

intentions (BI) for bus transit in Taiwan through the hierarchical linear modelling technique (HLM). The results of the study show that the applied model has a high degree of goodness of fit and both Group level Service Quality and passenger Satisfaction have a positive influence on the bus passengers' Behavioural intention. While passengers' satisfaction mediates the effects of service quality on behavioural intention, the direct positive influence of satisfaction on behavioural intention has been negatively moderated by Service Quality (moderated mediation effect). The study remarked that the results have many implications not only in retaining existing passengers but gaining new passengers also.

Cheng, Y, H & Tseng, W, C. (2016) analysed the perceived value of metro-bus passengers who make use of intermodal transfer services in Taiwan. The study applied information processing theory and SEM for examining the behavioural intention and to develop suitable marketing segmentation strategies across prevailing and prospective users of transfer services. The analysis revealed that the behavioural intention of existing and prospective commuters to use intermodal transfer services was widely influenced by the amount of information possessed by them and probable transfer service benefits and penalties. The study concluded that the perceived value of the service users is a vital determinant of their behavioural intention.

De Oña, J. et al. (2016) have conducted an opinion survey among LRT passengers in Spain and opined that understanding passengers' behavioural intentions to reuse transport service is very helpful for transport authorities in framing the most suitable strategies to satisfy and retain existing and attract new passengers. It is stated that analysing service quality and passenger satisfaction is fundamental to studying the behavioural intention of passengers. The researchers applied a structural equation model to explore this relationship in some aspects that effects light rail transit (LRT)passengers' behavioural intentions to use and reuse transport services. The study observes that passengers' behavioural intentions are mostly influenced by their judgements on the service quality and their satisfaction with the service. Further, the study also brought up the important variables which have a direct and indirect relationship with the passengers' behavioural intentions.

De Ona, J et al. (2016) evaluates transit service quality in connection with metro service users in Spain and through the study developed a new index for measuring transport service quality: a composite index that integrates transit service quality perception of both the transit users and providers. The study attested that there are significant heterogeneous service quality gaps across the various socio-economic transit users' groups.

Fan, Y. et al. (2016) analysed riders' (travellers) perception of waiting time and the effect of gender and bus stop amenities on waiting time perception and observes waiting time for travel is always perceived negatively and the amenities in bus stops/stations will reduce riders' aversion to a certain extent. The study appends timely accurate traffic and scheduled information dissemination at waiting points also reduces such aversion. The study observes ladies' passengers perceive more insecurity than men passengers while they wait for some time, more than 10 minutes. The study proposes some suggestions to mitigate the negative perception of waiting time: basic amenities like shelter, sitting arrangements, sign board, traffic and schedule-related information provision at waiting point, specifically at bus stop low frequent pickup and relatively unsafe.

Guirao, B. et al. (2016) conducted a study with the prime aim of developing a new method for straightway estimating the stated significance of quality attributes instead of using the traditional customer satisfaction index (CST). The study was conducted by taking samples in the bus transport corridor in Madrid (Spain) by applying factorial analysis and Multiple indicators and Multiple causes model to the conventional survey samples. The study results revealed that the stated significance of the quality attributes can be directly estimated and hence can reduce the over-content of the questionnaire and thereby reducing the gap between assessors' needs and scientific research.

Hernandez, S, et al. (2016), in their study of travellers' attitudinal survey about the Monclova Transport Interchange (Spain), opined that service quality offered by transport interchanges are directly influencing the daily experience of commuters. The study was conducted to find out the strength and weaknesses of urban transport

interchanges and the study results revealed that ‘signposting’, a way of the information provided to the users, is the major strength of the related transport services. The study also pointed out that the ‘internal design’ of the vehicles should get proper attention as this is related to the safety and security aspects perception of the users.

Joewono, T, B. et al. (2016), in their study regarding the road based public transportation in urban areas of Indonesia and user’s expectation of service quality, applied a series of structural equation modelling estimates in three important urban transport sectors of the country and observed that negative experience, service importance and dissatisfaction are the three key factors influencing users’ preference and thereby urban transport service quality. The study also highlights the demand for locally designed transport policy to enhance the transport service quality.

Leon, J, L, et al. (2016) applied structural equation modelling in the study of the role of the involvement of commuters in the perception of light rail transit services in Seville (Spain). The study revealed that the involvement of public transport users can positively affect their evaluation of service quality and hence their intention to reuse the said service and suggest it to others. According to the study, higher-level involvement will lead to a favourable perception of service quality to make positive behavioural intentions towards the service.

Lin, J, H. (2016) signifies passengers’ behavioural outcomes are highly related to their motivation level in service and hence the study proposes a passengers’ segmentation approach for well-understanding passengers’ needs and desires to improve service quality and behavioural outcomes. The study classifies passengers into five segments based on quality disconfirmation level and intensity: “slight quality disconfirmation”, “serious quality disconfirmation”, “moderate quality disconfirmation”, “moderate quality disconfirmation with serious interaction problems” and “moderate quality disconfirmation with management support problems”. The study suggests bus service quality has to be improved by considering the segmentation of passengers to avail more favourable behavioural outcomes.

Machado-León, J. L. et al. (2016) applies SEM and Multigroup Analysis for investigating the three possible roles (mediator, moderator, and antecedent roles) of involvement in the passenger's perception. The results show that the involvement of public transport passengers could positively influence their perception of the service quality, and heightens their behavioural intentions to reuse the transport services and recommend it to friends, relatives and others. Besides, the involvement could also moderate the direct influence of highly involved users' service quality perception on their behavioural intentions. As a result, a high level of involvement could lead to service quality perceptions to affect positive behavioural intentions mostly through passengers' satisfaction. Furthermore, the level of service product hierarchy in which users make their decision to use a transport mode may affect how they have made their evaluation and decision in connection with that mode. The study concludes that the study results lead to important practical considerations for transport authorities who struggles to increase passengers' intentions to ensure the reuse of the public transit service and recommend it to others.

Mambu, E. (2016) advocates that to make much better services, the service providers should inform customers about the quality of service they offer and should place their service quality in customers' minds hence his study proposes to seek whether there are any significant influences between corporate brand image, and the service quality towards customers purchase intention of public taxi services. The study applied multiple regression analysis, statistical f-test, statistical t-test etc for analysing the relation and differences of variables. The result showed that corporate brand Image and service quality influence perceived trust and which in turn has a positive influence on customers' purchase intention.

Morton, C et al. (2016) analysed commuters' perception of public transport service quality concerning bus transit in Scotland. The study identified that there are three major latent constructs such as covering convenience, cabin environment and ease of use issues which are directly related to the service quality perception of commuters. These latent constructs are shaping factors of attitude toward bus services across socio-economic groups. The analysis put forth attitudes on the quality of bus

services differ remarkably among the commuters' socio-economic cohort: ladies often evince a negative attitude toward the cabin environment as compared with their home environment. It is observed that perceived convenience in buses is directly and positively correlated with perceived service satisfaction. The study concluded that service frequency, service availability and service stability will, of course, enhance the perceived satisfaction of prevailing commuters and for this, there should be a necessary detailed analysis of existing transit policy and reports.

Rahman, F. et al. (2016) carried out a study among the paratransit commuters of Dhakka City to gauge the general Structural equation modelling which uses 24 service quality variables to find out the perceived service quality of paratransit commuters. The study stated that the punctuality & reliability and service features were respectively found to be the expressed and hidden variable that significantly influences the service quality perception of paratransit users. The researchers also traced that there is a direct influence of heterogeneity of commuters on their service quality perception. It is suggested that the utility of this research outcome is in city transportation, especially in developing countries.

Van Lierop, D & El-Geneidy, A. (2016) opine that the improvements in perceived service quality enhance the attraction of transit, and hence result in growing patronage the researcher aimed to examine how to transport customers perceive service quality and how customer satisfaction influences loyalty. their study attempts to grasp the complexities of various factors affecting passenger satisfaction and their behavioural intentions. The researcher uses an SEM approach to build a model that reflects the different users' groups of transit; Captive Riders (users who are transit dependents), Choice Riders (Car owners who opt to take transit), and Captive-by-Choice riders (users who are transit dependent and a car owner) are considered. The study suggests this model can be applied by transport operators to frame service strategies for attaining benchmark user satisfaction and thereby secure increased patronage among various user groups. The study concludes that the cognizance of perceptions of transit users gives adequate information that can enable transport

agencies to comprehend the factors that inspire users' perceptions of quality service and loyalty.

Efthymiou, D & Antoniou, C. (2017) proposes a study for analysing the effect of the financial crisis on public transport passengers' satisfaction in Athens. The study used an exploratory model which integrates demographic and travel characteristics and revealed that enhanced satisfaction of passengers on service quality in public transport resulted in the increased demand for this transport mode. Besides, it was also noted that the high cost of running and maintaining private cars is the pushing factor for most middle users towards public passenger transport and at the same time the ticket fare act as a pulling factor that motivates the passengers to rely on bike, cycles and even on a walk.

Gunaratna, G, S & San Santaso, D. (2017) evaluates commuters' perception of public bus transport service quality and proposes public transportation is the panacea for attaining a sustainable transport system and minimising users' travel time and traffic congestion. As per the study, to enlarge the share of public transportation, service quality should meet and exceed commuters' expectations. They found 12 critical determinants of service quality and listed them in the order of overall relevance in commuters' satisfaction: information dissemination, security in the vehicle, safety elements, crews' politeness, chauffers' behaviour, ease of interchange, bus capacity, amenities in the bus, bus stop facilities, comfort in the journey, duration of service and frequency of service. The study also found that the perception of these variables changes among commuters based on their socio-economic-demographic features.

Lin, J, H. (2017) argues that service quality measurement tools without a psychometric approach may not serve the purpose and so develops a competitive model, "Lin's Short BUSQUAL model" of four dimensions with fourteen inventories, based on confirmatory factor analysis, cross validity checking and non-nested model and the study proves it to be a proper tool for evaluating bus transport service quality.

Murat, Y, S. et al. (2017), in the study titled "Comparative analysis of public transport users' perception targeting sustainable transportation" has done in Turkey, state that every national policymaker always straining to minimise private vehicle

usage and maximise public transport usages which in turn strongly related with the quality of public transport services which consists of many relevant dimensions like the comfort of the journey, frequency of service, reliability, information provision or communication travel fare etc. The study concludes that all those dimensions of service quality are perceived by commuters differently based on their age, gender, education, occupational status etc.

Ngoc, A, M. et al. (2017) analyses various key factors influencing transport users' behaviour and the relevance of users' behaviour in the determination of transport service quality standards, from the perspectives of customers as well as transport operators and found the key factors and its effect varies from country to country. The study concludes a better comprehension of transport users' behaviour facilitates the estimation of transport service demand and the offering of service incentives, especially in the case of developing countries.

Septiani, R. et al. (2017) analysed the factors influencing the passengers' behavioural intention on an Indonesian online transportation service. With a quantitative approach using the covariance-based Structural Equation Model method, the study observed that important factors such as perceived ease of use (internal perception), subjective norm (external influences), compatibility (innovation characteristics), perceived enjoyment and service varieties mainly influences the behavioural intention of passengers.

Yilmaz, V & Ari, E. (2017) propose a structural equation model for describing the factors influencing the loyalty of passengers of high-speed rail transport in Turkey. In their proposed structural model, functional service quality (FSQ) and technical service quality (TSQ) were defined as the latent exogenous variables, and corporate image, passenger satisfaction, passenger complaint, and passenger loyalty were defined as the latent endogenous variables. It was concluded in the study that as the perception of passengers with a positive attitude towards the corporate image about the functional as well as technical services quality increased, their satisfaction with the service and loyalty increased as well. Further, it was counted in the study that

a one-unit increase in customer satisfaction leads to a 0.76-unit decline in passenger complaints and a 0.97-unit increase in passenger loyalty and behavioural intention.

Chowdhury, S, et al. (2018), in their analytical study titled “Public Transport Users’ and Policy Makers ‘Perception of Integrated Public Transport System” in Auckland and New Zealand, observes similarity in policymakers’ and transport user’s perception of network integration (as a core attribute) and fare and ticketing integration and dissimilarities in the perception of the importance of timely transfer service attribute. Analytical hierarchy and cluster analysis are tooled by this study and suggest the model for transport policymakers for integrating public transport services in tune with the expectation of transport users.

Enoch F. Sam et al. (2018) examines the service quality of city bus service in Ghana, by adhering SERVQUAL model and affirm that an accurate discernment and evaluation of commuters’ expectation and apt and regular modification of service quality is essential for encouraging public bus transport uses. Analysis with the paired sample t-test and regression model shows the wide gap between commuters’ expectations and perception of service quality and overall satisfaction levels in the services. They state that in bus services, ‘reliability’ and ‘responsiveness’ are the most influencing dimensions of service quality and general service satisfaction.

Gao, Y. et al. (2018) analysed the trip-wise satisfaction of public transport users in China and developed a model by integrating trip-related attributes, perceived quality of service, personality traits and dispositions of the users. The core highlight of the study is that service satisfaction rating is not only based on the discrepancy between expected service and delivered service but also often varies according to the attitude, frame of mind and personality traits of the respondents at the time of rating of users’ satisfaction on the related service. In this tune, the study explored the trip-wise satisfaction of public transport commuters changing in a non-linear format with the differences between expected and received attributes of service, managing the perceived service quality and the psychological dispositions of the user-respondents of the study. The study also observed that commuters are willing to tolerate and compromise some attribute discrepancies while availing of the service.

Gil-Saura, I. et al. (2018) carried out a study to examine the determinants of customer satisfaction such as service quality and perceived value, as well as its potential influence on customer loyalty to transport service providers in Spain. The study proposes a causal model verified with the information of more than 200 customers collected through personal interviews. The model used the Partial Least Squares (PLS) approach for estimation and the differences between the variables tested with the help of ANOVA. Results reveal that service quality influences customer satisfaction, both directly, and through perceived value. Sequentially it affirmed the interrelationship between satisfaction with transportation providers and customer loyalty. Furthermore, there is a significant difference in service quality dimensions and satisfaction among various transport modes. This study confirms the relevance of the service quality and the perceived value to strengthen the relationship between chain actors: users of transport service and transport service providers.

Irtema, H. I. M. et al. (2018) investigate the behavioural intention of public transit passengers in Kuala Lumpur. The study also explores the interrelationship among passengers' behavioural intentions and its underlying variables like service quality, perceived value, involvement, and satisfaction. Questionnaires are used to get empirical data from the transit users and the SEM method was applied to analyse the conceptual relationship among constructs. The results reveal that all the relationships are statistically significant: the quality of service, perceived value, involvement, and passengers' satisfaction have a positive influence on the behavioural intention of public transport users and it also identifies a direct negative relationship between passengers' perceived value and their satisfaction. The study noticed that passenger satisfaction is the construct that significantly determines passengers' behavioural intention. So, to improve passenger satisfaction, service quality as well as perceived value must be given due consideration. Passenger satisfaction, however, is collateral to improvement in the quality of service offered by the public transport services and that in turn influences passengers' value perception, which is solely based on the ticket fare. The research results also conclusively indicated that the service attributes like vehicle safety and security, cleanliness, and the grievance management system have a prominent influence on the perception of public transit passengers.

Ok, S & Hengsadeeikul, T. (2018) designed their study to gauge important factors influencing the quality of private bus services and commuters' satisfaction in Cambodia and the study applied a five-factor- SERVQUAL model. The study opined that service quality is to be an essential deliberation in a promising service business and in turn, to render high-rated quality services, service providers should primarily focus on the comprehension of commuters' service requirements and their expectations before framing and executing suitable service policies.

Putrianti, A. S & Samuel, H. (2018) came with their study demonstrating the role of public transportation in reducing traffic congestion problems and the need for innovation in the mobile applications which are used in connection with public transportation. The study pointed out the requirement of measurement of behavioral intentions to have a clear insight into future customer behaviour and satisfy customers accordingly. The study wanted to know the factors that influence the behavioural intention of customers of online transportation. This research utilised the 'causal quantitative research method' and made it clear that e-service quality, perceived trust, and perceived value were significantly correlated and influences customers' behaviour intention. The researcher concludes by stating that e-service quality is the major influential factor in creating positive behaviour intention compared to the other two factors; perceived trust and value.

Sam, E. F et al. (2018) used the SERVQUAL methodology and analysed the core public bus transport passengers' service quality expectation and perception and its impact on overall passenger satisfaction in the public bus transport services in Ghana. The study data were analysed by using the paired-sample t-test and multiple (standard) regression techniques. The study revealed the vast differences between public bus transit service quality expectation and perception and hence a general dissatisfaction regarding the bus transport service delivery. The bus transport service reliability and responsiveness are observed to be key dimensions to explain the bus transit service quality in the city.

Van Lierop, D et al. (2018) reviewed various studies relating to the causes of passenger satisfaction and public transport loyalty and observed that the service

attributes which are more correlated with passengers' satisfaction are on-board neatness, comfort, empathetic and courteous behaviour of crew, safety, punctuality, and frequency of services. Whereas, service loyalty and ridership retention are closely associated with passengers' perception of value for money, cleanliness and safety of vehicles, image and crews'/ operators' interactions and commitment to service. It concludes that public transport users who possess a positive image of the transporting operators and view public transport as an integral part of their commuting life are most possible to evince loyalty and perform like an envoy for public transport services.

Weng, J et al. (2018) evaluates bus service quality and passengers' transport choices in the urban public transport system in Beijing and contributes a two-tier passenger satisfaction rating index; six service attributes such as timeliness, safety and security, comfort, convenience, reliability, and thrift in the first tier and 21 other attributes in the second tier. With the help of multivariate analysis, the study in first tier index, 'timeliness' has the least satisfaction score and that is significantly influenced by the second-tier attributes, age of passengers, the purpose of the journey and time and duration of travel. The study bestowed an important tool for public transport performance evaluation and to develop a sustainable bus transport system.

Abenzo, R, F. et al. (2019) applied three factors (basic factor, performance factor and exciting factor) theory for analysing the (non) linear characteristics of various transit attributes and tested distinct passengers' segments and travel modes based on their captivity and frequency. The study conclusively remarked that the "one size fits all" approach cannot be treated as an adequate approach for ascertaining the exact transit requirements of passengers.

Allen, J. et al. (2019) analyses the relationship that exists between commuters' satisfaction and loyalty and opines that apprehension on commuters' behavioural intentions after the service experience is essential for framing transit-related policies and public transport loyalty analysis is a prerequisite for creating transport patronage. The study reveals that a 'Critical incident'; a previous service anomaly negatively affects overall satisfaction and service quality and then commuters' loyalty. The study put forth the application of SEM-Multi-group analysis

(MGA) in verifying the difference in commuters' satisfaction (heterogeneity in satisfaction) by travel time, age, and travel frequencies.

Borhan, M. et al. (2019) have conducted a qualitative analysis of limiting factors of public transport usage of public bus services in Malaysia, from the response of bus and car users. The study found various factors like reliability, security and safety, customer servicing etc, are the crucial factors influencing public bus transport and in these, the reliability dimension (service frequency, timeliness, and transfer facility) determines the choice of travel mode. The study suggests safety elements in public bus service must be improved for ensuring more customer satisfaction.

Borjessen, M & Rubensson, I. (2019) carried out a service satisfaction survey among the users of public transport in Stockholm and pointed out that crowding is a vital attribute with minimal satisfaction and it is the single attribute on which public transport users' satisfaction declines continuously day by day and the study concludes that commuter's satisfaction and preference are mostly affected by the reliability and crowding attributes.

Brewer, R, N & Kameswaran, V. (2019) proposed a study to explore the factors affecting customers' acceptance of specific vehicles (Automated vehicles). A new theoretical model, Technology Acceptance Model (TAM) was proposed by the study adding three new constructs: perceived initial trust and perceived safety risk and perceived privacy risk. The study hypothesized that perceived initial trust was affected by perception factors; perceived usefulness, perceived ease of use, perceived safety risk and perceived privacy risk and perceived trust was a key determinant of vehicle acceptance. The validity of the TAM model was tested and confirmed with an SEM analysis of the data collected from nearly 200 survey samples. Results of the study reveal that perceived initial trust was the most crucial factor affecting a positive attitude towards a vehicle's acceptance, which, together with perceived usefulness, determines users' intention to use the vehicle. Perceived trust can be enhanced by improving Perceived Usefulness and reducing perceived safety risk.

Hansson, J. et al. (2019) analysed various quality attributes of regional public transport and their impact on the choice of travel mode, transit demand and

commuters' satisfaction. The study noted that onboard comfort, network coverage, and coordination are the more prominent factors influencing travel mode selection and satisfaction of commuters. The study demands the requirements for a deeper knowledge of the specifics of regional transport for serving local passengers at best.

Houria, B & Fares, B. (2019) investigates the satisfaction degree of urban transport users in the context of transport sector liberalisation in Algeria. In their study service satisfaction was assessed by considering the attributes like service offer criteria, accessibility, comfort, security, duration of transit, customer care and attention and environmental impact of urban transport services and reveals the users' satisfaction level in urban transport services were only average in all these attributes. The study highlighted the impact of urban transport disorganisation on the offered service quality and remarked that though urban transport liberalisation results increased supply of transport services, the quality of services deteriorated significantly.

Ojo, T, K. (2019), in his comprehensive review of important articles and research papers related to public transport service quality, states even though the term service quality is the antecedent of commuters' satisfaction or vice versa, perceived service quality often means that there is a gap between commuters' expectation and experience of service availed. In other words, satisfied commuters are often perceiving good service quality and so both the term, service quality and satisfaction, should be differentiated even if they are correlated. The study concludes that the SERVQUAL model considers service quality as the precursory factor of commuters' satisfaction as service quality is the emotion and satisfaction is the evaluation of that emotion.

Quddus, M et al. (2019) carried out a study on the Dhaka Public Transport system from commuters' perspective revealing the high dissatisfaction with the public transport services. Comfort and driver skills are the most dissatisfying factors and followed by punctuality, safety and security, entry and exit convenience, waiting time, and the conditions of the vehicles. The study concludes that public bus transport in

the city is unsafe, unreliable, and inefficient and failed in catering to the mobility needs of the times.

Ramu, N. B & Gurtoo, A. (2019) explores the service quality attributes of intercity bus transport and analyses the major determinants of passengers' perceived value in the context of Europe and India. A structured questionnaire was used to capture the service quality perception of passengers. Through the factor analysis and multiple linear regression analysis, the research hypotheses were tested and the empirical results disclosed that attributes: service punctuality, women-friendliness, ticket fare affordability and the service to price satisfaction were alike to passengers in Europe and India and such attributes significantly effects commuters' perceived value on service provided leads to overall satisfaction. While the cleanliness of tangibles is a more important consideration for European passengers, the more appropriate tangible consideration for Indian passengers is luggage comfort and handling. Further analysis of the study suggests that technology and innovation also significantly affect the overall satisfaction of commuters in Europe as well as India.

Sun, S & Duan, Z. (2019) purposes a study to analyse public transport users' loyalty and patronage in Xiamen, China, both from attitudinal and behavioural perspectives. The study follows the commuter segment approach and uses structural equation Modelling for analysis. The highlight of this study is its unmasking a specific user segment i.e., "Spurious Loyal" users who show a low level of attitude but high behavioural patronage towards public transport modes. The study conclusively remarks that the majority of public transport users are like "Spurious loyal" who adhere to public transit mode only due to the scarcity of other cheaper alternative transport modes.

Agyeman, S & Cheng, L. (2020) analysed the major hindrances to perceived Bus service quality in Ghana from the viewpoint of students. The study was able to relate the service quality of bus mobility with the attendance percentage and teaching and learning quality environment in the schools. With the help of exploratory factor analysis, the study noticed four major hindrances which are influencing perceived bus service quality such as; (1) related to schedule and route network, (2) related to safety

and bus features and facilities, (3) related to pedestrian and bus station and stop attributes and (4) related to efficiency, effectiveness, and equity attributes. The study concludes by recommending that transport policymakers and school authorities concurrently should draft and execute an operational policy framework to make use of acceptable bus service delivery quality for improving the key performance indicators of educational institutions.

Bellizzi, M, G et al. (2020), through their Stated Preference Survey, analyses the heterogeneity in bus transit service quality both from the perspective of existing and potential users of bus service and stress the necessity of understanding the perception of potential users and their relevant reasons for travel choices. The study was able to reveal the difference in the perception of existing users' transit service quality and potential users desired service quality. The study also attempted to calculate 'Willingness-To-Pay' (WTP) and finds that the WTP values of potential users are significantly higher than that of existing users. The study suggests a model for the transit operators to structure a portfolio of quality levels for allocating to the various aspects of services.

DAM, T. C. (2020) empirically examine the influence of trust and perceived value on brand preference and customers' purchase intention concerning mobile service providers in Vietnam City. The findings of the research highlighted that perceived trust had a significant positive influence on service brand preference. Similarly, the findings of the study also stated that perceived trust had a positive impact on customers' purchase intention and the perceived value had a positive influence on service brand preference. Moreover, the outcome of the study shows that perceived value had a significant positive influence on customers' purchase intention as well as the service brand preference having a positive influence on purchase intention.

De Oña, J. (2020) applied a structural equation model approach to seeking more understanding of the role of passengers' involvement with public transport by comparing eight related models and from a survey conducted in 5 European cities. The study considered four constructs such as service quality, satisfaction,

involvement, and behavioural intentions. This study verified that passenger satisfaction is the complete mediator between service quality and involvement and involvement is a complete mediator between satisfaction and behavioural intentions. The study further suggests that involvement is the highest factor that contributes to behavioural intentions or loyalty followed by the perceived service quality and passengers' satisfaction. The study observes that City, location, gender, age, transit frequency, educational status and income levels are the important variables that add heterogeneity in involvement, Perceived value, service quality and behavioural intention of passengers and it remarked the importance of controlling heterogeneity in passengers' perceptions, to obtain more robust relations between factors and determine significant variations among market segments, which will be useful for transport policymakers and service providers.

Hussain, H. D. (2020) has conducted a study to analyse behavioural intention and its antecedents in the public rail transport system. The study applied four important predictors such as situational factors, trust in service, novelty seeking and external influencers in the "Theory of Planned Behaviour" (TPB) model. Results of the study reveal external influencers and novelty-seeking results in the attitude formation of passengers and this formed attitude along with perceived behavioural control (PBC) and subjective norms positively influences the behavioural outcome of passengers. The other, situational factors have an indirect and negative effect on behavioural intention on service.

Ibrahim, A.N & Borhan, M.N. (2020) carried out a massive review of the pieces of evidence for establishing the relationship among the antecedents of commuters' satisfaction: perceived quality and perceived value and the consequence of user satisfaction such as complaints and loyalty to the service provision. The literature review concluded that the two concepts, perceived quality and perceived value were significant effects on user satisfaction. Their study added that satisfied commuters lead to loyalty to such service and hence reduces the number of complaints. This study has stated that the fundamental reason for this relationship is service quality. So, the study indicated that service providers have to prioritise such

factors to ensure commuters' satisfaction, which in turn will increase the loyalty to the service offered and this is essential for the sustainable survival of public transport service providers.

Shamsuddin, M, F. et al. (2020) evaluates the commuters' perception of service quality in public bus transport services in Kuala Lumpur. The study analyses five dimensions of service quality and observes that reliability and tangible dimensions are the most significant factors determining customer satisfaction in public bus services.

Sorensen, L et al. (2020) were conducted a study titled "How much flexibility does rural public transport need" with a core focus on 'Demand Responsive Transport'(DRT) in rural clusters in Germany and the study states that rural areas in industrialised nations are facing obstacles in public transport provision against the scenario of demographic change, urbanisation and rigorous thrift policies. The study opined that demand-responsive transport is a completely flexible and pure door-to-door operation and this can be able to satisfy the transit requirements of the rural region and reduce their car usage and enhance mobility for all population cohorts. The study noticed that rural people welcome innovative DRT services and are happy to use smartphone applications for accessing their services.

Nasir, M. et al. (2021) particularly, their study aimed to attempt to develop a model that derives a linkage between after-sales service, service quality, customer satisfaction, customer loyalty and word of mouth (WOM). The researcher administered a structured questionnaire to collect data through the purposive sampling method. The findings of the study reveal that both customer loyalty and reuse intention have a significant and positive mediating role in the relationship between customer satisfaction and the word of mouth (WoM). This hint that satisfied customer is most likely to be loyal to the service providers and would spontaneously engage themselves with positive word of mouth.

Fu, X. (2022) examined how service quality perception, perceived value, the image of service operators, passengers' satisfaction and complaints interactions affect passengers' intention or loyalty towards public transport. Based on a passenger

segmentation approach the researcher tried to know the extent to which passengers are satisfied and dissatisfied with public transport services. The study followed “a cross satisfaction-and-complaints classification approach.” A four-layer analysis consisting of exploratory factor analysis (EFA), structural equation model (SEM), latent class cluster analysis (LCCA), and multigroup SEM, is put forth.

Under this study, passengers are classified into three subgroups profiled by distinctive features in tune with the extent of satisfaction and complaint of passengers towards public transport. The multigroup analysis shows a significant difference in the relationships among the influencing factors across the 3 subgroups. The study concludes with an expectation that the results may offer helpful implications for transit authorities to enhance the passengers’ behavioural intention or loyalty and to frame customized marketing strategies towards the passenger groups holding a diverse satisfaction level and complaints about public bus transport.

2.3.2 Studies in Indian Public/bus transport scenario

Chandra, M. (1969) analyses the operational and financial performance of nationalised public transport sector in Uther Pradesh. The study opined that the financial performance of road transport corporations can be enhanced by making a users’/commuters’ focused policy framework and the study deduces that the users’ focused policy framework will be able to provide an improved quality of services and satisfaction to the passengers and hence can gain a better financial performance.

Alwin Prakash, B. (1974) evaluated the performance of Kerala state road transport corporation for a period ranging from 1959 to 1971. The study analysed the physical and financial operation of KSRTC and suggested important remedial measures for improving its performance. The study pointed out that corporations must focus more on manpower and fuel management to achieve cost reduction in operations. A comparison of KSRTC s fleet utilisation rate, vehicles- staff ratio, mileage of diesel buses with those of other state road transport undertakings and all India average figures revealed that KSRTC is showing a better position. The study

also highlighted the requirement of commencing point-to-point bus service and long-cover services like interstate services.

Singh, J. (1990) observed that perceived dissatisfaction is believed to be an emotional status that induces customers to engage in one or more post-purchase reactions and these reactions consist of loyalty (continued patronage), brand switching (exit from the brand), complaint making and Word of Mouth (WoM) and recommend to others etc., have critical implications for the service providers.

Hanumantha Rao, C, R & Rama Krishna, S. (1996) analysed the perception of commuters regarding the service quality of both state-owned and private operators in the current service environment and states that state-owned transport operators should adapt to remain with the competitive service environment by accurately designing and executing policies relating to service market segmentation and prospective commuters. The study emphasised that the corporate administrative as well as operational plans should be moulded in a strategic and professional perspective and should pay more attention to the service market forces.

Nandakumar Mekoth (1997) carried out a comparative study of service quality of public and private sector bus services in Goa and observed that commuters' perception of the quality of bus services is the function of various components such as safety of vehicles, punctuality of operation, regularity and frequency of services, comfort and convenience felt by the commuters, bus staff behaviour and their sociability. Besides, the study found that, even though the public sector bus service is operationally and financially efficient, their profitability is comparatively less due to the unhealthy and unethical practices of private bus operators.

Raichaudhuri, A & Jain, S. (2007) initiated the study on the need for improving public utility services through customer orientation. The study observed some major key factors for the failure of public services such as lack of a proper mechanism for updating, lack of grievance redressal system, lack of information and skills to deal with the problems of customers, lack of feedback about the service performance, low accessibility to customers and lack of proper monitoring and follow up system. All these findings hint at the urgency of the establishment of a complaint

or grievance redressal and follow-up mechanisms for better serving the customers of public services.

Basu, S & Ramachandran, N. (2010), in their study related to Gujarat SRTC, emphasises that examining the commuters' behaviour, their emerging ambitions and preferences and maintaining a balance between these are the prime concern of RTCs as they exist because of commuters. The study found that commuters often consider road transport as the optimal transport mode in terms of six variables; the number of transactions, availability, and accessibility to and fro, time and duration of travel, cost of travel, the capacity of vehicles and comfort level in travel and stoppages. Analysis of these variables shows that while the first two variables are positive to SRTC, time and cost are limiting factors and vehicle capacity and comfort are more complex but often determining travel mode. The study also states economic prosperity of the commuters and the commodification of exclusive travel are the core reasons for the rapid shift in travel mode preferences.

Gautam, P. (2010) compares passengers' travel satisfaction with State Road transport undertaking (NST) and private bus service operation in Nagaland and opines the co-extension of both services creates unhealthy competition in public transport services in the state. The study analyses the influence of various socio-economic factors on passenger travel satisfaction and confirms such influencing factors makes difference in passengers' travel experience and hence the level of satisfaction with STU and private bus services.

Singh, S. (2010) carried out an empirical investigation into the antecedent and aftereffects of customer trust in service organisations. The peculiarity of the study is that it not only reveals the interrelationship between antecedent and consequential factors of customer trust but the order of such factors' influences on each other. The study found that the quality of service and customers' perceived value had a positive influence on customer satisfaction in general. Customer satisfaction along with positive switching barriers and marketing efforts had a strong effect on customer trust in the service organisations. Customer repurchase intention (continual intention) is mainly significantly influenced by the independent variable in the order; positive

mode switching barriers, customer satisfaction, service quality, perceived trust, negative mode switching barriers, interdependence, and marketing effort of the service organisations. Similarly, the loyalty of the customer is influenced by the variables in the order of continual intention (repurchase intention), negative mode switching barriers, customer satisfaction, service quality, perceived trust, positive mode switching barriers, and interdependence. The study concludes that all these relations are moderated by various moderating variables.

Vanniarajan, T & Alleswari, A. (2010) applied Structural Equation Modelling to analyse the interrelation between service quality, service satisfaction of passengers and reuse intention (loyalty) of passengers of Tamilnadu State Road Transport Corporation. The study confirmed that service quality of transport bus services is the crucial predictor of the satisfaction of passengers and their behavioural intention and reuse decisions.

Vishnuvarthan, S & Selvaraj, A. (2012), in their study related to passenger satisfaction in Indian railway, it is observed that most of the passengers are dissatisfied with the services of Indian Railways. The study states that the Indian railway has to take various measures to improve the railway services by properly and regularly encouraging and redressing the grievances of the passengers. The Railways has to understand the requirements and expectations of the passengers with the help of proper Grievance Redressal Cell at each railway station and in this connection, further suggestions as to maintain the Complaint and Suggestion Boxes at all the stations should be reviewed periodically in the presence of Grievance Redressal authorities(e.g.: members of Consumer Protection Council or other similar social bodies) and it will be able to resolve the passengers' genuine complaints and maximise service quality and passenger satisfaction.

Das, S & Pandit, D. (2013) stated that the service quality assessment facilitates service operators to know the passenger satisfaction with present service and their expected level of satisfaction. The study opines that since the socio-economic environment of service delivery varies between developed and developing countries, passengers' perceptions of service is also varying. The study traces the

significance of passengers' perception in assessing transport service quality and stresses the need for the application of LOS (levels of satisfaction) in the context of bus transport service in a developing economy like India.

Dhinakaran, D. P & Rajarajan, M. (2013) opined in their study conducted on the bus operation service quality in Tamilnadu, that one major reason for the increased demand for privatisation of public sector transport undertakings is the lower quality of service offered to the commuters. The study examined whether service quality is the reason for the continuous loss of the transport corporation. Quality of services is measured in terms of the number and frequency of trips operated, travel comfort and convenience, safety and reliability, staff quality and information quality.

Mannaa, M & Chaudhry, B. (2013) examined how air passengers' evaluation of the complaint redressal process affects their satisfaction with the complaint handling system and their retention in the present transport service. A scenario-based study was carried out to examine the impact of the justice dimensions on passengers' post-complaint satisfaction level and their behaviour or patronage intentions. The proposed hypotheses were proved and verified. The study concluded that interactive elements of justice have a significant and positive influence on passengers' satisfaction with the complaint-handling mechanism and their behavioural reuse intentions.

Saroja, T. (2013), in her thesis relating to service quality comparison between public and private sector bus services in Erode, Tamilnadu applied the SERVQUAL model with five service dimensions. Regarding tangibility and reliability dimensions private bus services appear to be better as the staff attire is neat and good and it provides efficient and timely services to commuters. In the case of responsiveness and assurance dimensions, both services are found to be equally good but passengers feel free while dealing with private bus ticketing office. In respect of empathy dimensions, commuters opined that public sector bus staff have better occupational knowledge as they get more training opportunities and at the same time passengers get a good travel experience in private buses during transit. A significant variation was reported regarding the convenience of operating time. The study remarks that the private

sectors follow an aggressive approach in the transport market so they create overcrowding in the buses and on the other side, public sector buses are struggling to meet passenger expectations. The study concludes by demanding healthy and constructive public-private sector competition in the transport market.

Biju, M, K. (2014) has done a comparative study of KSRTC and private bus services in Kerala for analysing the deviation between the expectation and performance of these two services and the study concluded that there is a significant difference between the performance of KSRTC and private bus services in Kerala in terms of service quality.

Pardeshi. RK. (2014). His study in connection with the service performance of Maharashtra State Road Transport Corporation (MSRTC) hints that the level of 'customer satisfaction' is not only an ambiguous and abstract concept but also varies across the customers and services since it depends on physical as well as psychological variables. The study notes that MSRTC, the public sector bus service operates on a fixed schedule whereas the private sector service provides flexible and customised services to commuters. The study highlights its core finding, even though the public sector operators cover transit needs of rural and unreached areas, opinion on its service quality and customer satisfaction is only 'least good' or just 'above average.' While assessing its service quality attributes, it is observed that timeliness and cleanliness are the important dimensions of which most of the customers have a negative opinion. Besides, customers opine while compared to other public transport modes of long-distance travel, its travel cost is a little bit high. In the conclusion, the study pointed out that public sector operators (MSRTC) should pay sufficient attention towards timeliness and schedules, cleanliness of facilities and cost of service to provide more service quality and satisfaction to the commuters and to attract more commuters to public sector transport services.

Agrawal, V et al. (2015) observe SERVQUAL model combines a variety of dimensions and some ambiguous criteria that are difficult to evaluate because each respondent is of different disposition on the same criteria they are supposed to be answered. To overcome this issue, the researchers applied Fuzzy TOPSIS for the

assessment of service quality in the public transport system. Under this methodology, the linguistic assessment of respondents on service is clubbed by Fuzzy TOPSIS and produced more accurate and objective results on multiple criteria of service quality.

Gajendran, A. (2015). In his thesis titled “A comparative study on passengers’ satisfaction between public sector and private sector bus transport service industries in Tamilnadu” observed that passengers are satisfied with the services of private buses in Chennai but he also pointed out the operational inflexibility of public sector bus services in this regard. With the application of cluster analysis and factor analysis, the study observes all the service quality dimensions vary according to the socio-economic-demographic pattern of the passengers. The study highlights that even though there is a difference in the level of satisfaction between private and public bus services, passengers possess the same attitude towards the service attributes of both services like service efficiency, safety, security, bus and premises maintenance, bus fare, schedule, and management etc.

Kaur, S. (2015). In her study “Quality of bus services in Punjab a comparative study of the public and private sector” found that the public sector bus services show a negative growth rate and the analysis of both commuters’ and employees’ perception reveals the dissatisfaction scene in public sector services. The study suggests that necessary strategies are required to be adopted for the ease of potential commuters and it can be done by concentrating on important aspects like the provision of basic amenities at bus stops, fair conditions of buses, facility of online tickets, convenience at the bus station and in vehicles, training and development of crew and ensuring of quality bus service. The study highlighted that private sector bus services attain service satisfaction through the attributes of services such as service commitment, flexibility in services, the attitude of the crew, facility of online tickets and cleanliness of buses and so there is vast scope for public sector bus service for competitive improvement.

Mahesh, R. (2015), in his thesis titled “the relationship between service quality and attitudinal loyalty of bus passengers: the mediating role of perceived value, customers trust and customer satisfaction”, applied PLS-SEM (Partial Least

Square-Structural Equation Modelling) to examine the constructional relationship between the service quality and its determining variables based on the survey of passengers of public bus transport in Hyderabad. The findings of the study show the direct and indirect bondage of construct in the synthesised research model of the study and noticed that apart from transport operators' brand image-attitudinal loyalty relationship, all other relationships in the proposed model are statistically significant. Furthermore, perceived value, passengers perceived trust and passengers' satisfaction were partially mediating the relation between attitudinal loyalty and service quality. Besides study remarks the greater influence of travel frequency of passengers on the shift of attitudinal loyalty.

Pardeshi, R. (2015), in the study relating to Maharashtra State Road Transport Corporation (MSRTC), opines that a service that responds quickly to the queries, complaints and other requirements of the customers can attain a competitive advantage over others and this can be gained by the effective application of information and communication technology (ICT) in the relevant areas of service. The study found an immense potential for MSRTC for use of ICT and thereby enhance service quality and customer satisfaction. The study shows the possible areas of effective application of ICT like dissemination of seating position, ticket and vehicle reservation, time schedules, stoppage and waiting time, duration of the journey, facilities, and flexibilities available in buses etc.

Riyaz. et al. (2015) intended to provide a bird's eye view of passengers' perception and awareness of facilities and quality of services in Karnataka Road Transport Corporation. The study results found that most of the commuters are aware of the facilities available in Karnataka RTC but they have a negative opinion on adherence to the bus schedule and stops, security and safety measures of the bus, misuse of bus passes, service, reservation seats etc., overcrowding of bus, the behaviour of crew especially conductors and the maintenance of first aid box. The study concludes passengers are just satisfied with the service of KSRTC. To attain its motto 'passenger satisfaction is most important' present service must be modified by

focussing strictly on crew behaviour and schedule reliability. The study suggested fitting seatbelts in buses to protect passengers.

Manikandan, B & Vanniarajan, T. (2016) studied service quality and commuters' satisfaction with the State Road Transport Corporation of Tamilnadu by the application of Structural equation Modelling. The study observed that the key service quality attributes are service plan, transport network, safety and cleanliness, comfort, and service receptivity. The most influencing service quality factors of passenger satisfaction are service planning and transport network. While service planning is directly influenced by reliability, crew behaviour and information variables, transport network by route features, accessibility and availability of bus stops and frequentness of services. The study suggested that the service planning dimension of service quality can be improvised by the behavioural modification of service personnel, especially drivers and conductors.

Manoj Kumar et al. (2016) conducted a passenger satisfaction survey in connection with the public transport service quality of UPSRTC, Agra, on various aspects of service dimensions such as safety of passengers, the behaviour of the crew, facilities, response and comfort, cost, and availability of services. The study revealed that commuters are highly dissatisfied with the attributes like conditions of the vehicles and the approach and behaviour of staff. Besides, the survey pointed out that cleanliness of bus stand premises, travelling comfort and bus fare etc., also act as negative variables which results in overall dissatisfaction with public transport services.

Ravi Prakash. et al. (2016) carried out a service quality study of public road transport services in the border area of Rajasthan for developing a service quality standard. The study remarked that the road network' coverage is nearly five times more than that of the rail network in India which indicates the importance of road transport in India. The study opined that ensuring and maintaining the proper quality of service is essential for creating and maintaining a better image of state public transportation. The study suggested that State Road transport companies should experiment with flexibility in the schedule of time in on-peak and off-peak hours,

timely e-complaint from the commuters should be considered and frequent public, as well as commuters opinion surveys, should be carried out for adequate improvement in service quality and thereby ensuring good public image on State Road transport service.

Sravana, K. (2016) affirmed the incredible role of KSRTC in the public transport provision of Kerala in perspectives of passenger satisfaction, bringing out various critical attributes that reflect in the level of passenger satisfaction such as travel fare, punctuality and timeliness, interstate services, convenience and comfort, concession facilities, crew behaviour on passengers, provision of special service on special occasions like festival, vacation etc, and other amenities. The study attracts the attention of corporations towards rural and interstate services, though, in these services, crew behaviour is considered fair, there are ample dimensions that demand furtherance of service provision. The study also highlights the need for innovative service facilities like Wi-Fi, hotspots, Online reservation, mobile app etc. to render satisfaction to emerging commuters.

Vini, M, S & Sreekrishnan. (2017) carried out a study on the topic, ‘An evaluation of the performance of Kerala State Road Transport Corporation-A case study’ and the study examined four years (2012-2016) financial reports of KSRTC to evaluate its financial performance and position. The study considered important factors such as operating schedules, number of vehicles, average collection per day, earnings per passenger kilometre, earnings per bus per day etc. the detailed analysis of these variables discloses the operating inefficiency and critical financial position of KSRTC.

Jyothichandra, R & Ambily, A, S. (2018) reviewed the performance and status of Kerala State Road Transport Corporation at the juncture of its silver jubilee celebration. The study observes that there is nothing to exhibit before the public other than its multifaceted crisis. The study counted the factors which added momentum to the present pathetic scenario KSRTC, such as:

- Awkward government policies.
- Unfavourable bureaucratic attitude and interferences
- Illegal fixation of routes and schedule network.
- Payment of huge accident claims as per the order Motor Accident Claim Tribunal.
- Unwanted student concession and issuance of free passes.
- Inaccurate projection of future finance and human resource requirements.
- Incompetent top-level administration and management.
- Absence of professionalism and resistance to change.
- Trade union interruption and internal politics.
- Uneconomical and loss-making route schedules and operation.
- Frequent fuel and spare price hikes.
- Irrational financing of infrastructural projects.
- Heavy purchase and storing of non-moving spares and stock and lack of procurement of vital spares.
- Unfair political interference in administrative and operational activities and frequent changes of political party key managerial persons.
- Private and parallel operation across the all-region in Kerala.

The study suggests that proper management of men, money and resources of the corporation, abolition of corruption, and adequate revival policies and support are essential for regaining the past pride and glory of KSRTC.

Navya, A, H. (2018) has conducted a comparative study of the service quality performance of public (KSRTC) and private bus services in Kerala by using Canonical Discriminant Analysis. The study revealed that there is a significant variation in the service quality between KSRTC and private bus services. The study pointed out that while service facility and transport network design are the largest discriminating factors, transportation affordability and safety are the least discriminating factors in the service quality performance of these two services.

Vijayan & Indu. (2018) have done a case study on the financial crisis of Kerala State Road Transport Corporation. The study observed that the earnings of the corporation are not sufficient to meet even its operating expenditure since the growth rate of expenses was much higher than that of income. The study suggested that KSRTC should have a pricing policy that is profit-oriented and dynamic to attain better financial performance. Researchers demonstrated the significance of an automatic fare revision system without political intervention.

Leejiya, J & Jisha, A. (2019) carried out a performance evaluation of Kerala State Road Transport Corporation in the backdrop of its financial crisis. The study incorporates depot-wise financial and operational parameters for Data Envelop Analysis (DEA). The study compared the efficiency level of 28 depots of KSRTC and found that most of these depots are under inefficiency in terms of the ability to transform their input into output and the Technical Efficiency Analysis (TEA) of the study remarked that a significant part of the technical potential of KSRTC is kept idle. The study concludes that there is sufficient space to improve the performance of the KSRTC.

Navya A, H. (2019) analysed the operational and financial performance of KSRTC. The study observes there is service deficiency and operational inefficiency in the corporation due to the frequent breakdown of vehicles, poor workshop performance, underutilisation of personal staff etc. Occurrences of hartals, employees and public strikes, and road blockages add a burden to the revenue loss of the corporation. Financial performance analysis reveals that the liabilities of the corporation increase day by day and from an HR angle, it is remarked that there is a significant interrelationship among reward and remuneration system, welfare measures, job satisfaction and employees' commitment. Regarding service provision, the study pointed out that the service quality attributes often affect commuters' satisfaction. The study ends with a recommendation that there should be a synchronised alliance among commuters, employees, and management for a better performance of the corporation.

Sharma, S. (2019), in the thesis titled “Service quality and passenger satisfaction in bus transportation in Haryana” reveals that though commuters are satisfied with the bus services of both the state-owned sector and private sector, more satisfactory services were credited to the State transport undertaking, HRTC. The study found while “punctuality” and “reliability” were the factors that contributed more passenger satisfaction in public sector bus services, “comfort” is such a factor in private bus services. The study suggests that the transport authorities should pay more attention to the matters such as punctuality, regularity of bus operation, commuters’ safety, and bus staff behaviour for enhancing the efficiency of bus services in the public sector as well as private sector bus services.

Singh, M. K. (2019), as the outcome of the study related to employee satisfaction with Bihar Road Transport Corporation, suggested that a grievance redressal cell should be set up by the Corporation so that the employees will be able to put forth their problems and concern without any hesitation or hindrances. It was also suggested that by setting up a channel for getting feedback and assessing the level of employee satisfaction, management can easily inform employees of the decisions that will lead to increased productivity, better job satisfaction, and loyalty to the corporation by sticking to key areas of concern.

Sudhakar, G & Rao, R, S. (2019) examined various determinants of commuters’ perception of public transport in Hyderabad, relatively a big city in India and the study opines that if commuters opt for public transportation instead of private vehicles for their transit needs, environmental pollution and noises, traffic congestion etc, are reduces to a minimum. To retain existing commuters and to attract new commuters and tourists, the public transportation system should be customer friendly and satisfy the wide and varied needs of commuters. With the help of descriptive, inferential statistics and regression analysis, the study examined the association between commuters’ satisfaction and its influencing factors. Analysis reveals that travel ticket fare is the utmost factor influencing commuters’ satisfaction followed by comfort and timeliness of services and other factors like minimum stops, amenities in buses, and conditions at the bus station are having least influence on commuters’

satisfaction. The study posted a conclusive remark that for triumphant performance public transport bus services should be affordable, competent, flexible and profit potential.

Patil, P et al. (2020) examined Indian consumers' behaviour towards service usage. The study applied the meta-UTAUT model with individual differences in variable attitude as a basic construct and integrated the model with customer-centric constructs like personal innovative mind, anxiety, customer trust and grievance redressal. An empirical examination of the said model among nearly 500 Indian customers reveals that performance expectancy, intention to purchase (use) and grievance redressal are significant positive antecedents of customer use behaviour or behavioural intention. Furthermore, the intention to use the service was significantly affected by attitude, social influence, and facilitating conditions.

2.4 Research Gap

Extensive reviews have shown that very few studies have been conducted in India, especially in Kerala regarding the quality of service of public bus transport. There is no serious or intensive study found comparing the service quality and passenger satisfaction of state-owned transport bus services and private bus services. From the foreign studies' experience, it is evinced that there is vast scope for improving the bus transport service quality in Kerala. The present study deals not only with the service quality of both services but its behavioural outcome also. Therefore, the present study helps to know how the public transport bus service quality varies between state-owned and privately owned bus services and how such variation influences passengers' continual and word-of-mouth intention.

2.5 Conclusion

The above-discussed literature reviews are pooled from past studies and it is properly arranged to grasp the meaning, methodology, and concept of those studies. The early studies which focused on transport service quality, its dimensions, determinants and behavioural outcome, passenger/user/commuter satisfaction, the importance of public transport and ways to increase passenger satisfaction in the field

of public bus transport were considered for the research. For the present study, 25 past studies which elucidate the importance of public (bus) transportation, 96 international studies and 37 studies in Indian contexts were thoroughly referred to apprehend the interdependency between transport Service quality and its determinants and dependant variables such as passenger satisfaction, trust, involvement, perceived value, passenger complaint and behavioural intention etc.

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CHAPTER 3

**PUBLIC BUS TRANSPORT SYSTEM IN INDIA AND
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CHAPTER 3

PUBLIC BUS TRANSPORT SYSTEM IN INDIA AND KERALA: A PANORAMIC VIEW

3.1 Introduction

“Most effective economic fact of our times is not the development of manufacturing industries but that of the transport services” (Dr Marshall, 1928, cited, Rodrigue, JP, 2020). It is evident that the prosperity of a country not only depends upon agricultural and industrial development but also on the development of various modes and efficiency of transport. The transport system refers to the different ways in which men and materials are commuted from one place to the other. Transportation is the keystone of economic infrastructure progress. It adds momentum to the growth and development of trade, commerce, and industry by removing the hindrance of place and regional disparities and facilitating the conveyance of goods and services to the needy points. Transport or transportation is the movement of people, animals, and goods from one place to another. It can be defined as a particular movement of an organism or thing from one point to another. “Transportation is the movement of goods and persons from place to place and the various means by which such movement is accomplished” (Britannica, Transportation Technology, n.d). The capacity and ability to transport many people and a sizeable quantity of goods for a long distance at high speed with comfort and safety are considered an index of growth, civilisation, and technological progress.

Transport facilitates trade and services between people located at various nooks of the world and is the linchpin for the growth and development of civilizations. W.E. Ogburn defines “*Transport as the de facto barometer of economic- social - commercial progress and has transformed the entire world into one organized unit. It carries ideas of inventions to the people and has considerably contributed to the evolution of civilization*” (Mascarenhas Romeos, 2002).

3.2. Public Transport System

Public transportation systems mean and include a variety of transportation alternatives such as buses, train, light rail, flights, and subways which are available to and accessible by the general public, may require a charge or fare, and operates at scheduled times. The objective behind the introduction or expansion of the public transportation system is to enhance access to and usage of public transport modes while, simultaneously, reducing the volume of motor vehicle miles run and traffic congestion (Robert Wood Johnson Foundation, 2017). Public transport modes remain as the primary mode of transit among most of the population, and the public transport system in India is found to be a major partaker of the world's total public transport (Tiwari, 2007). An essential element in attaining sustainability's triple-bottom-line goals is an efficient public transport system. Several studies have proven the correlation between the efficient public transport system and the sustainable development of related regions (Too, L., & Earl, G., 2010). "Public transportation is defined as transportation by a conveyance that provides continuing general or special transportation to the public; excluding school buses, charter, and sightseeing service. Public transportation includes various modes such as buses, subways rail, trolleys, and ferry boats" (Tran & Kleiner, 2005). Public transportation is often a fixed route transit services continue to be much more efficient and beneficial systems of getting people from one place to another. (National Express Transit, 2017)

3.2.1 Importance of Public Transport

"A developed country is not a place where the poor have cars, It's where the rich use public transportation" (Gustavo Petro, 2006). Public transportation caters to the peoples' need for conveyance and access to employment, education, community resources and medical care in communities across the country. Public transportation serves those people who prefer to travel and those who do not have any other option to commute. Public transportation also helps to reduce traffic congestion, transit times, air and noise pollution, and energy and fuel consumption, and therefore benefits both

the commuters and the society (Davis, M, n.d; APTA, 2004). If transport is considered a catalyst of the economy, public transport is crucial in productivity and competitiveness maximisation. The economic importance of public transport is inferred from three main areas:

- i. The efficient linkage of wealth and labour to the market
- ii. The removal of productivity obstacles
- iii. Generating and maximising opportunities for individuals, business organisations and government to enhance income and capital appreciation. Public transportation is indispensable for ensuring economic connectivity, specifically in major urban areas. (TTF position paper, 2010)

The social importance of public transportation is inferred from the accessibility it gives to employment and occupation opportunities, education, health services and recreational amenities. By the provision of public access points to important people, goods and services, public transportation is a medium for social cohesiveness among diverse demographics in society. Public transportation also offers an alternate mode of transit to the users of a private vehicle and that will be important for reducing carbon emissions. Public transport is a much more suitable mode for aged commuters. So public transport significantly reduces the negative impacts of traffic congestion and carbon emissions and environmental pollution. (TTF position paper, 2010). Public transportation systems provide many benefits to individuals, society, and the local economy, but it never gets the sufficient attention that it deserves. While the mass attention is focused on profile stories of autonomous vehicles, cars, and motorbikes, and even discussing the benefits of such new vehicles model going to launch in near future. Beirao, G & Cabral, J. S. (2007) states 9 key benefits of public transportation while comparing it with the private/personal modes of usage

Table 3.1*Benefits of Public transport and limitation of private mode transit*

SL. No	Benefits of public transport modes	Limitation of private modes
1	Low cost of transit	Higher cost of transit
2	Less stress in transit	Difficulty in parking
3	No need for effort (to drive)	Cost of parking
4	Be able to relax	Stress on Driving
5	Be able to rest and read	Increased traffic
6	Lower pollution and carbon emission	Waste of time in a rush hour traffic
7	Sociability and cohesion	More air pollution and carbon emission
8	No worries about parking	More chances for accidents
9	Travel time on a bus line	Isolation

Source: (Beirao, G., & Cabral, J. S., 2007)

Apart from the said benefits lot of economic Opportunities are generated by Public Transportation. Each \$1 investment in public transport is paying back \$5 in economic returns. Each \$1 billion investment in public transportation generates approximately 50,000 jobs. Each \$10 million capital funding in public transport yields \$30 million of increased business sales. Each \$10 million operating capital funding yields \$32 million of increased business sales (APTA, 2020).

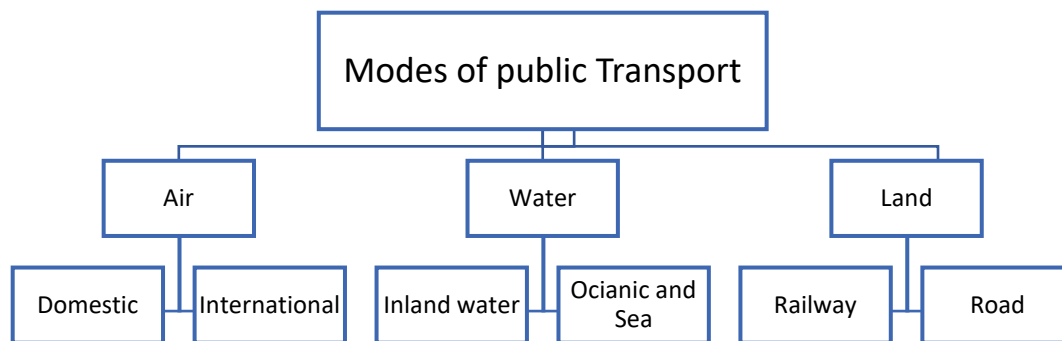
3.2.2 Public Transport Modes in India

Public transportation is the primary mode of mobility for the greater number of the Indian population. Globally, the Indian public transport system is well known for its most frequent and wide usage (Gajendran, A, 2013). The major modes of transportation such as land transport (rail and road), air transport and water transport were assigned with the provision of better physical connectivity and quicker as well as smother flow of passengers and goods and thereby performing as the arteries of the nation. Each of these modes has its own plus and minuses. Even now a small portion

of public transportation also undertaken by Non-Motorised Transport (NMT) modes in India. 'Tonga', 'Victoria', and Cycle rickshaws are examples. Apart from these, special transport modes like cable, pipeline etc., are used for exclusive transport of fuel, oils, gas etc.

Figure 3.1

Modes of Public Transport



- i. Air transport:* Air transport is the fastest, most prestigious, and most comfortable mode of conveyance and it has shortened distances by reducing travel time. It is indispensable for a big country like India, where distances between major towns and cities are relatively more and terrain and climatic conditions vary greatly. The Indian aviation industry was occupied by one national carrier, Air India, and private airline operators such as Indigo, Spice jet, Vistara, Air Asia India, Go Air, True Jet, Alliance Air and other domestic operators. There are 153 airports in India comprises of 29 international airports, 114 domestic airports and 10 customs airports (Airport Authority of India). At present, India has claimed as the third largest domestic market of air transport in the world.
- ii. Water transport:* Water transport is a cardinal mode of transport for both passenger and goods traffic in India. It is the cheapest, most fuel-efficient, and eco-friendly mode of transport mostly suitable for porting ponderous and bulky materials. India is endowed with an immense network of water transport in the form of rivers, natural and constructed canals, backwaters and relatively

a long coastline with fair accessibility to seas and oceans. It is the cheapest means of transport in India since it possesses the benefit of the natural track so that only less capital investment is required in respect of construction and maintenance. India has 14500 kilometres of inland waterways of which around 5700 kilometres are navigable by mechanized ships and boats (Economic Times,2019).

iii. Land Transport: Since the ancient period pathways and unmetalled roads have been used for carrying men and materials in India. Animal-pulled transport modes such as bullock carts, and horse carts, and men-pulled transport modes such as palanquin (called palluck in Kerala), and ricksha were widely used for transport at that time. Metalled roads and railways were developed with the economic and technological progress for the transportation of large volumes of goods and people across the country. Though a few minor transport modes such as pipelines, cables, and ropeways are in use for the transportation of goods and commodities, the major components of land transport are Rail transport and Road transport. The railway network of India is the fourth largest network in the world with a total route length of 68,000 km covering 7325 stations in India. Railways facilitate the transport of both goods and passengers and contribute to economic growth and development. IR runs 13169 passenger trains and 8479 freight wagons daily and on average IR carries 800 crores of passengers and 120 crore tonnes of freight in a year (Indian Railway Year Book, 2019-20). Indian railway was segregated and delegated into 16 railway zones and its rolling stock consists of 2,93,077 goods and freight wagons, 76,608 passenger-carrying coaches and 12,729 locomotives (IR Yearbook 2019-20). Railways carry passengers into two transit modes: Suburban rail service, and non-suburban services. Apart from these, India now witnessing an active and innovative role of another 'mode' in public transport, i.e., Metro Rail transport Services or Rapid rail services. At present, there are thirteen rapid transit rail systems which are popularly called 'metro' systems in 13 cities in the country and out of these the Delhi Metro is the largest network in the country which carries 2.8 million passengers per day (DMRCL- AR, 2021).

3.3 Road Transport in India.

Road transport plays a critical role in the economic progress of a country and is the major mode of transport when compared with the other modes. Road Transport is a vital infrastructure for the economic growth and development of the country and it greatly impacts the structure, velocity, and pattern of economic development. People travelling on the roadways are either pedestrians, or they use animal-pulled carts or non-motorised vehicle bicycles or men-pulled rickshas or they use motorised vehicles (automobiles) buses, lorries, cars, vans, trucks, or all kinds of descriptions for carrying themselves or their own or other's goods.

In India, road transport has been noted from the historic time of the great empires of the Guptas and the Mauryas who had constant conveyance with their outer dominions and nearby states. Such ambitious and successful rulers recognised the construction of roads as an administrative and public convenience necessity being a prime duty of Rulers. The continuation of this tradition was more evident from the abiding creations during the reign of the Pathan and the Mughals like the 'Grand Trunk Road' which remained as a monument of road transport and the prevalence of sizeable development of trade and commerce. The home trade and commerce of the country were dealt with considerably by those roads, supplemented by the river and coastal sea transport means. Carts and carriages pulled by human beings and packs of animals like donkeys, horses, elephants, yaks, and bullocks, of all kinds transported men and materials in large quantities and long distances, with a varying degree of economy, comfort, and efficiency. (Gadgil, et al. 1974).

Now, India has the second-largest road network in the world. The total length of road networks in India is 63.86 lakh kilometres which comprise National Highways, State Highways, Express Highways, Major and minor District Roads, villages, and other roads and annually it collectively carries about 85 per cent of total passengers and 70 per cent of total freight traffic in India. (Morth. nic.in, Annual Report 2020-21)

Table 3.2*India's Road Network on 2019*

Serial No.	Road Category	Length in Kms
1	National Highways	1,32,500
2	State Highways	1,86,528
3	District Roads	6,32,154
4	Rural Roads	45,35,511
5	Urban Roads	5,44,683
6	Project Roads	3,54,921
Total		63,86,297

(Source: Annual Report 2020-21, Ministry of Road Transport & Highways)

Though National Highways constitute only 2.07 per cent of the total length of the road network, carry 40 per cent of the total road traffic and State highways constitute 3.00 per cent. District roads account for 10.17 per cent of total road length. Around 73.00 per cent of the total road length of India comprises rural roads (including JRY) and the urban roads share is 8.76 per cent. Apart from these, NHAI, Government of India has taken two major projects in a phased manner: the Golden Quadrilateral project and NS and EW Corridor which comprises buildings of 5846 km 4/6 lane and 7716 km of road length respectively. The number of vehicle categories that occupied Indian roads in 2019 is tabulated below.

Table 3.3*Number of Vehicles on Indian roads in 2019*

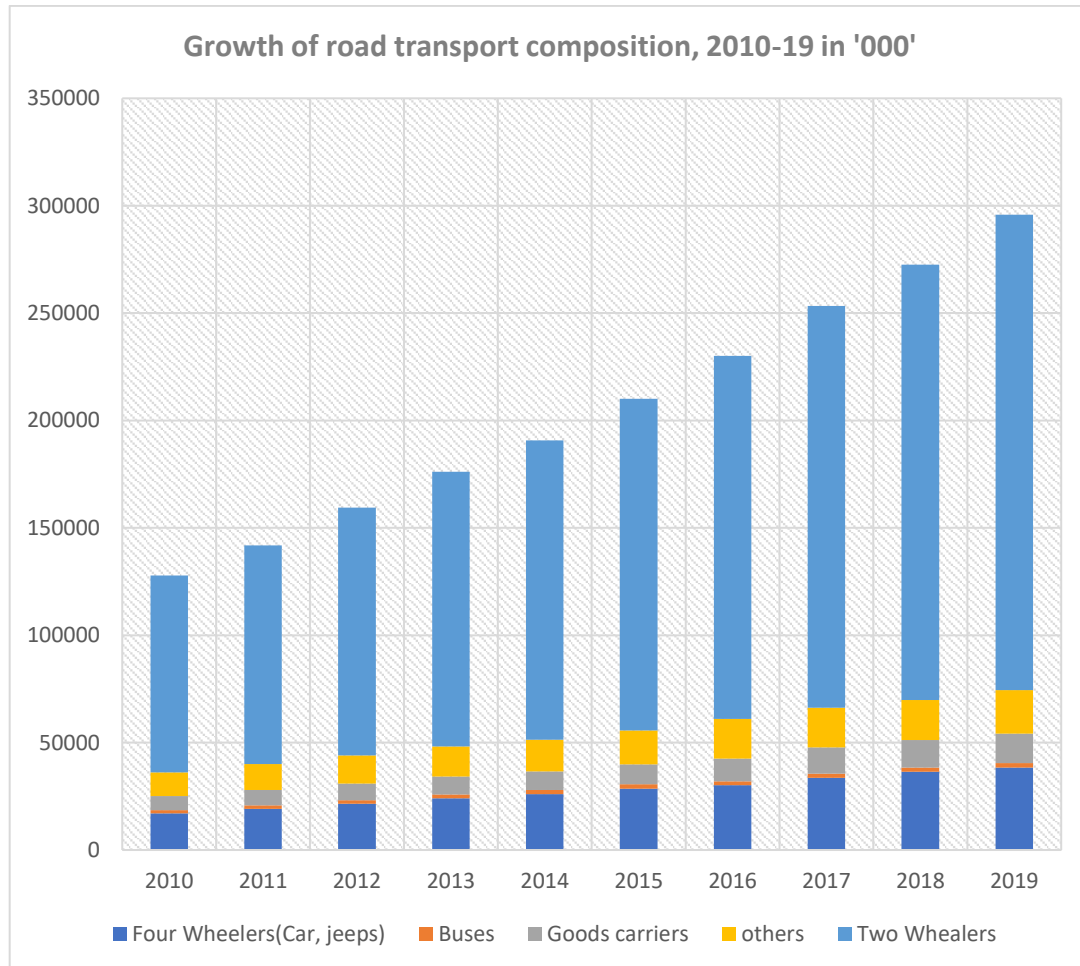
Serial. No	Vehicle Category	Numbers in '000'
1	Two-wheelers	221270
2	Car/jeeps/taxis	38433
3	Buses#	2049
4	Goods vehicles	13766
5	Others*	20254

(Source: Annual Report 2020-21, Ministry of Road Transport & Highways)

*Others include tractors, trailers, three-wheelers (passenger vehicles) / LMVs and other miscellaneous vehicles. # Including omnibuses.

Figure 3.2

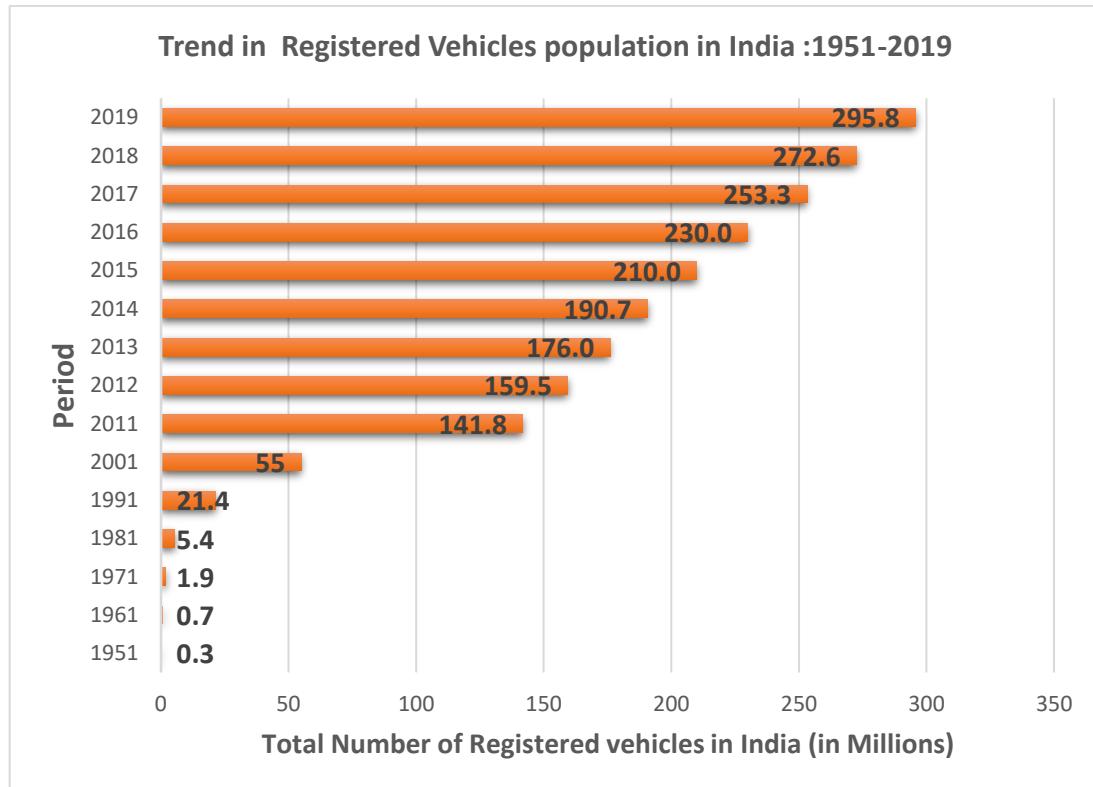
Growth of road transport composition in India, 2010-19 in '000'



The road vehicle population in India is largely dominated by personalised modes of transport mainly two-wheelers and four-wheelers (cars, jeeps, and taxis) which account for around 88 per cent of the total motor vehicle population in the country. Two-wheelers alone claim around 75 per cent of the vehicle composition. Private cars, jeeps and taxis stood at 13 per cent, buses at 0.7 per cent, goods vehicles at 4.65 per cent and other vehicles which include three-wheelers, trailers, tractors etc. at about 6.85 per cent, as of 31st March 2019.

Figure 3.3

Trend in Road Transport composition for the period 1951-2019 (in 'million')



(Source: MORTH Annual Report 2020-21)

India has experienced astounding growth in the registered vehicle population from 0.3 million in the year 1951 to 295.8 million in the year 2019. The registered vehicle composition in India raises at a CAGR (Compound Annual Growth Rate) of 9.91% between 2009 and 2019. During 2018-19, the growth rate of the number of registered motor vehicles in India was more than two times of CAGR (4.22) of the road network (latest data: MORTH, 2021)

3.3.1 Inherent Features of Road Transportation

- a. Road transportation provides door-to-door delivery of goods and services.
- b. It provides a very economical mode of cartage, loading and unloading.
- c. Road transportation sometimes may be the only means for carrying men and materials to and from interior or remote areas which are not accessible by other transport means such as rail, water, or airways.

- d. Movement of people and goods between small cities, towns and villages is possible only by road transport.
- e. Road transport requires only less capital investment for construction and operation and maintenance.
- f. Provides flexible and customised timing, routes, and services.
- g. Very suitable for short-distance travel.
- h. About the above point there are consequential merits such as minimum package cost, reduced time of risk, minimum operation cost etc.

However, road transportation also suffers its limitations. For example, compared to other transport modes road transport have more chances of accidents and breakdowns. So, motor transport is relatively less safe. Road transport is relatively less organised. Sometimes it seems to be irregular and undependable. Road transport rates and charges are often unstable and unequal. Comparatively speed of transit is lower and limited. Carrying heavy goods for a long distance is not at all safe and economic in road transport. (The Economic Times -E-paper, 20-05-2021)

3.4 Passenger Bus Transport

“Bus, any of a class of large, self-propelled, wheeled vehicles that are designed to carry passengers, generally on a fixed route” (Britannic.com). Sir Goldsworthy Gurney of the United Kingdom built a large stagecoach powered by a steam engine in 1830, which may have been the first motorised bus. In 1895, a four-horsepower single-cylinder engine powered an eight-passenger omnibus in Germany. Sightseeing companies in New York City operated the first buses in the United States. The basic evolution of the bus is given in the table below.

Table 3.4*Basic Evolution of Buses*

Year	Nature of Bus	Launched in
1662	Horses-drawn carriage developed by Blaise Pascal	France
1826	Horse-drawn omnibuses	France
1830s	Steam-powered Bus	UK
1882	Electric trolley buses (Trams)	USA
1895	The internal combustion engine, the motor bus developed by Karl Benz	France
1951	Rear-end engine bus developed by Mercedes Benz	USA
2010s	Hybrid, Fuel cell, Electric, ONG buses	USA

(Source: Eckermann, E, 2001)

The history of bus transport in India dates to 1922 when the first bus-shaped vehicle was launched in Calcutta. There upon many private parties were beginning to run buses in many places in India. The first motor bus service was operated on July 15, 1926, which ran between Afghan Church and Crawford Market in Mumbai and the fare for the trip was four ‘anna’ or 25 paise. It was greeted with enthusiasm by the public, just as the electric tram had been. The Mumbai bus, like the tram, set several records. The city had a diesel-powered bus, a double-decker bus, and an eight-foot-wide bus for the first time in India. Another fascinating aspect was that between 1928 and 1930, each bus had a letter box for the passengers' convenience as well as the postal service. Until the Bombay Electricity Supply and Transport (BEST) Company come up with motor bus services with buses, such services are affordable only for upper-middle-class people. After the operation of 18 months, the company’s buses stood at 242 buses and passengers carrying 38 lakhs.

By then a considerable number of passengers were attracted to city bus services. As per the solicitation of the Bombay Municipal Corporation, in 1934 company extended its operation into the northern part of Bombay. To cater for the growing commuting needs double tucker bus was introduced in the year 1937. While

a single-decker bus carried 36 passengers, a double-decker was able to carry 58 passengers. In 1947 Bombay Municipal Corporation took up the Company.

3.4.1 Passenger (Bus) Transport Evolution in India

Mechanised transport hit the Indian road in the year 1892 creating a paradigm shift in the commutation history of the country when the French-made motor vehicle was imported by Maharaja Rajinder Singh (The economic times, 2018). In the earlier period, the use of motor vehicles was considered a sign of luxury and novelty purely meant for rich people. The steady growth of the number of vehicles results in the enactment of various provincial Acts for the control and regulation of their registration and operation specially to safeguard the lives of pedestrians and other commuting people. Important milestones in the history of bus transport development in India were:

3.4.1.1 Indian Motor vehicle Act, 1914

It was in 1914, the first Indian Motor Vehicle Act was passed for dealing with operational control over vehicles. The fundamental growth in Indian road transport was traced to the beginning of the 1920s when surplus army vehicles were brought into the civil market. The vehicle growth was new-fangled and remarkable and at the end of that decade, there was found mushrooming of a considerable number of vehicle usage in different parts of the country. Large sprouts of private bus operation result in unfair competition and fare manipulation among these operators and a lot of legislative and administrative measures were implemented to curtail the evils of this unhealthy competition but it could not fetch any appreciable outcome. IMV Act 1914 could not confront the impetuous pressure and the then government was compelled to supplement the existing IMV Act with various provisions and rules to bring the transport operation within the clutches and to have rail-road coordination in passenger transport.

3.4.1.2 Mitchel-Kirkness Committee, 1932

The committee was constituted to study the feasibility of the 'Rail-Road Coordination' in India. Mitchel-Kirkness Committee observed that public service

motor transport is suffering from unemployment amongst buses and concentration of bus operation in the more popular routes. The committee advocated for a 'controlled monopoly' of bus operation to eliminate unlimited competition and to encourage enterprises to consider less popular routes. The Committee also prescribed for restriction of the number of buses on the route, provision of schedule, publication of bus fares and compulsory insurance of motor vehicles. The committee hope that these recommendations would create a framework for attaining better control over bus transport, ensuring better services to the public, and improving the business and economic status of transport enterprises.

3.4.1.3 Transport Advisory Council, 1935

In recognition of the inadequacy of the Motor Vehicle Act of 1914 to cope with the fast growth of motor transport, the Transport Advisory Council was appointed by the Government and the Council put forth the need for a coordinated transport system that pay sufficient attention to the interest of convenience of the public and have control over their operation and with definite power and authority for effective regulation of transport system.

3.4.1.4 Wedgewood Committee, 1937

Though the committee exclusively constituted for rail transport study and named as "Wedgewood Railway Enquiry Committee," the waves of that committee report also were explicit in the road transport sector. The committee strongly argued for the Road-Rail sector coordination for improving the economic and operational performance

3.4.1.5 The Motor Vehicles Act, 1939

Pursuing the recommendations of various relevant committees such as the Mitchel and Kirkness committee, Transport Advisory Committee, Wedgewood committee and Motor vehicle Insurance Committee (1936), Government has set up a comprehensive motor vehicle regulatory framework for having adequate control over motor transport operation in India including railways, known as 'The Motor Vehicle Act,1939'. This Act along with subsequent suitable amendments provides for the

establishment of Regional / State transport Authorities vested with ample power of issuing permits for the passenger as well as freight-carrying transport vehicles. The Act also prescribed the conditions regarding the bus routes, times schedule, vehicle maintenance standards etc., for the knowledge of permit holders. The Act of 1939 was a noteworthy piece of legislation in India in connection with passenger transport (Jain, 1988)

3.4.1.6 Sub-Committee on Transport, 1943

Sub-committee on Transport constituted as a part of the 'Post War Reconstruction Committee,' threw light on the urgency for regular and speedy, comfortable transport services in India. The report stated that transport operations are to be undertaken by large companies otherwise it will be a deadlock for small owners to meet the fast-growing transit requirements of the country.

3.4.1.7 Tripartite scheme, 1945

Transport sub-committee report recommendations (1943) were strongly backed by the Transport Advisory Council (1945) and the Post-war transport policy committee and these recommendations acted as a basic force for the government to think over the compulsion for organising large-size transport operators. Consequently, a scheme known as the 'Tripartite Scheme' was initiated and under this scheme joint stock companies were set up at the state level with 35 % shareholding each by the state government and railways and 30% by the bus operators of the concerned state. Having realised the potential of bus operation, the government has taken steps towards the elimination of private hands and the railway from the scene of bus transport operation scheme and to take strict measures to get strap on the bus transport operation in the country. This was the scenario that prevailed in India just before independence (unipune.ac.in).

3.4.1.8 Road Transport Act 1950.

Following the footfall of India's first industrial policy (1948), the Government passed an important bill in the Parliament, the Road Transport Corporation Act, 1950, to create public sector dominance in the field of road passenger transport. The RTC Act was enacted to entitle the State Governments to commence their transport

corporations with the defined corporate objectives such as: (1) To provide an efficient-adequate-economical and well-co-coordinated system of road and bus transport services. (2) To operate bus transport on business principles.

The enactment of the RTC Act empowered the state governments not only the role of regulator of road or bus transport in the states but also the role of the operator and operating alongside several other small operators of passenger transport in the concerned state. This created troubles since the prevailing Motor Vehicle Act (1939) did not recognise the initiatives of nationalisation and was not in a frame to discriminate between different operators (Ray, A. 2000).

3.4.1.9 Planning Commission, 1950.

Regarding the First Five Year Planning of India, the planning commission put forward an opinion that whatever the road transport services were operated by the state government, a specific corporation was required to be set up for more efficient transport management. As a result, more and more financial resources were pumped by the Government of India to heighten the performance of State Transport Undertakings towards an economic and efficient bus service. The second FYP document remarked on the inadequate progress of road transport in the previous period and recommended the feasibility of forming a joint stock company or Cooperative societies alike for pooling the effort and resources of small individual private bus operators who facing insufficiency of resources for transport operation. During the Seventh FYP, the planning commission pointed out that even if the operating performance of STUs has improved, the overall financial results were unpleasant and it is better to consolidate existing STUs.

3.4.1.10 Industrial policy, 1956

Industrial Policy Resolution, 1956 considered road transport as an important segment and included in the schedule B of listed industries and stated the role and scope of private operations to augment the efforts of the state governments. The STC Act, of 1950 was amended in 1956 and 1969 to insert chapter IVA to further monopolize and nationalize road transport in India. In the year 1977, GoI added chapter IVA to schedule IX of the constitution to add an addendum to the process of speedy nationalisation of road transport and the same resulted in granting of all India

(National) permit to public carriers, national level tourist buses and inter-state operating buses.

3.4.1.11 Private Sectors turn in passenger Transport, 1988

In the year 1984, The GOI constituted a working group to study and submit a proposal for a comprehensive restructuring of the existing Motor vehicle Act, and as a result, a new Motor Vehicle Act was passed in the parliament in 1988 and it was meant to liberalise the issue of a permit to any person at anywhere who had applied for the same and there was a ‘floodgate’ for permits. The Act of 1988 added Chapter V and Chapter VI for more stringent control over the operation of STUs and this was the juncture of a decrease in the role of public sectors and an increase in the participation of private sectors in passenger transport services. Some provisions of this Motor Vehicle Act were heavily criticized as at that time people preferred state-sector-nationalized buses for making long-distance travel (Sharma, S, 2019).

3.5 Bus Transport Nationalisation in India

Till the independence of India, the bus transport industry did not get due consideration and attraction. Before independence, the nationalisation of bus transport was mainly concentrated in some advanced states like Bombay, Travancore, Hyderabad etc (table 3.5). The first industrial policy resolution was put forth without stating a single word on the road transport sector. The initial bold attempt by freed India Government was the enactment of the Passenger Road Transport Corporation Act, 1948, which nationalised the whole passenger transport operation in India for providing more transport utility for the common man. Accordingly, the Bombay State RTC was incorporated in the year 1949. But the Bombay High court declared the Act of 1948 as “ultra-wires”. Even though there was a wave of nationalisation in the early 1950s, the bus transport system could not fetch its zone.

The RTC Act, 1948 was repealed by the GOI and enforced more comprehensive legislation known as the Road Transport Corporation Act, 1950. Under the provisions of the RTC Act 1950, four states such as Maharashtra, Haryana, Gujarat, and Sikkim opted for full nationalisation of their transport operations whereas all the other states permitted both public and private players to provide bus transport services in their states. As per the provision of the RTC Act, the total capital

requirements of the RTCs were shared between Central and concerned State governments in the ratio of 1:2 respectively. By 1960 number of operative RTCs stood at 28 and increased to 64 by 1990. At present, there are 56 state transport undertakings with proper reporting (Morth, 2021). The Road Transport Corporations Act, 1950 not only paved the way for monopoly but also provided the basis for Government ownership. The Government, therefore, became not only the regulator but also an operator, operating along with several other small operators (Padam, 1990).

Table 3.5

Pace of Nationalisation of Bus Transport before and after independence

<i>Year of establishment</i>	<i>STUs</i>
1932	Andhra Pradesh Transportation, Hyderabad; 27 buses
1938	State Transport Department, Trivandrum (Kerala); 60 buses
1942	Kutch State Road Transport Corporation, Bhuj, Bombay (merged with Gujarat); 77 buses
1947	State Transport Department, Madras; 30 buses Ahmedabad Municipal Transport, Ahmedabad; 60 buses + 1 goods vehicle BEST, Bombay; 456 buses
1948	State Transport, Assam; 98 buses + 99 goods vehicles + 13 trucks Bombay (Maharashtra) State Road Transport Corporation, Bombay; 35 buses Mysore Government Transport Department, Bangalore (Mysore); 120 buses State Transport Services, Cuttack (Orissa); 43 buses Punjab Transport Services, Chandigarh; 13 buses Uttar Pradesh Roadways, U. P.; 511 buses + 336 goods vehicles Calcutta State Transport Corporation, Calcutta (W. B.); 165 buses + 10 trucks Delhi Transport Undertaking, Delhi; 189 buses Bihar State Road Transport Corporation, Bihar; 4 buses + 1 truck
1949	Sourashtra State Road Transport Corporation, Rajkot, Bombay (merged with Gujarat); 78 buses Himachal Government Transport, Simla (H. P.); 52 buses + 55 goods vehicles
1950	Poona Municipal Transport Service, Poona (Bombay); 57 buses
1951	Orissa Road Transport Company Ltd., Berhampur (Orissa); 55 buses
1952	Madhya Bharat Roadways, Gwalior (M. P.); 249 buses Manipur State Transport, Imphal
1953	Provincial Transport Service, Nagpur (merged with Maharashtra); 102 buses Central Province Transport Services, Jabalpur (merged with M. P.); 129 buses Directorate of Transport, Jaipur (Abu Rajasthan); 12 buses + 3 goods vehicles + 4 trollies
1954	Jammu and Kashmir State Transport Corporation, J. & K.; 53 buses + 379 goods vehicles + 3 taxis
1955	Pepsu State Road Transport Corporation, Patiala (Punjab); 12 buses
1956	State Transport, Marathwada, Aurangabad, Bombay (merged with Maharashtra); 160 buses State Transport Service, Andaman & Nicobar Islands; 5 buses
1959	M. K. Road Transport Corporation, Mandi (H. P.); 56 buses
1960	North Bengal State Transport Corporation, Cooch Behar (W. B.) Gujarat State Road Transport Corporation, Ahmedabad; 1969 buses + 38 goods vehicles
1966	Haryana Government Transport Service, Chandigarh (Haryana); 485 buses Chandigarh Transport Undertaking, Chandigarh; 30 buses

(Source: Singh, S, K, (2017), *State Transport Undertakings in India: Status and Issues*, Table 1: *Formation of State Road Transport Undertakings*)

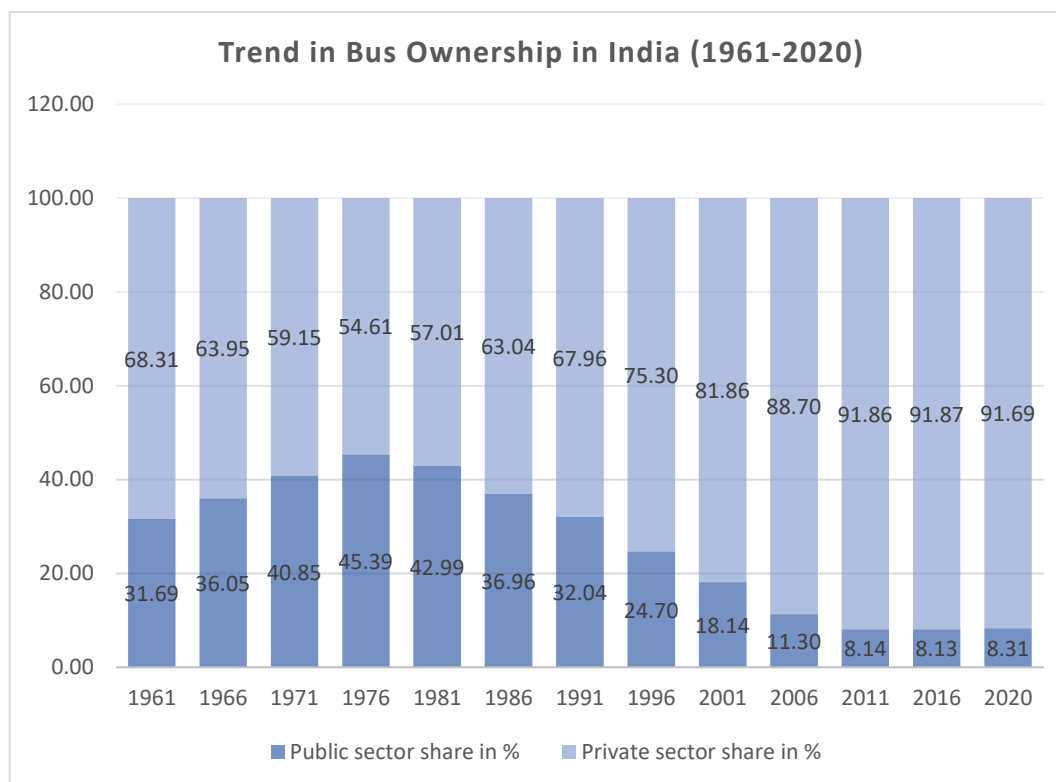
Almost all the expert committees constituted for studying the Indian transport industry opined that there should be a controlled monopoly in the transport sector in India to address the evils of the fragmented transport industry. The relevant arguments behind the nationalisation of the transport sector in India were:

- Providing transport service to profitable as well as non-profitable routes,
- implementing a stable and uniform fare system, coordinating the efforts of road authorities and bus operators,
- improving service quality in transport, enhancing intermodal coordination,
- Provide increased access to bus transport services and
- improving service and working conditions of the transport staff (Singh, S, K, 2017).

After the enactment of the RTC Act 1950, in the initial decades, the Indian government preferred a progressive nationalisation policy in passenger bus transport with greater involvement and as a result, the share of public sector ownership increased from 31.69 per cent (1961) to 40 per cent plus (1976 -1981). But that nationalisation frenzy slowed the 1980s. Like a nut on a cob, when the liberalization policy was introduced, the lion's share of public bus transport was lost. Presently, the claim of nationalised bus transport on the total bus transport operation in India is stood at only 8.31 per cent. However, there noted a slight increase in the last five years in the share of public sector transport, from 8.13 (2016) to 8.31(2020). Lack of market orientation and competitiveness may also be a factor for the downfall in the share of the nationalised transport sector.

Figure 3.4

Trend in the ownership pattern of Buses in India 1961-2020 (per cent)



(Source: Road Transport Year Book 2016-17& Morth Annual report 2020-21)

3.6 Bus Transport Organisational Forms in India

Realizing the large potential of public transport, every country has been injecting huge amounts into the transportation sector year after year. Since the development of public transportation infrastructure is costly, private investment interference is often crucial and considered effective in delivering the required services. Private players' involvement in public transportation infrastructure has generated positive output around the world. Rachel Kyte (the World Bank Expert) argued for the balancing of public good needs with the operation efficiency of the private sector, which fixes the key role of government in the public transport systems (Sivaraman, M, 2016). In India, bus transport services have been served by both the public sector and private sector operators of the country. In the year 2019, approximately 20 lakh buses were owned and operated collectively by the public and

private sectors in India. Out of the total bus holdings of the country, only 9 per cent belongs to public sector undertakings.

Since the independence of India, the bus transport sector has been organised as a mixed ownership pattern of public and private sectors. The bus transport industry is dominated by State Transport Undertakings (STUs) as private sector operations are highly scattered and fragmented. The STUs have been vested with special responsibility to give road passenger mobility due to their size and government ownership (Singh, S, K, 2017).

Table 3.6

Number of Buses owned by Public and Private Sector 1961-2020 (in '000')

Year	Public Sector	Private Sector	Total buses	Public sector share (%)	Private sector share (%)
1961	18.00	38.80	56.80	31.69	68.31
1966	26.50	47.00	73.50	36.05	63.95
1971	38.40	55.60	94.00	40.85	59.15
1976	52.20	62.80	115.00	45.39	54.61
1981	69.60	92.30	161.90	42.99	57.01
1986	84.00	143.30	227.30	36.96	63.04
1991	106.10	225.00	331.10	32.04	67.96
1996	111.10	338.70	449.80	24.70	75.30
2001	115.00	518.90	633.90	18.14	81.86
2006	112.10	879.90	992.00	11.30	88.70
2011	130.60	1473.20	1603.80	8.14	91.86
2016	142.90	1613.80	1756.70	8.13	91.87
2020	170.20*	1878.80*	2049.00*	8.31	91.69

**Include omnibuses, educational-purpose vehicles and other government-purpose vehicles. On November 2020, there are 62 public sector bus undertakings in India in which 56 reported STUs held 147029 buses.*

(Source: Road Transport Year Book 2016-17& Morth Annual report 2020-21)

3.6.1 Public Sector Transport Undertakings (STUs)

The Public Sector Bus Transport Undertakings in India were popularly known as ‘State Transport Undertakings’(STUs) Because, as per the provisions of the RTC Act 1950, the State governments must take initiatives to establish and operate public sector transport in India and more over the ‘Schedule B’ of Industrial resolutions of 1956 affirm that road transport as a “state subject”. All the STUs are not exclusively incorporated under the RTC Act 1950, some of them were established as Government Transport Companies (GTCs) under the Indian Companies Act 1956, Some were formed as Government Transport Departments (GTDs) and some others as Municipal Transport Department (MTDs). The Act Collectively named these undertakings as State Transport Undertakings (STUs). Though at present 62 STUs are existing in India, only 56 STUs are adhering to regularity in accounting and reporting. Out of these 26 are SRTCs, 10 are GTCs, and 8 each are GTDs and MTDs (ASRTU, Morth AR 2021). State Transport Undertakings based on their formation may be described below:

3.6.1.1 State Road Transport Corporations (SRTCs)

Transport corporations established under the RTC Act 1950 were the most popular type of transport organisations in India and this form of STUs is more attractive to the state governments as 1/3rd portion of the capital requirement of the corporations is funded by the Central government. Out of 56 STUs in India, 26 number belong to SRTCs and many of them were relatively very large transport undertakings carrying considerable passenger traffic through urban, rural, intra-state and interstate operations. Under the provisions of the RTC Act, the concerned State government has the power of controlling the operation and function of the SRTCs. Maharashtra RTC, Karnataka RTC, Gujarat RTC and Andhra Pradesh RTC are stood at the maximum number of passenger-carrying transport bus operators in India. The key characteristics of SRTCs are as below:

- i. Its full ownership is vested in the State Government.
- ii. It functions according to the power, duties and responsibilities stipulated in RTC Act.

- iii. State government has the power to appoint the MD and Board of Directors of the corporation.
- iv. It is a corporation with a separate legal entity and can frame policy, enter a contract, file suits, and carry on business in its name.
- v. Its employees are not civil servants though the corporation is wholly owned by the government. Employees are selected and paid as per the terms and conditions specifically laid down by the corporation.
- vi. It is usually relieved from most of the prohibiting and regulatory measures relating to public expenditure.
- vii. Generally, it is not subject to regular budgeting, accounting, auditing, and procedures applicable to government undertakings.
- viii. Comptroller & Auditor General of India who conducts accounts and regularity audit is the sole auditor of the corporation.
- ix. It is independently financed and as per the requirements, it may raise funds by borrowing through the treasury and accepting public deposits.
- x. Unless there is prior permission from the government, the corporation is not authorised to indulge in activities other than those related to passenger transport.

The list of 26 SRTCs who registered in the “Association of the State Road Transport Undertakings” (ASRTU) and their fleet size as on March 2018 is given below:

Table 3.7*Fleet Size of Reporting SRTCs in the year 2018*

Sl. No	Name of SRTC	No. of Buses
1	Andhra Pradesh State Road Transport Corporation (APSRTC)	12072
2	Assam State Transport Corporation (ASMSTC)	1067
3	Bangalore Metropolitan Transport Corporation (BMTC)	6270
4	Bihar State Road Transport Corporation (BSRTC)	223
5	Calcutta State Transport Corporation (CSTC)	773
6	Delhi Transport Corporation (DTC)	4168
7	Gujarat State Road Transport Corporation (GSRTC)	7863
8	Himachal Road Transport Corporation (HRTC)	3205
9	Jammu & Kashmir State Road Transport Corporation (JKSRTC)	529
10	Karnataka State Road Transport Corporation (KnSRTC)	8212
11	Kerala State Road Transport Corporation (KSRTC)	5869
12	Maharashtra State Road Transport Corporation (MSRTC)	18710
13	Meghalaya Transport Corporation (MEGTC)	52
14	North Bengal State Transport Corporation (NBSTC)	805
15	North Western Karnataka Road Transport Corporation (NWKnRTC)	4385
16	North Eastern Karnataka Road Transport Corporation (NEKnRTC)	4802
17	Orissa State Road Transport Corporation (OSRTC)	455
18	PEPSU Road Transport Corporation (PRTC)	1067
19	Rajasthan State Road Transport Corporation (RSRTC)	4635
20	South Bengal State Transport Corporation (SBSTC)	721
21	Telangana State Road Transport Corporation (TSRTC)	10415
22	Tripura Road Transport Corporation (TRPTC)	47
23	Uttar Pradesh State Road Transport Corporation (UPSRTC)	10780
24	Uttarakhand Transport Corporation (UTC)	1242
25	Puduchery Road Transport Corporation (PSRTC)	143
26	West Bengal Surface Transport Corporation	252

(Source: ASRTU,2019)

These twenty-six State Road Transport Companies and Corporations represent around 46 per cent of the reported SRTUs in India and they held 73 per cent of the cumulative fleet size of all SRTUs. They constitute 70 per cent of the performed passenger-km and staff size of the total SRTUs. SRTCs are the pulling factor of the financial performance of SRTUs in India as these 46 per cent part takers account for 71 per cent of the combined total cost and 63 per cent of the total losses of all SRTUs. Out of the 26 SRTCs in India only a few like APSRTC (Andhra Pradesh), GSRTC(Gujarat), RSRTC(Rajasthan), and UPSRTC (Uttar Pradesh) were maintaining consistent operational and financial performance (morth.nic.in, 2021)

3.6.1.2 Government Transport Companies (GTCs)

While most of the large-sized STUs were formed under the RTC Act, there are a few undertakings that have been registered under the Indian Companies Act. This form of STU was first introduced in Tamil Nadu. Government Transport Companies (GTCs) are the organisations that are incorporated u/s 617 of the Indian Companies Act, 1956 and in which the Central government or one or more state governments or both shall hold not less than fifty-one per cent shares. Since the government is the major shareholder, the controlling power of these companies is vested with the government. Now there are 13 (10 reporting) such companies in India and out of these, eight companies are functioning in one state, Tamil Nadu. The important features of Government Transport Companies are below:

- i. GTCs are body corporates registered under the Indian Companies Act 1956 and created by mere executive decision without any special charter.
- ii. It can file suits and be sued in its name.
- iii. GTC can enter contracts and transact in the properties in their name.
- iv. Bound by their own Memorandum of Association and Articles of Association.
- v. Under section 619 of the Companies Act, it is liable to file its audited financial statements, annual reports etc to the Registrar of Companies.
- vi. It is liable to pay tax on its income through regular IT returns.
- vii. It is exempted from the regular accounting and audit procedures to have adhered to government departments.
- viii. Except 'on deputation' their employees are not civil servants and their recruitment and personnel policies are subject to the Articles of Association.

Government Transport company form of STUs have been able to make a good impression and achieve healthy growth in Tamil Nadu as they have been acquired by the government from well-managed and profitable private sector companies and the

culture of private bus operation has been preserved. The following is the list of Government Transport companies (reported only) in the year 2018:

Table 3.8

GTCs (Reported) and their fleet size (number of buses held)

Sl. No	Name of GTC	Fleet Size
1	Kadamba Transport Company. Ltd (KDTCC)	536
2	Metropolitan Transport Corporation (MTC-CNI)	4002
3	PUNBUS	1209
4	State Express Transport Corpn. Ltd. (Tamil Nadu) (SETC -TN)	1184
5	Tamil Nadu State Transport Corpn. Ltd. (Coimbatore) (TNSTC - CBE)	3245
6	State Express Transport Corpn. Ltd. (Kumbakonam) (SETC -KUM)	3718
7	State Express Transport Corpn. Ltd. (Madurai) (SETC- MDU)	2583
8	State Express Transport Corpn. Ltd. (Salem) (SETC-SLM)	2222
9	State Express Transport Corpn. Ltd. (Villupuram) (SETC- VPM)	3578
10	State Express Transport Corpn. Ltd. (Tirunelveli) (SETC -TVL)	1881

(Source: ASRTU, 2019)

While analysing the operating and financial performance of STUs, GTCs are showing relatively good symptoms, especially in terms of vehicles as well as staff productivity. Out of the total operating and physical performance figures of all STUs in India, GTCs constitute about 16.20 per cent of fleet size, 19.13 per cent of staff size, and 25.39 per cent of passenger carrying capacity. As far as concerned with the performance of the reported GTCs, State Express Transport Corporation (TN) is found to be the most productive and Kadamba Transport Company Ltd (KDTCC-Goa) is found to be the least productive.

3.6.1.3 Departmental Transport Undertakings (DTUs)

DTUs are also called Government Transport Departments (GTDs). It is the oldest form of government undertaking. GTDs are created and function under the direct control of the government as an executive department. DTUs have a monopoly in the operation of specific urban and rural areas of some states. This kind of STUs

has been very popular in certain states like Punjab, Haryana, and some other north-eastern states. Now there are eight reporting departmental undertakings in India. The specific features of DTUs are as follows:

- i. They are financed by the state treasury by appropriation and their lion's portion of the revenue goes to treasuries.
- ii. These undertakings are subject to all accounts and audit, budget and control measures and procedures applicable to the government departments.
- iii. Permanent Employees of these undertakings are civil servants and recruited through the procedure applicable to government officers.
- iv. Since these undertakings have sovereign immunity like that of the state, no legal action can be initiated against it without the consent of the concerned government.
- v. Its entire activities are controlled by properly appointed administrative (cadre) officers of the concerned state.
- vi. The chance of misuse and misappropriation of the funds is lower as there exists a built-in internal check system.
- vii. These undertakings are usually formed as a major subdivision of one prominent department of the government with strict control by Department Chief or Head.

However, the lack of flexibility in operation, administrative red-tapism, inordinate delay and cumbersome procedures for getting finance forced them to convert themselves into corporate forms of STUs (Thomas, 2000). The list of departmental undertakings with their fleet size in 2018 is given below:

Table 3.9*Number of DTUs with Fleet size*

Sl. No	Name of DTUs	Fleet Size
1	State Transport Haryana (STHAR)	4145
2	State Transport Punjab (STPJB)	606
3	Chandigarh Transport Undertaking (CHNTU)	533
4	Nagaland State Transport (NGST)	223
5	Sikkim Nationalised Transport (SKNT)	122
6	Mizoram State Transport (MZST)	49
7	Andaman & Nicobar State Transport (ANST)	268
8	Arunachal Pradesh State Transport (APRST)	182

(Source: MoRTH, 2019)

While reading the recent years' figures regarding the STUs in India, the Departmental undertakings' operational and financial performance on average seems to be less than that of STUs created under the Companies Act and the Road Transport Corporation Act. As per the record of MORTH, the State Transport Haryana which held a greater number of buses also claims more staff and vehicle productivity compared to other DTUs. Though DTUs constitute about 14 per cent of total STUs, their fleet size, collective passenger carrying capacity, Staff size, revenue generation etc only less than 5 per cent (3 to 4.8 per cent) of total related figures of STUs DTUs account for 6 per cent loss of total STUs.

3.6.1.4 Municipal Transport Undertakings (MTUs)

Municipal transport undertaking is another type of public sector transport organisation with eight out of reported STUs having assumed this transport form in urban or municipal areas where the mobility of people mainly represents the standard of life of the people. These are urban transport undertakings managed by the 'Transport Committee' of the municipal Councils. In the wave of nationalisation of transportation, the role of the municipal councils in transport management reduced drastically and now MTUs are prevalent only in two states; Maharashtra and Gujarat. The main characteristics of MTUs are as follows:

- i. Its entire operation including policy formulation is controlled and managed by a municipal transport sub-committee constituted and elected by municipal members and this committee is headed by a member chairman.
- ii. They are lacking professional expertise as it is managed by elected members.
- iii. Their operational jurisdiction is limited to urban or city areas.
- iv. Their capital requirements are met only from the municipal budget allocation.
- v. Municipal commissioner from the state administrative cadre is acted as the executive head of the MTUs. The list of MTUs with their bus holdings in 2018 is given below:

Table 3.10

List of MTUs with their fleet size in numbers

Sl. No	Name of MTUs	Fleet Size
1	Brihan Mumbai Electric Supply & Transport Undertaking (BEST)	3844
2	Pune Mahamandal	2045
3	Ahmedabad Municipal Transport Service (AMTS)	910
4	Thane Municipal Transport Undertaking (TMTU)	393
5	Kolhapur Municipal Transport Undertaking (KMTU)	129
6	Navi Mumbai Municipal Transport (NMMT)	385
7	Solapur Municipal Transport Undertaking (SMTU)	203
8	Kalyan Dombivli Municipal Transport Undertakings (KADMTU)	170

(Source: MoRTH, 2019)

Municipal undertakings contribute around 14 per cent of the total reporting STUs and hold about 5 per cent of the total fleet strength. MTUs constitute 2 per cent of the total passenger kilometres performed by the STUs and 7 per cent of total staff strength. They are accounted for 5 per cent of total revenue but responsible for 11 per cent of losses of STUs in India. Out of the prevailing MTUs in India, except

Ahmedabad Municipal Transport Service (AMTS), all other MTUs belong to the State of Maharashtra. Around 90 per cent MTUs services belong to Maharashtra.

Apart from SRTCs, GTCs. Departmental undertakings and Municipal undertakings, there are 2 Associate members, Himachal Pradesh TDCL and DIMTS and 2 Special Purpose Vehicles undertakings, Meerut City TSL and Kanpur City TSL which altogether constitutes less than 2 per cent of the fleet number, negligible amount passenger carrying, only less than 400 staff size and responsible for around 2 per cent of the losses of reporting STUs.

Table 3.11

Profile of Operational performance of 56 STUs in India.

	2016-17	2017-18(P)*	2018-19(P)*	increase/ decrease% (2018/ 2017)	increase/ decrease% (2019/ 2018)
Physical Performance indicators					
Fleet held in numbers	135407	137175	136998	1.31	-0.13
Fleet operated in numbers	122653	123545	122836	0.73	-0.57
Fleet utilisation in %	89.72	90.06	89.66	-0.57	-0.45
Passenger KMs offered	8108592	8035745	7916786	-0.90	-1.48
Passenger KMs performed	5591694	5747537	5584156	2.79	-2.84
Occupancy Ratio in %	68.96	71.52	70.54	3.72	-1.38
Staff size in numbers	667368	653616	644533	-2.06	-1.39
Staff per Bus ratio	4.93	4.76	4.7	-3.32	-1.26
Staff productivity (Bus Kms/staff/day)	64	65.06	65.56	1.66	0.76
Vehicle productivity (KMs/Bus/day)	315.42	310	308.42	-1.72	-0.51
Financial performance indicators					
Total Revenue in Crore	51401.87	54534.5	59451.15	6.09	9.02
Total Cost in Crore	66155.68	71969.16	75356	8.79	4.71
Loss	14753.81	17434.66	15904.35	18.17	-8.77

(Source: Morth AR 2020-21) * Provisional.

In the year 2016-17, details of 56 reporting SRTUs are available. Details for the years 2017-18 and 2018-19 12 SRTUs furnished only provisional data till November 2020. The total loss accounted by the 44 STUs in 2017-18 and 2018-19 in respect of the reporting SRTUs was in the order Rs.17,434.66 crore (P*) in 2017-18 and Rs 15,904.85 crore in 2018-19. The total revenue gained by the reporting STUs was Rs. 54,534.50 crores in 2017-18 and Rs. 59,451.15 crores in 2018-19. Though there is an increase in the revenue earnings of the STUs, there is relatively a higher increase in the costs also reported and this is reflected in the loss per cent.

3.6.2 Private Sector Bus Transport in India.

Private bus transport services are an integral part of public transport by catering for the urban and rural mobility needs in India. Private buses carry more than 90 per cent of India's bus passengers and provide wide access to commuters irrespective of their areas. Private bus transport highly fragmented industry and scattered in various ownership forms like single ownership, partnership, trust, cooperatives, and private limited companies and each of which may own and operate one or two or many buses. Private bus transport mainly consists of 'Stage carriage' and 'Contract carriage' services. Stage Carriages are the buses that operate between stages (prefixed distance) picking up commuters on the way and collecting fares by issuing tickets. Contract carriages are buses that held all-India permits to carry passengers on a contract basis.

In India, there are 2000 plus private large and mid-fleet operators like VRL travels, Parveen travels, Neeta travels, SRS travels, Prasanna travels, Orange travels, National travels, Kallada travels, Jabbar travels, etc owns and operates 100 to 1000 buses and stiffly compete with STUs in intercity and interstate passenger traffic. Moreover, these giant private operators are facilitated by the s 'Bus Aggregators' like RedBUS, AbhiBus etc by massive ticket booking and other supporting services. Popular mid-fleet (10 to 100) bus operators are National Travels, Evacay Travels, Asian Xpress, Gujarat Travels, Kaveri Travels, Diwakar Travels, Hebron Travels, Verma Travels, Vivekananda travels, Raj Ratan Travels, PK Travels and many more.

Apart from these, there are lakhs of single-bus or double buses operators in India. The following figure shows the growth of private buses in India.

Figure 3.5

Growth of Private Sector Buses in India, 1960-2020

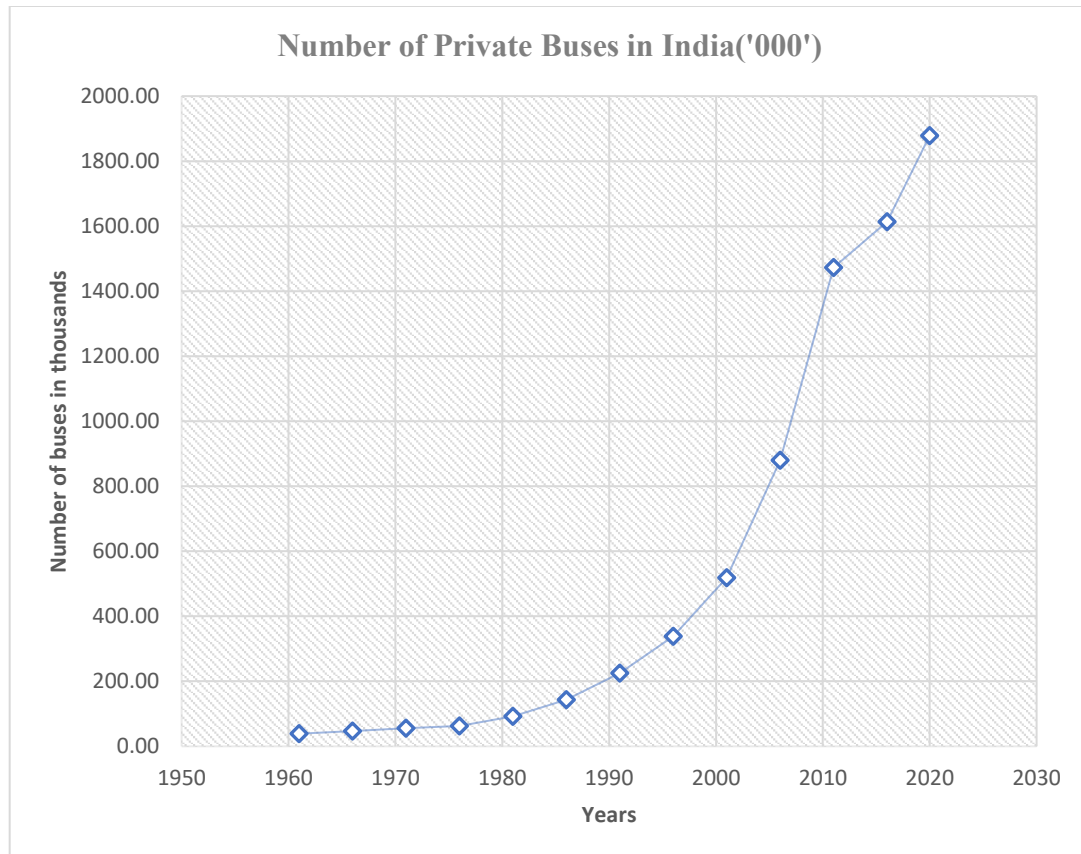


Figure 3.5 depicts the steep growth of private-sector buses since the end of 1980s. To enhance the supply of transport buses to meet the demand of a steadily growing number of passengers, road transport policy makers uphold to add momentum to the privately owned and managed passenger transport organizations. So, the privatization of passenger bus transportation will not only balance the ongoing transit demand but will also support the STUs by lowering the huge financial burden and facilitating the Central and State governments for optimum allocation and utilization of scarce resources (Sharma, S, 2019). The New Motor Vehicle Act of 1988 and the privatisation policy of the then government paved a smooth path for

private operators. As per the available data of the Ministry of Road Transport and Highway, the following Indian states hold more than one lakh private buses:

Table 3.12

States Names and Ranks in holding Private Buses.

Sl. No	Name of State	No. of Private buses*	Rank
1	Karnataka	200912	I
2	Kerala	111851	V
3	Madhya Pradesh	189118	II
4	Maharashtra	134163	IV
5	Rajasthan	104046	VI
6	Tamilnadu	185006	III
7	Utter Pradesh	100850	VII

(Source: Morth.ac.in)

* Consist of stage carriages, contract carriages, and educational and other institutional buses.

It is noteworthy that while public sector buses are struggling for survival, most private buses are making good profits and growing well. Though private operators offer a wide range of bus services from luxury (Volvo, Benz, Ashok Leyland, Tata, and Scania multi-axile luxury buses) to ordinary services to urban as well as rural communities, they are often blamed for their unregulated bus fares, improper pick-up, changes in drop-off points, staff misbehaviour, poor vehicle condition, unnecessary halt for luggage loading and unloading etc.

3.7. Regulatory and Institutional Framework for Bus Transport.

In India, the road transportation industry is severely fragmented institutionally, not just between the three tiers of government but also across institutions. In connection with road transport, generally central government forms and executes its policies and regulations through various Acts like the Motor Vehicle Act 1988, the RTC Act 1950, the National Highway Authority Act 1988, the Carriages by Road Act 2007 etc and various intuitions like Ministry of Road Transport and Highways, Ministry of Finance, SRTCs, City Development Authorities,

Traffic and pollution control authorities etc. Concerned State governments must look over the bus transport of the states, rural road conditions, urban transport, and intercity bus services. the responsibility of arranging infrastructure support like bus stands and allied facilities of bus transport lies with the concerned city governments or development authorities. It should be noted that the responsibility of these intuitions is not absolute but joint and several. Their development plans and agenda are superintended by the NITI Aayog, which draws up sectoral targets and stimulates the bus transport sector to grow in the needed direction. A bird's eye view of Institutions involved in the planning and regulation of bus transport services at different levels in India is given in the table below:

Table 3.13*Institutional/ Regulatory Frame of Bus Transport in India*

Level	Sl. No.	Institutions	Key Role
National level	I	Ministries	
		A. Core Ministries (Direct Control)	
	1	Ministry of Road Transport & Highways	a. Formulate Road transport policies
	2	Ministry of Urban Development-Urban Transport	b. Promoting Road Transport development programme
		B. Other Ministries (indirect Control)	
	3	Ministry of Finance	c. Fund assistance to state and regional governments
	4	Ministry of Environment and Forest	d. Setting up standards and guidelines
	5	Ministry of Petroleum and Natural Gas	e. Coordinating various stakeholders of bus transport
		C. Special Institutions	
	7	National Highway Authority of India	f. Appraisal of the progress of Bus transport
	8	National Rural Road Development Authority	g. Timely monitoring of the bus transport operations
	9	Central Pollution Control Board	
	II	NITI Ayog	Assess nation's road transport needs and available resources, prepare FYP for successful development of transport system

Level	Sl. No.	Institutions	Key Role
State Level	III	State Transport Department and Regional Transport Offices	Vehicle licencing and Registration, Road Tax collection and following emission norms etc.
	IV	State Transport Undertakings (STUs)	Providing inter/ intra-city/state transport bus services
	V	Pollution Control Board	Enforcement of emission norms
	VI	Finance Departments	Budget allocation, tax collection etc.
	VII	Traffic Police	Enforcement of traffic rules
City /District/ Regional Level	VIII	Municipal Government/ Corporation or City Public works Departments	construction and maintenance of bus stands and supporting infrastructure
	IX	City/Town Development Authority	Town Planning functions
	X	City Bus Corporations/ SPVs	Planning and Management of concerned bus services

(Source: TERI, Green Growth Background paper, 2015)

3.8 Recent Promising Trends in Bus Transport in India

Extreme carbon emissions, complex traffic jams, self-driving stressors, and financial considerations have driven people in many developed countries to rely on public transportation, especially bus transport. As part of this, there have been some radical changes in global bus transportation and some of its ripples have been felt in India as well. The recent and innovative trends in bus transportation in India were:

3.8.1 Bus Rapid Transit System (BRTS)

Bus Rapid Transit System (BRTS) is a high-quality bus-based transport service that provides very fast, comfortable, and cost-effective bus services with metro-like capabilities. It carries out such services through the facilities such as dedicated bus lanes, busways and unique bus stations typically arranged to the middle of the road, fast and frequent runs, off-board fare collection etc. As BRTS has features resembling light rail or metro rail, it is highly reliable, convenient, and far faster than usual bus transit and it can avoid traffic delays and unnecessary queues for fare payment on board.

The first BRTS is 'Rainbow BRTS' introduced in 2006, operating between Pune and Pimpri, Maharashtra and followed by Delhi BRTS in 2008 but defunct now. Ahmadabad, the seventh largest city of our country began BRTS operation in the year 2009 under the name 'Jan Marg' is the best BRTS in India and now it has 2 lakhs daily passenger base, with around 500 buses and 168 bus stations (INAE Report, 2020). Nowadays 14 BRTS are functioning in India and 8 BRTS in projects in progress.

3.8.2 Integrated Multi-Model Transit system (IMMTS)

Megacities in India experiencing an increasing demand and supply gap in public transportation. IMMTs are a solution to meet this ever-growing transit gap. The objective of the integrated multi-modal transport system is to foster the development of the various transport modes in a manner that will lead to the realization of an efficient, sustainable, safe and balanced transport system, where each mode of transport operates in its field of economy and usefulness, with competitive and non-discriminatory prices that are adequate to support the progressive development of transport infrastructure and service (Planning Commission, 2001). IMMTS is a combined system and management of transit considerations like transfer time, waiting time, unabated travel, etc are in top priorities. A commuter can choose any combination of various public transit modes like a bus route, rail, metro, light rail, suburban rail, waterways etc according to his time, cost, comfort, connectivity and destination points.

The Delhi Government has developed an IMMTs project by considering various modes like Bus Transit (HCBS), Mono Rail, Light Rail, Metro rail etc and the project is approved by the Cabinet for phased implementation in 2020-21. While increased accessibility of transport modes, cost and time saving, more safety, and raise productivity are promising benefits to commuters, service gap filling, lower cost of operation, optimum inventory utilisation, increased market and potentials are benefits to the transport operators.

3.8.3 Sustainable Transportation (SUSTRANs)

The high demand for the fossil fuel has led the transportation sector to the third most Green House Gas emitting sector in India, in which the most contributor is road transportation which emits 94.5% of CO₂ and 53.3% of CO (Singh, et. al., 2018). Sustainable Transportation means any mode of transport that is ‘green’ and less harmful to the environment. Sustainable transportation is also meant to balance the present and future transportation needs. Examples of SUSTRAN transportation consist of using green vehicles, walking, cycling, carpooling etc. E-Buses and Green buses have been introduced in the Indian bus transport sector as part of embracing Sustainable Transportation. Electric buses (E-Bus) attach many values to Indian bus transportation as these are more efficient and reliable, cost-effective, cleaner, and quieter. It is estimated by 2030, four out of ten buses on Indian roads could be electric and as a stepping stone the GoI has already allocated 35.45 billion rupees as an incentive for the adoption of 7000 plus e-buses.

The Government of India introduced “The Green Bus project” in 2014 in Nagpur with the start of its first ethanol-run and environment-friendly public bus. The green bus emits relatively less carbon dioxide its effect of emissions was monitored by the GOI, Maharashtra State government along with Nagpur Municipal Corporation. The manufacturer of the green buses, ‘Scania’ company additionally brought BS-5 engines for these buses for further mitigation of carbon emission. The Sustainable Transport Solutions (STS), SPV operates green buses as stage carriages with the affordable fare for all. A conflict related to GST, this green bus operation met some difficulties in 2018. The first electric bus in India was launched in 2014 at Bengaluru but the first intercity electricity bus was operated on the Mumbai-Pune route in the year 2019. In 2016, the 100 per cent Indian-made electric buses with a carrying capacity of a maximum of 65 persons, were built by Ashok Leyland. Though the operating electric buses in India are limited to a few hundred, a scalable portion of commuters of major cities like Delhi, Mumbai, Bengaluru, Pune, Hyderabad etc is experiencing the service value of e-buses. Under phase II of “Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India [FAME],” the Delhi

Transport Corporation (DTC) going to induct 300 Fully Electric AC low-floor buses in 2021 onwards and that will be the biggest employment of electric buses by any Indian STUs. As a part of the 'Go Electric Campaign', RK Singh, the Power Minister of India has recently announced the proposal of launching the 'Hydrogen Fuel' Bus Service from Delhi to Jaipur. To boost green transport, National Thermal Power Corporation Limited is assigned the task of operating these intercity bus services.

3.8.4 Advanced Public Transport Information System (APTIS)

Advanced Public Transport Information System (APTIS) is the application of advanced technologies like Global Positioning System (GPS) in public transport systems for monitoring the route of vehicles and bus operation frequency to reduce the commuters' waiting time and related frustration and dissatisfaction. Under this Bus Tracking system, there are display boards of high-quality LEDs in broad view angles are provided with the bus waiting points and hence commuters can see the information relating to bus location and timing. It displays the number and destination of the approaching bus, the expected time of arrival and messages of public interest (Lalitha, et. al., 2010). Last few years, public bus transport systems in Chennai, Indore, Bangalore etc utilising this GPS vehicle tracking system to enhance their customer satisfaction and service quality. Mysore intelligent Transport (MITRA) is a noteworthy example of the application of APTIS for the improvement of transport bus services.

3.8.5 Hop On -Hop Off Bus services (Ho-Ho)

These are a type of tourist/ sightseeing buses that keep to a stipulated circular route (loop model) with a fixed number of stops through a city or towns and that accept a fixed sum fare and allow passengers unlimited seamless transit for a day or other period like a week or month with the freedom to get in or get down at any bus stop and reboard another to continue their journey. The National Capital City was the first city that launched (2010) Ho-Ho Bus services with one-day/ two-day single fare and the system was followed by Hyderabad in the year 2015. Now, many towns and cities, and tourist places started Ho-Ho bus services to provide transit flexibility to tourists and other commuters. Kerala RTC is proposed launch Ho-Ho bus services

with one-day tickets in Trivandrum City by the end of July 2021(24 News Kerala, 03/06/2021).

Besides, as a part of the Intelligent Transport System (ITS) lot of other innovations are brought to the Indian transport sector. Electronic Toll Collection System (FASTag), Advanced Parking Management System (APMS), Travel Demand Management System (TDMS), Realtime Incident Warning System (RTIWS), Remote Traffic Control System (RTCS), Traffic violation detection and punishment System (Interceptor) are some major concepts appreciably influencing urban bus transport efficiency.

3.9. Passenger Bus Transport Services in Kerala

Public passenger bus transport services were well organized and predominant in Kerala state (Praveen MV et al, 2022). Kerala is famous for its scenic beauty and cultural diversity. A wide and well-connected network of roads ensures that this diversity does not hamper the convenience of local commuters and tourists. Due to the state's geographical features, relatively low rural-urban divide and scattered habitations, bus transport has gained widespread acceptance in Kerala. Kerala has a public-private partnership bus transport system to meet the travel needs of the people. State-owned KSRTC services and privately owned bus services work hand in hand to meet these transport needs. A brief account of the public bus transport components is given here.

3.9.1. State-Owned Bus Services-KSRTC

Kerala State Road Transport Corporation (KSRTC), a public sector undertaking, is one of the oldest state-owned bus undertakings in India and one among the pride and nostalgia in the minds of Keralites. The nickname of KSRTC then and now is 'Anavandi' and such a name must have come from the presence of government-stamped buses with the image of elephants. There will be no Keralites who have never travelled by KSRTC bus at least once in their life. These transport buses are a lifeline for many as they connect isolated and remote villages with towns, and the eastern hill regions, which lacks railway accessibility, to the cities.

3.9.1.1 Brief His Highness Story of KSRTC

The State or government-owned bus journey in Kerala was born in 1938, the then King of Travancore, Sri Chithira Thirunal Balarama Varma, started a bus service called the Travancore State Transport Department (TSTD) on February 21, 1938, at Thiruvananthapuram to ensure convenient transportation for his subjects. Shri Chithira Thirunal Balarama Varma was enthralled by the public transport seen in London during his European tour. At that time water transport was the main reliance in Travancore and Kochi. Some motor vehicles were driven for public transport on the cement road between Thiruvananthapuram and Kanyakumari and in the city of Thiruvananthapuram. The idea of starting a government-owned bus service at a reasonable rate was born when the Raja received several complaints about the exorbitant fares of private operators.

On September 20, 1937, a royal proclamation was made appointing Salter, the then Assistant Operating Superintendent of the London Passenger Transport Board who had arrived in Thiruvananthapuram, as Superintendent of the Travancore Transport Department. As per the recommendation of Salter, 60 chassis of 'Comet Company' with inbuilt Perkins's diesel engines were imported from England. The body was built by mechanical staff under the guidance of Salter. First, the experiment was carried out by driving a bus designed by Salter. With that success, in that model, the body was built on top of the chassis with native wooden items under the supervision of Salter. Iron plates and bolts were purchased from Bombay. The glass for the windows of the bus was brought from England. The first service was from Thiruvananthapuram to Kanyakumari. The Maharaja and his relatives were the passengers on the inaugural journey and EG Salter was the driver of that voyage. The first bus had 23 seats covered in leather. The first fare was 'half chakra' which would have cost at least 150 rupees today. This is to say, in the early days, the fare was very high.

The private vehicle drivers who lost jobs due to the Thiruvananthapuram-Kanyakumari route nationalisation were selected for the Travancore State Transport Department and the conductors were selected from reasonably educated people. It was

Salter who directly indulged in the selection process of the crew. With the selection of over 100 graduates as inspectors and departmental officers, the public bus is ready to run. When it started, the spit smoke became a sign of the development of the state. Salter pulled first gear into the new mobility history of the state as well as the country and the people cheered and applauded the mass entry of thirty-two buses with the saloon body had an entrance at the back, a passageway in the middle, and two leather-covered seats at the front. The bus was allowed to carry 23 people. The fare and schedule of bus services on each route were displayed at every public corner for public attention.

The bus fare was half chakra per mile, and that was the minimum fare too. For first-class tickets 50% additional fare was charged and in the case of children below three years no charges if they are not occupying seats. Only 50 % of fares are charged to children between 3 to 14 ages. There was no special charge for the luggage of those who travel by fare. However, a parcel bus was run separately and the luggage is charged up to six chakras if they are above 28 pounds. The official records show that these buses gained huge profits for the government in the early years and a portion of the profit was utilised even to energize other transport modes like water transport. By the time the travel revolution in Travancore spread to Kochi and Malabar, the princely states had disappeared. The service extended to Kochi in 1949 and to Malabar after the formation of Kerala in 1956. Following the enactment of the Road Transport Corporation Act in 1950, the KSRTC Rules (Section 44) were enacted in 1965. The department became an autonomous body on April 1, 1965. Thus, the Kerala State Road Transport Corporation was established on 15th March 1965 by notification of the Government of Kerala.

3.9.1.2 Various services of KSRTC

KSRTC provides various types of bus services to cater for the travel requirements of commuters.

- The Ordinary services are common services that run short distances.

- Fast Passenger services are used for long-distance services. These have fewer stops than the Ordinary. Limited stop services, Town to Town (TT) bus services are among the fastest.
- Superfast bus service is a service for long distances and has stoppage points only in major towns.
- The point-to-point services launched by KSRTC in Thiruvananthapuram and Wayanad districts are known as 'Rajdhani'. Rajdhani buses are available in dark yellow and various colours. Today such services have become the regular colour of KSRTC.
- Green super-class buses belong to the category of Super Express. Super deluxe buses are white long-distance services. Deluxe buses also ply under the name 'Sabari.' Sabari entered the arena as Sabarimala Special Services during the 2016 constituency. That is why they are called Sabari. The live design of these buses includes the image of Ayyappan's vehicle, the tiger.
- Minnal Service is aimed at getting passengers to their destination faster than trains by incorporating better travel facilities.
- Scania and Volvo are KSRTC's top bus services. Garuda buses are also known as Garuda Maharaja and Volvo buses are known as Garuda King Class.
- 'Vestibule' is a bus that looks like a train compartment and KSRTC has only one bus in this category. The service is operated on the Attingal-East Fort route.
- JJNNURM are modern buses sanctioned by the Central Government. They run in AC and non-AC categories.
- Kannur Deluxe is the oldest super deluxe service in KSRTC. The Thiruvananthapuram-Kannur service was started in 1967 and was flagged off by the then Transport Minister Impichibawa.

- Double-decker bus services are familiar only in Thiruvananthapuram and Ernakulam and the first double-decker service in Kerala was in 1955 at Thiruvananthapuram.
- Minibus services were introduced by KSRTC to operate on narrow roads and short distances.

Apart from these services KSRTC bus services also ply under various key names such as ‘Malabar,’ ‘Venad’ ‘Chunk Bus,’ ‘Sandesha tahini, Hi-tech’, ‘Japthi Vehicles etc.

That being the case, the present condition of the KSRTC is a bit bad. The corporation is in a huge debt trap. The growth of KSRTC was hampered by the lack of long-term plans and the adoption of unscientific policies and procedures. KSRTC is always proud of Keralites, despite its shortcomings and indebtedness. KSRTC will be at the forefront of helping everyone in emergencies. It is clear from the occasions of floods, Hartals, the COVID-19 pandemic etc. The KSRTC is still running at a loss and at the same time gaining more favour from the people.

Table 3.14

Performance Indicators of KSRTC for the last 5 years (2016-17 to 2020-21)

Sl. No	Indicators	2016-17	2017-18	2018-19	2019-20	2020-21
1	Average Fleet held	5953	5636	5690	5488	5483
2	Average Fleet operated	5795	5435	4548	4153	1842
3	Average Age of fleet	7	7	10	10	9
4	Overaged Vehicles	259	54	17	43	156
5	Staff Strength	35083	35002	31844	29148	28089
6	Staff -Bus Ratio	6	6	6	5	5
7	Fuel efficiency (HSD/Km)	4	5	4	4	4
8	Average Occupancy bus/month	750	535	574	603	67
9	Gross Revenue (Rs. in Crore)	1827	2006	2277	2053	629

Sl. No	Indicators	2016-17	2017-18	2018-19	2019-20	2020-21
10	Gross Expenses (Rs. in Crore)	2368	2621	2554	2500	1546
11	Gross operating loss (Rs. In Crore) *	540	615	277	447	917
12	Number of schedules operated	4737	4688	5024	4153	1837
13	Average Earning per bus per day (in Rs)	10925	11892	13450	13521	9265
14	Average Earnings per kilometre (in Rs)	32	34	22	22	26
15	Average kilometres run by bus per day	339	343	334	356	288
16	Passenger carried (in lakh)	10414	10593	9524	9314	2418
17	Average Earning per passenger (in Rs.)	26	22	23	20	18

*Excess of Gross expenses over Gross revenue
(Source: Kerala, Economic Review, 2021)

Covid-19 has affected the financial situation of KSRTC. KSRTC's total revenue has declined to Rs 628.62 crore in 2020-21 from Rs 2,245.60 crore in the just preceding year. The revenue expenditure in the financial year 2020-21 was Rs 1,546.20 crore as compared to Rs 3,449.66 crore in 2019-20 and this has resulted in a doubling of its operating loss. In pre-covid pandemic days, KSRTC's daily average collection was nearly Rs 6.30 crore and the monthly average revenue was nearly Rs 190.00 crore. The first wave of covid-19 pandemic and the ongoing lockdowns disrupted the situation and its revenue down and expenditure rose sharply (Economic Review, 2021).

As part of the duty reforms, the corporation has cut around 450 schedules and 8000 employees in the last 5 years. KSRTC was the largest employer in the state and had close to 35,000 employees, now (2022) has only about 26,000 employees. The Corporation proposes to reduce the number of employees by around 20000 through the new 'single duty' reform (Ajeeshraj, B., 2022).

Despite the loss, KSRTC is gradually changing its face. Plans have been proposed to convert 1000 diesel buses to CNG/LNG and the remaining buses will be converted to CNG continuously. It also has a proposal to purchase new electric buses in the next few years and all these efforts will reduce the degree of air pollution and amount of fuel consumption to a great extent. Modernisation of workshops and re-engineering towards 'e-office' is also under an expedited process.

3.9.1.3 New Initiatives of KSRTC

As mentioned earlier, KSRTC has been conducting many experiments to hold on when it falls from loss to lose. Most of it is designed to retain existing passengers and attract new passenger segments. But only bond services and budget tourism services are only holding the clutch. A brief account of important new initiatives of KSRTC is given here.

i. E-Buses

The KSRTC has recently taken several steps to overcome the financial burden. Out of those, the electric buses have been found successful, so the corporation is planning to extend that service. The corporation flagged off 5 number of inter-states, air-conditioned multi-axle buses taken on a wet-lease basis from a private company in November 2017, signalling a strategic shift in operations. Scania Metrolink buses have carried passengers to major cities like Bengaluru, Chennai, Mangalore, etc, in the neighbour states. As a first step, 10 buses were put on the road. Then 15 buses were added. The speciality of such services is that, apart from letting the vehicles, the lessor company itself will bear the driver's wages, maintenance, taxes, cleaning etc. Only the conductor's wages and fuel (electricity) charges need to be borne by KSRTC.

ii. CNG Buses

KSRTC to convert its buses to CNG in the wake of fuel price hikes and increasing air pollution. There is an active move to install CNG engines in diesel buses which are nearing expiry. While buying new CNG buses cost 65 lakh rupees per bus, the cost of installing new CNG engines on old diesel buses is only one-tenth of that (Vishnu, K.,2022) If the trial is successful, installation of CNG engines in old

diesel buses will be extended. As a first phase, at least 100 buses are expected to be converted to a CNG system.

iii. Safe Stay

A new initiative by the Kerala State Road Transport Corporation (KSRTC) is bringing cheers to women commuters who must avoid travel due to lack of safe accommodation at night. The 'Safe Stay' scheme aims to provide low-cost and safe shelters at 44 KSRTC depots across the state. The new initiative ends the hardships of women commuters related to overnight stays and at the same time, KSRTC earns more profit through this initiative.

iv. Bus on Demand (BOND) services

KSRTC introduced 'Bus on Demand' (BOND) services to make it more commuter-friendly, picking up passengers and dropping them off at their office steps. The service offers work-related travel with colleagues or peer groups. Bond services were introduced during the Covid pandemic and achieved good results in some districts like Ernakulam, Kozhikode, Thiruvananthapuram etc. With the launch of the bond service, the corporation is targeting public and private sector employees who commute long distances to their offices in their vehicles, especially two-wheelers. The main facilities offered by KSRTC to the BOND passengers are:

- Ensured seats for each passenger.
- Passengers can alight and board in front of their offices.
- Parking facilities for two-wheelers in each depot.
- Flexible advance ticketing ranging from 5 days to 25 days.
- Insurance cover for passengers.
- Complete sanitization of vehicles.
- A separate WhatsApp group for providing updates.

v. City Circular Services

It is a dedicated urban bus operation with a unique brand. With the launch of “City Circular” services in Trivandrum, KSRTC operates 90 bus service at a headway of ten minutes connecting all the core places not covered by bus service earlier. City Circulars buses have the features of a unique brand with unique graphics and colour. Initially, Thiruvananthapuram runs 7 city circular routes in which each route is featured in seven different colours. In the next phase, radial routes are also planned to strengthen travel across the city.

vi. Tourism-linked Services

The 'Budget tourism' services and "Ho-Ho" services are two projects conceived by KSRTC to monetize a portion of the benefits of tourist attractions in Kerala. The Corporation now operates many bus services to various tourists and religious destinations across Kerala. Under the budget tourism services, KSRTC operates 29 route services to tourist destinations like Munnar, Malakkappara, Nilambur, Vagaman, Wayanad etc. The budget tourism services have indeed been able to attract a good number of tourism travellers and thereby earn a good share of the revenue.

Hop-on/hop-off (Ho-Ho) bus services are much more popular in Urban cities like Delhi. Such services were introduced by KSRTC in 2013, but the project had to be abandoned due to its failure to popularise the scheme. Again in 2021, the Ho-Ho bus service scheme was re-launched shortly after the Corporation's 'Heritage City Tourism' introduction at Trivandrum using two double-decker buses. Five AC low-floor Volvo buses were procured under the JNNRUM scheme used for intra-city service. The HO-HO buses operate continuously and with a single ticket, tourists can board or alight the bus from any pick-up point and are free to explore tourist attractions and plan their trip. These bus services cover well-known tourist spots like Kovalam, Shankhumukham, Museum, Zoo etc.

vii. Bypass Riders and KSRTC Refresh.

Bypass Riders is a service introduced to take the hassle out of long-distance journeys and ensure timeliness. Buses go through bypass without getting into any traffic jams. These buses travel from Thiruvananthapuram to Kozhikode and vice versa without entering the towns via bypass only. These bypass services will run through National Highway and MC Road at one-hour intervals day and night. KSRTC has tied up with hotels to provide food and board to passengers on long-haul services. The 'KSRTC Refresh' scheme will provide food and meals on long-distance journeys. With the establishment of refreshment centres, passengers are expected to get special treatment. Time spent on eating and meeting other basic needs can also be saved.

viii. Green Buses

Kerala Transport Minister Antony Raju flagged off the state's first green bus service for regular commuters from Thiruvananthapuram Central Depot in June 2021. Liquefied Natural Gas (LNG) fuelled bus services started operating on Trivandrum-Ernakulam and Ernakulam-Kozhikode long-distance routes. The first commercial LNG bus service was started in Kochi exclusively for PETRONET employees. According to Hon'ble Transport Minister, KSRTC can save 500 crores per year in fuel costs by converting all the buses into Green Buses.

Apart from these lot of other initiatives like 'Grama Vandi' (to secure buses owned by private operators on wet lease for operating in village routes), 'Yathra Fuels' (to open KSRTC pumps to the public with the help of oil companies to increase non-ticket income). As per the 'best from waste' policy, KSRTC had also taken steps to convert worn-out buses into 'Bus-Turned Kiosks' to contribute something towards revenue.

ix. Prepaid Travel Card

KSRTC's new experiment is rechargeable prepaid travel cards. These are prepaid cards and there will be facilities for recharging in buses and bus stations. When buying a ticket using such a card, the remaining amount on the card will also be recorded on the ticket. Also, the balance is known through the ticketing machine

with the help of the conductor. Currently, the card is available for Rs 150 to Rs 2000. To make it more attractive, the facility of taking a Rs 100 card and travelling up to Rs 150 has also been introduced. This card is transferable to others.

3.9.1.4 Dr Sushil Khanna Committee Report on KSRTC

The Committee headed by Dr Sushil Khanna conducted a two-year comprehensive study to understand the main issues plaguing the KSRTC and suggested changes in policies to make the Corporation a productive and profitable entity. The committee found that KSRTC buses were stopped on the road for long periods for repairs. Lax labour norms, unsanitary work environment, loss of man-days due to outdated technology in workshops and depots and poorest inventory management are observed as reasons for poor productivity. The committee severely criticised the long leave of employees, cut down of schedules, uncompetitive and unqualified managerial levels, pathetic labour productivity, irrational running times, double duty pattern, the staff-bus ratio of KSRTC by comparing with that of APSRTC, SETC etc. In 2017, KSRTC had 28 lakh passengers, but today it has only 18 lakh passengers.

Key critical observations of the Dr Sushil Khanna Committee:

- 8.37 staff per bus (high staff ratio).
- Average productivity per staff is only 36 km.
- Inefficient workshops.
- Bus painting is still done by hand (manual painting).
- 150 to 200 schedules are cancelled every day.
- 91 per cent double duty and 3 duties per person per week.
- 3500 people are on long-term leave. They will come back when they nearing to retire.
- A bus's productivity is only 332 km.
- It takes 325-to-350-man days to build a bus. (Nearly a year).
- It takes 6 man-days for even tyre re-treading.
- Unqualified unit heads.

“If this is the way things go, KSRTC will not pass the year 2030” (Biju Prabhakar, MD, KSRTC). But, “The existence of KSRTC is essential. It cannot be allowed even a small burial to stop it. It is an organization that employs thousands of people and has a daily commute of around 6 lakh people. There is no substitute for KSRTC and action must be taken to attract passengers” (Hon’ble High Court of Kerala, 12th July 2022).

In the public sector bus service in Kerala, apart from KSRTC buses, there are also bus services operated by its own subsidiary company KURTC, and the bus services of the ‘Swift’ company, which was recently formed to concentrate only on long-distance bus routes.

[1] Kerala Urban Road Transport Corporation (KURTC)

Buses procured with financial assistance from the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and operated by the Kerala State Road Transport Corporation (KSRTC) were brought under the newly formed Kerala Urban Road Transport Corporation (KURTC). It is formed as a subsidiary of KSRTC in the year 2014 and the operation and maintenance of these buses are managed through the administrative setup of KSRTC. It was established with a mission to provide quality transport service, especially to urban commuters, and to connect the tourist spots of Kerala and order to minimize congestion in urban areas by reducing the use of private vehicles and prompting them to use public transport bus services (Joseph, J, M, 2019). At present, KURTC operates 719 low-floor A/C and NON-A/C buses in Kerala.

[2] KSRTC-SWIFT

KSRTC SWIFT is a new company formed particularly to operate long-distance bus services. In the words of Sri. Biju Prabhakar, MD, KSRTC, K-Swift is a solution for the crisis faced by KSRTC now. 310 CNG buses, 100 diesel buses, and 50 electric buses were purchased for SWIFT services out of the KIIFB fund. Besides, it is proposed to transfer 190 KURTC buses and 237 other KSRTC buses including Scania-Volvo to the K-Swift. Currently SWIFT functioning independently within KSRTC and it is expected to be dissolved in KSRTC after 10 years. As these services

are meant for long journeys, Swift buses are mostly AC semi-sleeper and sleeper buses with amenities like bottled water, blanket, freshener, etc. Swift's first service was flagged off on April 11, 2022, by the Honourable Chief Minister, Sri Pinarayi Vijayan.

3.9.2. Privately Owned Bus Services (Private Buses)

Private bus services were playing a vital role in the socio-economic development of Kerala state. Private bus transport services are the only industry in Kerala that has grown up without incurring any kind of liability to the government but at the same time providing a lot of assistance to the government financially and otherwise. Private bus transport services are bus services owned and operated by private individuals, partnerships, trusts, cooperative societies or private companies without the share, investment and management of the government or government-owned corporations/companies. Private-transport bus services seem to be efficient and contribute value to the Kerala Government's exchequer relaxing it from the responsibility of providing public transport facilities to the people. A private bus contributes around Rs.1,40,000 per year to the Kerala government as a road tax. Government gains approximately 750 crores per annum from the private bus service operation (CPPR, 2016).

In 2008, about 35,000 private buses were operating in Kerala, but in 2022, there are only about 8000 plus buses. Around 26,000 buses disappeared from the road. As a result, around 2,00,000 direct bus staff lost their jobs. Similarly, employment in supportive sectors such as workshops, bodybuilders, tyre works and spare parts business etc., that depend on the bus industry has also been adversely affected. When there was a decrease in the number of buses, the Kerala government lost about 230 crores in way of road tax and 200 crores in other means (permit fee, service tax, renewal fee, welfare fee etc) annually. Such a loss of revenue can never be ignorable for the Government of Kerala which is relying on debt. Most of the large and medium-scale bus owners and operators have left the scene. Unfavourable government policies like route restrictions, excessive operation of parallel services, increased number and rates of concessions, hikes in fuel prices and spare components and increased taxes

have acted as a hindrance to private owners in running the bus services (Private bus Kerala, June 13, 2020). Table 3.15 shows the number of actively operating private buses across Kerala in the year 2019.

Table 3.15

District-wise number of private stage carriage buses in Kerala in the year 2019

Sl. No	Districts	No. of Buses
1	Thiruvananthapuram	559
2	Kollam	681
3	Pathanamthitta	447
4	Alappuzha	429
5	Idukki	658
6	Kottayam	1432
7	Ernakulam	2303
8	Palakkad	1075
9	Thrissur	1394
10	Malappuram	1450
11	Kozhikode	1493
12	Wayanad	371
13	Kannur	1852
14	Kasaragod	355

(Source: Kerala E-Gov. magazine, 2019)

Many of the mass private bus operators who once graced the road have left the scene. Mehboob Transports, KC Transports etc, in Kasaragod, PC Transports, Shajee Motors, AK Motors, Prakash Transports etc, in Kannur, KTC, NTC, CWMS, MP Motors etc, in Kozhikode, Manjeri Motors, Malabar Motors, Janaki ram Motors, Malabar Motors, CC Transport, Murukan Transport etc, in Malappuram, PCT, TBT, Mayilvahanam transport etc, in Palakkad, PSN transport in Thrissur and Kollam-based ‘Society Motors’ are some of the private bus operators that have disappeared from the Kerala bus transport sector.

3.10 Conclusion

An overview of public transport systems in India and Kerala have shown that public bus transportation is a vital component in meeting the mobility needs of urban as well as rural population. However, compared to other states in India, Kerala has reported a massive dropout of public bus passengers. The Kerala Motor Vehicles Department (MVD) has reported that the state's bus ridership has halved in ten years, and private-state-owned buses are losing at least 68 lakh passengers per day. In 2013, 1.32 crore passengers depended on bus services, but today it is only around 64 lakhs. According to their report, ten years ago there were 28000 private bus services with over 1 crore and 5500 KSRTC buses with 28 lakh passenger bases respectively, but now it has come to a situation where 8400 private buses have 40 lakh passengers and 4880 KSRTC buses have 24 lakh passengers. It is stated that when a bus is withdrawn, at least 550 people will lose their means of transportation, and many such people depend on two-wheelers, etc., which will significantly and badly affect the smooth transport system of Kerala. When bus services are reduced to meet the needs of passengers, passengers are forced to switch to individual modes of travel, thereby adversely affecting Kerala's economy, environment, and community health.

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CHAPTER 4

**SERVICE QUALITY: MODELS, DETERMINANTS
AND CONSEQUENCES**

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CHAPTER 4

SERVICE QUALITY: MODELS, DETERMINANTS AND CONSEQUENCES

4.1 Introduction

Service quality and users' or customers' satisfaction are very vital concepts that every organisation must consider to stand competitive and grow in their business areas. An organisation must understand how to measure such constructs from the customers' perspective for the purpose of inventorying a better idea of their actual needs and satisfying them. The service quality is being treated seriously as it results in improved customer satisfaction, profitability, reduced cost, better customer loyalty and customer retention (Chingang Nde, D., & Lukong, P., 2010). Service providers have begun to concentrate on users' service quality perceptions as it facilitates the development of strategies that gain better user satisfaction (Saravanan & Rao., 2007).

4.2. Concept of Service

The concept 'service' has many meanings and interpretations which leads to dilemmas in the way the term is defined in business and management literature, service can mean an industry or a performance or an output or an offer or a process (Johns, 1998). Services are often described as 'intangible' and their output is seen as activities rather than a tangible object which is unclear as some service outputs have some considerable tangible elements like physical facilities or equipment or personnel (Johns, 1998). The 'service' should be viewed from the perspective of customers as it is the customers' overall perception of the outcome. In other words, service is the customer outcome created or generated through a process and the service process consists of the delivery of service, personal interaction and performance or users' service experience (Edwardson, 1998).

The service concept is to be viewed differently from both the perspectives of the service provider and the service user; for the service provider, service is viewed as a process that involves the elements of basic delivery, service operation, individual or personal attention and inter-personal performance which are executed differently by various industries (Johns,1998). In service users' perspective, it is a phenomenon that they see as a part of an experience that contains the elements of basic needs, choices, and the emotional content which are expressed in various service outputs and that encounters and influences everyone's experience differently. However, common elements to both parties include; value (benefit versus cost), service quality and engagement or interaction (Johns,1998).

The well-known definition of service is “any intangible product/outcome, which is essentially a transaction and is transferred from the seller/ provider to the buyer/user instead of some consideration (or sometimes without consideration).”

The services terminologies spotlight the differences in services from that of products which put forth special challenges for service providers and marketers and users' buying process. The general features of services are:

- *Intangibility*: Service is not a physical product that can touch or see but it can be experienced by the users and one cannot judge its quality before consumption.
- *Inconsistency*: There cannot be any perfect standardization of services as even if the provider is unchanged, its quality may vary from time to time or from user to user.
- *Inseparability*: One unique feature of services is that the service and its provider cannot be separated. Further, unlike goods, the production and consumption of services cannot be separated.
- *Storage*: As the creation and consumption of service are inseparable in nature, the storage of services is impossible.

4.3. Concept of Quality

The concept 'quality' has much variety of definitions and it is difficult to find a single universally agreed common definition of quality (Wicks & Roethlein, 2009). Generally accepted Quality definition is rare due to the ambiguous nature of concept from different angles and orientations and the measures used in a particular context by the person who defines it (Hardie & Walsh, 1993; Sower & Fair, 2005). Hence, the quality definitions may vary between various organisations, between various services industries and between various academicians and practitioners. The important well-known definitions are given here.

“Quality is product performance which results in customer satisfaction freedom from product deficiencies, which avoids customer dissatisfaction” (Juran, 1985). “Quality is the extent to which the customers or users believe the product or service surpasses their needs and expectations” (Gitlow et al., 1989). “Quality is the totality of features and characteristics of a product that bear on its ability to satisfy stated or implied needs” (ISO). “Quality is the total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product in use will meet the expectations of the customer” (Feigenbaum, 1986). “Quality is anything which can be improved” (Imai, 1986). “We must define quality as “conformance to requirement” (Crosby, 1979). “Quality is the degree or grade of excellence etc. possessed by a thing” (Oxford English Dictionary). “Quality is defined as the summation of the affective evaluations by each customer of each attitude object that creates customer satisfaction” (Wicks & Roethlein, 2009). “Quality is the totality of features and characteristics in a product or service that bear upon its ability to satisfy needs” (Haider, 2001).

The above-said definitions of quality throw light into the understanding of the quality concept and mark out that quality has many perspectives. (Garvin, 1988) categorised the definitions of quality into five classes:

(1) *Transcendent definitions*: This category of quality definitions is subjective and personal and are perpetual/enduring in nature and at the same time go beyond the

measurement and the logical description. These are related to the concepts like beauty and love.

(2) *Product-based definitions*: Under this category, quality is viewed as a measurable variable. The measurement basis is the objective attributes of a product or physical unit.

(3) *User-based definitions*: Defines quality as a means for customer satisfaction and makes the concept of quality individual and partly subjective.

(4) *Manufacturing-based definitions*: consider quality as conformance to intended requirements and specifications.

(5) *Value-based definitions*: These categories define the quality of costs. Quality is viewed as the provision of good value by comparing with the cost.

So, quality may be viewed as the endurance of a product or service or usability or fitness for use or a means of customer satisfaction or conformance to requirements or value or excellence.

4.4. Service Quality

Service quality is a factor that determines a service organisation's profitability and goodwill. Organizations that want to increase their reputation, loyalty and profitability should constantly measure and improve their service quality. The concept of service quality has gained immense attraction both from academicians and practitioners (Negi, 2009) and the services marketing literature admits service quality as the overall evaluation or assessment of a service by its user (Eshghi et al., 2008). By defining the service quality, service organisations will be able to render services at a higher quality level probably results in increased customer satisfaction (Ghylin et al., 2008). In understanding service quality, it is essential to acknowledge the three characteristics of service such as intangibility-heterogeneity- and inseparability (Parasuraman et al., 1985; Ladhari, 2008) and in such a way only service quality can be easily measured. According to Ladhari, for an organisation, service quality is a crucial tool for attaining a competitive advantage and improving customer

satisfaction. Service quality is a vital area for related practitioners because the basic survival and growing need of organisations in a dynamic competitive market can be met only through maximum satisfaction of customers and in turn, this can be achieved only through superior service quality provision (Douglas & Connor, 2003; Saravanan & Rao, 2007). Many pieces of research proved that the provision of good service quality to customers can not only retains the existing but attracts new customers also and thereby enhancing the image, positive WoM recommendation and over and all ensuring survival and profitability of the organisations.

“The veritable gains of a quality revolution come only from customer delight, which again to a very great extent depends on the customer’s perceptions of overall service quality” (Suresh Chandra et al., 2002).

Service quality can be defined as a measure to know how an organisation/service provider delivers their services as compared to the expectations held by its customers or users. Customers avail/uses services as a response to requirement and they have certain standards and expectations, consciously or unconsciously, for how a company's services will meet those requirements of customers. The service provider is said to be delivered services with high service quality when it matches or exceeds its customers’ or users' expectations. Hence, an organisation/service provider which fulfils or exceeds ideal expectations set by the users or customers are considered to have better service quality.

Service quality is not only the most important practical theme for service providers and regulators, but it also remains to be one of the challenging research themes (Kumar, A. 2012). Research on service quality has long been conducted from various perspectives. Gronroos (1982); Berry, Zeithaml, & Parasuraman (1985); Brady & Cronin (2001) contributed significant research in moulding the concept of service quality.

4.5 Service Quality Models

The Service Quality Model delineates how to attain desired quality in the provision of services. Achieving the desired quality in services is a very difficult task

compared to that of physical products as its assessment is based on people's perceptions, expectations, and attitudes rather than the data on reliability.

The concept of service quality has been expounded and defined by different scholars differently and hence there is no consensus on what the exact or proxemic definition is. The claim of popularly agreed definition still belongs to (Parasuraman et al., 1988), which defines “service quality as the discrepancy between a customer’s expectation of a service and the customer’s perception of the service offering”.

Service quality measurement has been one most reiterative topic in marketing and management literature (Parasuraman et al., 1988; Gronroos, 1984; Cronin et al., 1992). This is due to the requirement of developing valid instruments for having a systematic evaluation of an organisation’s performance from the users/customers’ point of view; and the relationship between perceived service quality and the other key organizational outcomes (Cronin et al., 2010) and which has resulted into the development of various models for service quality measurement. Many scholars have put forward many ways and approach to measure service quality (Gilbert et al., 2004). They include;

- 1) Expectancy-Disconfirmation approach: It is related to the identification of customers’ expectations and comparing them with their experience. By this approach, the customers’ expectations can be measured after the services encounter by asking them to recall.
- 2) Performance-only approach: It assesses service quality by just asking customers or users about their satisfaction level with the various service features after a service encounter.
- 3) Technical-Functional Dichotomy approach: This approach considers two service components that widely affect customer satisfaction namely,
 - *Technical quality* based on a product’s features; durability, security, tangible, or physical features and,
 - *Functional quality*- concerned with the relationship and dealing between service providers and customers; courtesy, response, fast delivery, helpfulness etc.

- 4) Service Quality Vs Service Satisfaction approach: This approach mainly focuses on 2 interrelated service components; *transition-specific assessment* which assesses the specific features of quality for a particular sector or services and *overall assessment* which assess the overall quality and this approach links perceived quality with the overall satisfaction in the service. The term ‘perceived quality’ is here based on service attributes over which the providers have control and the assessment of service value is done from the customers’ perspective but not considering their expectations.
- 5) Attribute importance approach: This approach concentrates on the relative weight assigned by the customers on the importance of service attributes and how they linked with their level of service satisfaction.

There are multiple models relating measurement of service quality. The most recognised models are described below.

4.5.1 Gap Model and SERVQUAL

SERVQUAL is a very popular method for identifying and solving problems related to service quality. It was propounded by A. Parasuraman, V. Zeithaml and L. Berry (1988). The core idea of this model is based on five gaps, which compares the expectation and perception of service users regarding quality. The method was treated as one of the first tools moulded to evaluate and enhance service quality and hence it became popular very soon.

Parasuraman et al. (1985) introduced a conceptual model for service quality in which they considered five important gaps that will impact the user’s evaluation of service quality, especially in four different industries such as retail banking, product repair and maintenance, credit card business and security brokerage. The identified gaps were;

Gap 1: The customer/user’s expectation – Management’s perception gap

Service providers do not always understand what features, a service must have to meet customer needs and what level of performance is required on those features to provide high-quality service. This affects the way customers evaluate service quality.

Gap 2: The management's perception - Service quality specification gap

This gap occurs when the service providers recognize what customers want, but does not have the means to deliver on that expectation. Some of the factors affecting this gap could be resource constraints, conditions of the market and management apathy. This may affect the customer's service quality perception.

Gap 3: The service quality specification – Services delivery gap

A service provider may have guidelines to perform service well and treat customers properly, but this does not guarantee high service quality performance. The employees play an important role in ensuring high service quality and their performance cannot be understated. It affects the delivery of the service, which in turn affects the way customers perceive the quality of the service.

Gap 4: The service delivery – External communication gap

External communications affect not only customer expectations of the service but also customer perceptions of the service delivered. Firms may neglect to inform customers about specific efforts to ensure quality that are not visible to them, which can influence customers' service quality perceptions.

Gap 5: The expected service – Perceived service gap

Their study revealed that the key to assuring good service quality is to meet or exceed what customers expect from the service and evaluating high and low service quality depends on how customers perceive actual performance in the context of their expectations.

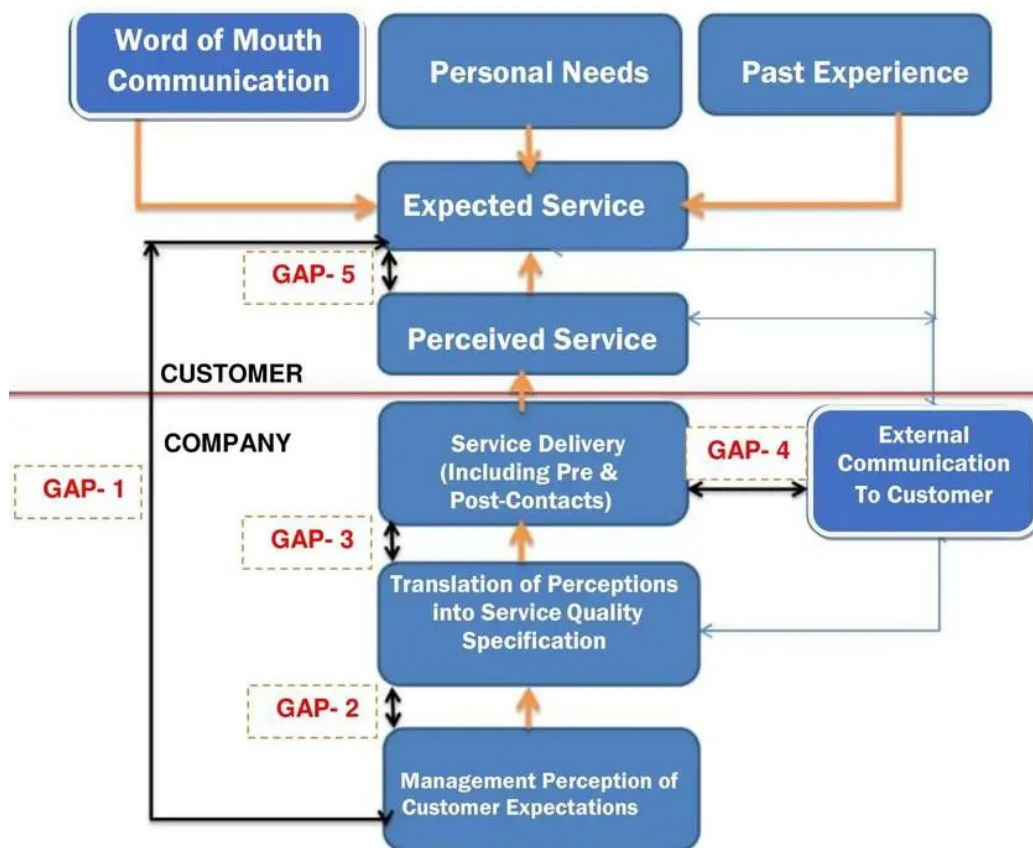
Parasuraman et al. (1988), subsequently expounded the 'SERVQUAL Model', a multiple items scale used to assess customers' perception of service quality in retail and service businesses. The scale rearranges the concept of service quality into five important constructs such as tangibility, reliability, responsiveness, assurance, and empathy. The scale is popularly known as the 'RATER' (Reliability, Assurance, Tangibility, Empathy and Responsiveness) scale. The scale paved the base for capturing the gap between expectations and experiences of the customers and such

gaps can be negative (if expectations are more than experience service) or positive (if expectations are lower than or equal to experienced service).

4.5.1.1 Functioning of SERVQUAL model: SERVQUAL means and represents ‘service quality’- as the discrepancy between a customer’s expectations from a service offering and the customer’s perception of the service availed and it requiring respondents’ answers to the questions about their expectations as well as perceptions (Parasuraman et al.,1988). The usage of perceived as against the actual service availed makes SERVQUAL an attitude measure that is related to satisfaction, but not the same as satisfaction (Parasuraman et. al., 1988). The difference between the expectations and the perceptions is called as the gap which is the determinant of service quality perception of customers as depicted in figure 4.1 below:

Figure 4.1

Service Quality Gap Model (Parasuraman et al.,1988)



(Source: Parasuraman et al.,1988)

Arguments for and against the SQ Model: Many authors (Rohini & Mahadevappa, 2006) argued in favour of the SERVQUAL model:

- It is widely accepted as a standard tool for measuring various dimensions of service quality.
- It has been proven to be valid for several types of service contexts.
- It is seeming to be a reliable assessment model.
- As the instrument contain a limited number of familiar questions/statements, it can be easily filled out by customers and employees.
- It has a refined standardized procedure for analysis which helps accurate interpretation and results.

The instrument also drew several criticisms on various grounds such as it uses an attitudinal model instead of a disconfirmation model (Cronin and Taylor, 1992,1994; and Oliver,1993), its conceptualization as a gap in expectation and perception (Cronin and Taylor, 1992 and Boulding et al.1993), the psychometric validity in gap score (Teas,1993), its over-focus on functional quality and non-focus on technical quality (Richard and Allaway,1993), Unsuitability of Likert scale (Babakus and Mangold,1992), exclusion of important factors like core service, the image of the company, infrastructure ambience, etc. (Sureshchandar et al., 2001), the structure and number of dimensions unclarity (Babakus and Boller,1991; Carman, 1990; and Teas, 1993) and many others.

4.5.1.2 Dimensions of Service Quality

Refinement of SERVQUAL Model: Parasuraman et al. (1985) identified various (97 in number) attributes which were observed as influencers of service quality. These 97 attributes are considered as important criteria while assessing service users' expectations and perceptions towards the delivered service (Kumar et al., 2009). All such attributes were grouped into 10 dimensions (Parasuraman et al., 1985) and the proposed 97-item instruments were then subjected to service quality assessment in

two steps to refine the instruments and select those with significant impact (Parasuraman et al., 1988).

The first purification stage suggested ten dimensions for measuring service quality; tangibility, reliability, responsiveness, communication/information, credibility, security/safety, competency, courtesy, knowing customers, and accessibility. Then they proceed to the second stage of purification and there they focused on condensing scale dimensionally and reliably. Further, they trimmed the ten dimensions into five core dimensions such as:

- 1) **Tangibility:** This dimension is related to the appearance and attraction of physical facilities, equipment, and attire of employees
- 2) **Reliability:** This dimension deals with the ability of an organisation to perform the offered service dependably and accurately.
- 3) **Responsiveness:** This dimension measures the willingness of service providers to help their customers and to provide prompt service.
- 4) **Assurance:** This dimension assesses the knowledge/competence, credibility and courtesy of personnel and their ability to impart trust and confidence among customers.
- 5) **Empathy:** This dimension is related to ease of accessibility, listening to and giving information to customers, and understanding customers' exact requirements.

Certain variables include both assurance and empathy, apart from communication, reliability, safety, competency, courtesy, understanding customers, and accessibility. These variables did not remain as different after the two stages of scale purification (Parasuraman et al., 1988). Those original five dimensions are subject to 22 statements derived from Parasuraman et al (1985).

This scale further undergoing reliability and validity tests and the variables were found to be very reliable and satisfy the content validity criteria (Parasuraman et al., 1988).

Initially, the SERVQUAL model was used for services and retail sectors and its purpose was to understand how customers rate the services availed by them (Parasuraman et al., 1988). This is very essential for a business concerned for its growth and profitability. They are recommending that this model can be used in conjunction with the other models and it could be applied to rate the service quality perception of employees and thereby get valuable suggestions from such employees for improvement in service quality. It is equally important that in applying the model, the relative importance or weightage of each dimension should be measured and this could be considered as a 'weighted SERVQUAL model' (Cronin & Taylor, 1992).

4.5.2 SERVPERF Model

A conceptual model 'The SERVPERF model' was developed by (Cronin & Taylor, 1992) and it is derived from the 'SERVQUAL' model by measuring service quality perceptions through the assessment of customers' overall feeling towards the service, excluding expectations. SERVPERF measures quality as attitude, not satisfaction. However, it uses a concept of perceived service quality that leads to satisfaction. But it goes further and links satisfaction with further purchase intentions. SERVPERF is a modification of SERVQUAL and therefore uses the same dimensions (RATER model) to assess service quality. Four important equations were derived from their study:

$$\text{SERVQUAL} = \text{Performance} - \text{Expectations}$$

$$\text{Weighted SERVQUAL} = \text{Importance} \times [\text{Performance} - \text{Expectations}]$$

$$\text{SERVPERF} = \text{Performance}$$

$$\text{Weighted SERVPERF} = \text{Importance} \times [\text{Performance}]$$

The SERVPERF model indirectly measures customers' experience relying on the same attributes as SERVQUAL and more closely matches the implications of the satisfaction and attitudinal literature (Cronin et al, 1992).

Later, (Teas, 1993) developed an 'Evaluated Performance Model (EP)' to overcome some pitfalls associated with the gap in service quality conceptualization

(Gronroos, 1984; Parasuraman et al., 1985, 1988). The new model assesses the gap between the perceived performance and the ideal amount of a service feature but not customers' expectations. He argues that analysis shows that the P-E (Perception-Expectancy) structure is of questionable validity due to its conceptual limitations involving the conceptual and theoretical definition and justification of the expectations component of the said framework and its quantitative validity. Then he modified expectation measures to contribute ideal amounts of service attributes (Teas, 1993)

Brady & Cronin, (2001), put forth a model which is framed with multidimensional and hierarchical constructs in which the service quality is described by three basic dimensions such as interaction quality, environment (physical) quality and outcome quality. Each of these dimensions is made up of three corresponding sub-dimensions; interaction quality consists of three behavioural sub-dimensions-attitude, behaviour, and expertise; physical environment quality consists of ambience, design and social factors and the outcome quality framed out of waiting time, tangibility, and valence. These authors argued hierarchical- multidimensional model enhances the knowledge of three basic issues related to service quality;

(a) what defines service quality perceptions; (b) how service quality perception is formed; and (c) how crucial it is where service experience took place and this framework could support managers to improve users' service experiences (Brady & Cronin, 2001).

After extensively reviewing the literature, Saravanan & Rao, (2007), described six critical factors that measure customer-perceived service quality and they include;

- (1) Human-related factors of the service delivery process; reliability, responsiveness, assurance, empathy.
- (2) Core service-related factors; content, features.
- (3) Social responsibility factors that improve corporate image.

- (4) Systematization factors of service delivery; process, procedure, system, and technology).
- (5) Tangible factors of service; equipment and machinery, signage, employee attire.
- (6) Service marketing

Their study observes that these six factors lead to improved service quality perception, customer satisfaction, and customer loyalty. Service quality may be emanated from either or all of a user's perceptions relating to a firm's technical and functional quality; the service products, service delivery process and the service environment; or the tangibles, assurances, reliability, responsiveness, and empathy related to a service experience (Brady & Cronin, 2001).

Another model, Mittal and Lassar's 'SERVQUAL-P model' reduced the number of dimensions of service quality into four; Tangibles, Personalization, Reliability and Responsiveness (T-P-R-R) with an extra focus on 'personalization' which means the social interaction content between service staff and customers (Bougoure & Lee, 2009).

A brief account of other popular models for measuring service quality is given here.

4.5.3 Technical and Functional Quality Model (Gronroos, 1984)

To successfully compete in the market, an organisation must understand customer perception of the quality and how the service quality is influenced. Perceived service quality management implies that the organisation must match the expected services and the perceived service to and fro so that customer satisfaction is achieved. The author considered three components of service quality: technical quality; functional quality; and image.

- Technical quality means the quality of what a customer received as a result of their interaction with the service providers and which is important to them for evaluating the quality of service.

- Functional quality is how customers get the technical outcome and that is important to them for their views towards the received service.
- Image is crucial to the service providers and it can be expected to build by the service's technical and functional quality and the other supporting factors; tradition, pricing, WoM, ideology, and public relations).

4.5.4. Attribute Service Quality Model (Haywood-Farmer, 1988)

The attribute service quality model states that service firms have “high quality” if they consistently meet customers’ preferences and expectations. Under this, the grouping of attributes into various segments is the first step in the construction of a service quality model. Generally, the service has three basic components: attributes as to physical facilities and processes; people’s behaviour; and professional judgment. Each of these attributes consists of several factors and each set of attributes forms an apex triangle. In this model, the author tried to map various types of service settings as per the degree of interaction and contact, degree of workers intensity and degree of service customization. The model suggests that special care must be taken to ensure that the physical equipment is reliable and easy to use for the customer.

4.5.5 Synthesized Model of Service Quality (Brogowicz et al., 1990)

As per this model, a gap in service quality may exist even where customers have not yet actually experienced the service but they learned through advertisements, word of mouth, or other media. So that in this model, there is a requirement to incorporate potential customers’ perceptions towards offered service quality and actual customers’ perceptions towards the service quality experienced. The model tries to synthesize the traditional managerial frameworks, services design and operations, and firms’ marketing activities. The main purpose of the model is to ascertain the dimensions related to service quality in traditional managerial planning, implementation, and control framework. This model considers three factors such as corporate image, external influencers, and traditional marketing activities as the major influencing factors on the customers’ expectations of technical and functional quality.

4.5.6 Ideal Value Model of Service Quality (Mattsson, 1992)

In most studies related to service quality, "expectation is considered as a belief about desired attributes as a criterion for evaluation". However, this issue required to be examined in tune with other criteria such as empirical, ideal, minimum tolerable and desirable. The model advocates a value-based approach to service quality, modelling it as an outcome of the satisfaction process. This value-based service quality model suggests the application of a perceived ideal standard against which experience is compared. It narrates that implicit negative disconfirmation at the preconscious value level is hypothesized to determine satisfaction at the "higher" attitude level. Such negative disconfirmation is a key determinant of customer satisfaction, and more attention should be paid to the customers' cognitive processes by which the perceived service concept is formed and changed.

4.5.7 Evaluated Performance and Normed Quality Model (Teas, 1993)

The conventional disconfirmation model is subject to conceptual, theoretical, and measurement problems. Teas (1993) pointed out the issues in the measurement in SERVQUAL (Parasuraman et al., 1988) as ambiguity in conceptual definition; theoretical justification of the customers' expectations; the usefulness of probability specification in evaluated performance measurement; and the link between service quality and customer satisfaction. The author proposed two frameworks for service quality; the evaluated performance (EP) framework and the normed quality framework with the assumption that the product's ability to provide satisfaction can be conceptualized as the product's relative match with the customer's ideal product characteristics.

4.5.8 Model of Perceived Service Quality and Satisfaction (Spreng and Mackoy, 1996)

The model attempts to strengthen the understanding of the constructs; perceived service quality (PSQ) and consumer satisfaction (CS). This model is a modification of Oliver's (1993) model. It highlights the influence of expectations, perceived performance desire, desire discrepancy and expectation (dis)confirmation

on the overall service quality and consumer satisfaction. These were measured using ten attributes of advising (convenience of making an appointment, friendliness of staff, advisor listening to questions, advisor providing accurate information, advisor's knowledge, advice was consistent, advisor helped long-term planning, advisor helped in the selection of right courses for career, advisor interested in personal life, offices were professional).

4.5.9 PCP Attribute Model (Philip and Hazlett, 1997)

The researchers (Philip and Hazlett, 1997) proposed a model which takes the form of a structure-based hierarchy on three basic classes of attributes-Pivotal- Core and - Peripheral. According to this approach, a service consists of three, overlapping, areas and most of the dimensions and concepts used so far to define service quality and these ranked levels are to be defined into three attributes such as pivotal (outputs), core, and peripheral (represents both inputs and processes). The key(pivotal) attributes located at the core are collectively considered to be the most decisive influence on the customer's decision to approach a particular organization and have the greatest impact on satisfaction levels. It can be defined as the "end product"/"output," the service encounter results. Simply, it means what the customer expects to be achieved and received when the service process is properly completed. core attributes', which focus on the pivotal attributes, may best be described as the combination of people, processes and the service organization structure with which customers will interact and/or negotiate so that they can achieve or receive pivotal attributes. The third, peripheral attributes, can be defined as "incidental extras" or frills that are designed to add completeness to the service encounter and make the entire experience a complete delight for the customer. When customers evaluate any service encounter, they will be satisfied if core attributes are achieved, but core and peripheral attributes may gain importance as the service is used more frequently.

4.5.10 Retail Service Quality and Perceived Value Model (Sweeney et al., 1997)

The study emphasizes the impact of service quality on value and willingness to purchase or use in a specific service encounter through two alternative models. 'value' can be described as a comparison between what consumers get and what they

give and simply value is the difference while the comparison between the benefits and sacrifices. The value construct applied in the model is “value for money.”

Model 1: This model argues that in addition to the quality and price of the products, functional service quality and/or technical service quality perceptions directly influence value perception.

Model 2: This model append that perceived functional service quality directly influences consumers' willingness to purchase. Further, the functional service quality perceptions also influence the technical service quality perceptions, which in turn influence product quality perceptions, both of which do not directly influence value perceptions. Many researchers have argued that the second model has better indicators than the first model.

4.5.11 Service Quality, Customer Value and Customer Satisfaction Model (Oh, 1999)

The researcher proposes here an improved model which integrates the constructs of service quality, customer value and customer satisfaction. The proposed model focuses on the customers' post-purchase decision process. The model indicates and illustrates the causal directions. The model covers major governing variables; perceptions, service quality, customer satisfaction, customer value and reuse intentions. This model proves that customer value has a pivotal role in their post-use decision process.

4.5.12 Antecedents and mediator model (Dabholkar, P.A et al., 2000)

The researchers propose here a comprehensive model for service quality which includes an analysis of the antecedents, consequences, and mediators of service quality to provide a deeper insight into its (SQ) conceptual issues. This model mainly examines some major conceptual issues related to service quality such as the significant factors related to service quality being better conceived as antecedents/components and the impact of satisfaction of customers in their behavioural intentions.

4.5.13 Internal Service Quality Model (Frost and Kumar, 2000)

The researcher has put forth an internal SQ model based on the GAP model concept (Parasuraman et al., 1985). The model examines the service quality dimensions and their binding between front-line staff (internal customers) and support staff (internal suppliers) in a service organization relatively large. Internal Gap- 1 indicates the difference in the perception of internal customers and internal suppliers and the Internal Gap -2 is the major gap between the specified service quality and the delivered service which results in an 'Internal Service Performance Gap'. Internal Gap- 3 is the deviation that focuses mainly on front-line staff and the same is based on the differences between the frontline employees' expectations and the support staff's perceptions regarding service quality.

4.5.14 Internal Service Quality (DEA) Model (Soteriou and Stavrinides, 2000)

The researcher framed a service quality model which can be used to give directions to a service organisation (banks for example) for its optimal resource utilization. The model does not intend to develop SQ measures but rather guides how such measures can be combined to improve service quality. The model can point out resources improperly utilized. Model input consists of two sets of resources: (1) consumables -personnel, space, time and so on. (2) the number of accounts among different categories. The model output is the level of service quality perception of the personnel of the organisation. The 'Data Envelope Analysis' (DEA) compares the performance of branches on well they transform these input resources to attain their output (level of service quality) given the client base. The DEA model can ascertain underperformers will suggest the means for their improvement. The 'Input minimization DEA' model will provide scope for the minimization of input for producing the same level of SQ while the 'Output Maximization DEA' model provides the scope for SQ improvement with the same level of inputs (consumables).

4.5.15 IT-based SQ Model (Zhu et al., 2002)

This model shows up the significance of IT (information technology) based service quality. Most service providers now use IT to minimize costs and maximise

value-added services to their customers. Zhu et al. (2002) proposed an SQ model that relates customers' perceived IT-based service options to the traditional service dimensions. The model attempts to examine the relationship between Information Technology based services and customers' perceived service quality. The model is concentrated on the linkages among various service dimensions as measured by SERVQUAL and the constructs represent the IT-based service quality, customers' preferences for traditional services, the experience of using IT-based services, and perceived IT rules.

4.5.16 Model of e-service quality (Santos,2003)

This study brought a conceptual model of electronic service quality (e-SQ) with its determinants. It is opined that e-service quality has incubated (proper website design, proper use of technology to improve the access, understanding and attractions of websites for the customers and the active dimensions (active support, fastness, and proper and attentive maintenance that a website will provide to its customers) for maximizing hit rates, loyalty, and retention of customers.

4.6 Service Quality in Public Transport

Although SERVQUAL is used as a measurement tool in many studies, it is designed to suit a specific sector and context, such as E-S-QUAL for the electronics sector and the SERVPERF for service performance, FS-QUAL for financial service and banking, TRANS-QUAL for transport services. Hence, there is vast scope for SERVQUAL for further modification for pervasive and universal standardization (Parasuraman et al, 1991). A lot of studies have been done in the transportation sector as well, based on service quality and most of it has been based on the 'SERVQUAL' (Parasuraman et al.) model. While conducting studies related to different modes of transportation, many researchers have modified the SERVQUAL model accordingly and suggested new names by making minor changes. For example, "BUSQUAL," "RAILQUAL", "TRANSQUAL", "TRAINQUAL", "P-TRANSQUAL" etc. Various studies conducted for examining service quality in public transportation (including bus transport system) are briefed in the table No.4.1

Table 4.1

List of studies in SQ in Public transport with its dimensions and attributes

Serial No.	Authors	Study area/Mode of transport	Dimensions and attributes
1	Silcock,1981	Public transport service quality	Accessibility, Reliability, Comfort, Convenience and Safety
2	Hanna and Drea,1998	Rail transport service quality (USA)	Comfort, Timing, Cost, Location, and Transit productivity
3	Drea and Hanna, 2000	Railway Service quality (Amtrack, USA)	Non-SERVQUAL- Cost, Convenience getting to the station, Parking availability, SQ-Seat and Ride comfort, Staff behaviour, Area, and Cleanliness
4	Tripp and Drea,2002	Passenger Service quality (Rail Transport)	Non -Servqual (Announcement, Seating Comfort, Ride, Seating Cleanliness, Staff Courtesy, Restrooms and Cab Facility)
5	Cavana RY, Corbett LM & Lo YL, 2005	Service quality in rail transport (New Zealand)	Modified Servqual (RATER+3Cs-Convenience, Connection, and Comfort)
6	Lel L, Mac L,2005	Transport service quality (China)	RATER+ Commuters' loyalty
7	Wen et al., 2005	Interurban Bus service quality	Service Quality and Cost Of Transit (Economy), Passengers Loyalty, Behavioural Intention, Continual Intention
8	Eboli L, Mazzulla G,2008	Public transport service quality (Italy)	Preference Experiment in Measuring Service Quality
9	Too L Earl G,2009	Public transport service quality (Australia)	SERVQUAL With Tangibles, Responsiveness, Assurance, and Reliability
10	Prasad MD, Shekhar BR,2010 a	Service quality in Indian Rail transport	Servqual Modified -Zone of Tolerance + RATER+ Comfort

Serial No.	Authors	Study area/Mode of transport	Dimensions and attributes
11	Prasad MD, Shekhar BR, 2010 b	Service quality of Indian Railways	RATER+ Service Delivery, Service Product, and Social Responsibility
12	Rita S, Ganesan V, 2010	Public transport service quality (India-Chennai)	SERVQUAL+KANO Model with Six Factors: Basic Service, Appreciative Service, Reliability, Assurance, Additional Service, and Technology Advancement.
13	Randheer K, Motawa A, & Vijay J, 2011	Public transport service quality (India)	RATER+ Culture (Excluding Tangibles)
14	Sezhian M, Muralidharan C, Nambirajan, & Deshmukh, 2011	Service quality in public bus transport (SRTUs, TN, India)	Passengers' Expectations and Organisation's Responsibility
15	Bakti, I. G. M. Y., & Sumaedi, S. 2015	Public land transport Service quality (Indonesia)	TRAN-SQUAL, Comfort, Tangibles, Reliability, and Personnel.
16	Machado-Leon et al., 2016	Urban transport (LRT) Service quality	Service Quality, Behavioural Intention
17	Ngoc, A. M. et al., 2017	Quality standards for public transport	Service Quality, Users' Behavioural Intention
18	Li et al., 2018	Public Transport service	Service Quality, Cost, Behavioural Intention
19	Chang and Yeh, 2017	Bus Transport Service Quality	Service Quality, Passengers' Involvement, Behavioural Intention
20	Deb, S., & Ali Ahmed, M. 2018	Service quality in city bus services	Service Quality, Level of Service, Latent Factors: Safety, Comfort, Accessibility, And Timeliness

Serial No.	Authors	Study area/Mode of transport	Dimensions and attributes
21	Sam, E. F., Hamidu, O., & Daniels, S, 2018	Service Quality in Public bus transport (Kumasi, Ghana)	SERVQUAL, Passenger Satisfaction, Reliability and Responsiveness.
22	Allen, Munoz & Ortuzar, 2019(b)	Bus Transport Service quality (Urban)	Service Quality, Behavioural Intention, WoM, Continual Intention
23	Yuan et al., 2019	Urban Bus Service Quality	Service Quality, Behavioural Intention, WoM, Loyalty and Cost (Economy)
24	Zhang et al.,2019	Urban public transport Service Quality	Service Quality, Passenger Satisfaction, WoM, Continual Intention (Reuse)
25	Sukhov, A et al.,2021	Travel satisfaction with public transport	Service Quality, Travel Satisfaction, Reliability or Functionality, Information, Courtesy or Simplicity, Comfort, and Safety

4.7 Outcomes of service quality

The concept of service quality has attracted the attention of many researchers and managers as it is known for reducing costs and increasing customer satisfaction, which is usually associated with customer loyalty, which increases profitability for the organisation (Machayi.J & Ahmed EM, 2016). Service quality was also observed to be related to continual (repeated) purchase intention (Perez et al, 2007) and consumption behaviour (Dabholkar et al, 1996). Many other prominent researchers have found service quality to be an antecedent of customer trust, customer value, compliance behaviour, involvement, and purchase intention (Lee et al, 2000). Details of studies conducted on different continuums of service quality are summarized in Table 4.2

Table 4.2*List of previous studies of SQ and its observed outcomes*

Sl. No.	Authors	The topic of the studies	Observed Outcomes
1	Lewis, BR, 1991	SQ-Comparison between expectation and experience	Customer retention, corporate image, Competitiveness and Value
2	Cronin & Taylor, 1992	SQ-Re-examination and extension	Customer satisfaction and purchase intention
3	Allen Klose & Todd Finkle, 1995	SQ, Employees and customer expectation	Perceived Value, Satisfaction, Congruence and Customer complaints
4	Valarie A. Zeithaml, Leonard L. Berry and A. Parasuraman, 1996.	Behavioural consequences of SQ	Customer satisfaction, Customer retention and behavioural intention
5	Nandakumar Mekoth, 1997	Commuters' perception of bus service	Perceived value and Satisfaction
6	Lee H et al, 2000	Determinants of SQ and customer satisfaction	Customer satisfaction and purchase intention
7	Newman, K, 2001	Assessment of service quality	Market share, profitability, corporate image, Competitiveness and WoM recommendation
8	Caruana A, 2002	Service quality and loyalty	Customer satisfaction, Customer loyalty, retention and WoM
9	M. Friman & B. Edvardsson, 2003	SQ: Complaints and Complements	Perceived Value, Satisfaction and Customer complaints
10	Yuvas U et al, 2004	SQ and Customers background relationship	Customer satisfaction and behavioural intention
11	Lel L and Mac L, 2005.	Transport sector service quality	Customer satisfaction and loyalty
12	Wen et al., 2005	Inter-Urban Bus service quality	Customers' trust, Loyalty, Behavioural intention, and continual intention
13	Sanchez P et al, 2007	Public Transport SQ	Satisfaction and behavioural intention
14	Eboli, Laura Mazula & Gabriella, 2008	Service quality measurement in public transport	Customer satisfaction and potential service effectiveness

Sl. No.	Authors	The topic of the studies	Observed Outcomes
15	Fellesson, M & Friman., 2008	Perceived service satisfaction in PTS	Perceived value, satisfaction, and Behavioural intention
16	Forbes SJ, 2008	Effect of SQ and Expectations in customer complaint	Perceived value, (Dis)Satisfaction and Complaint behaviour
17	Saha, GC, 2009	SQ, satisfaction, and BI in Low-cost airlines	Passenger satisfaction, Passenger Complaints, Re-use intention and WoM intention
18	Saha & Theingi, 2009	Inter-Urban transport service quality	Behavioural Intention, Involvement, WoM, Re-use/ continual intention
19	Wijaya, D, H, 2009	SQ and Passengers' complaint handling of Transport Busway	Confidence and Complaints
20	Minser, J., & Webb, V., 2010	Customer loyalty modelling in public transport	Customer satisfaction, loyalty and retention and re-use intention
21	Singh S, 2010	Antecedents and consequences of Customers trust	Customers' trust, Perceived value, Satisfaction Behavioural intention, continual intention and WoM
22	Vanniarajan, 2010	SQ-passenger bus transport services	Satisfaction, Behavioural intention and Re-use or Continual intention
23	Delbosc, A., & Currie, G., 2012	Causes and impacts of personal safety perceptions on public transport	Perceived Trust, Satisfaction, Continual intention
24	Eboli et al, 2012	Service quality and satisfaction	Perceived value, satisfaction
25	Khurshid R et al, 2012	Public transport system- SQ	Satisfaction
26	d' Ovidio, FD et al, 2014	Visible and invisible factors of commuters' satisfaction	Perceived value and satisfaction
27	Mahesh R, 2015	Service quality and attitudinal loyalty relationship	Perceived Value, Customers Trust, Satisfaction, and loyalty

Sl. No.	Authors	The topic of the studies	Observed Outcomes
28	Ponte, E. B., et al, 2015	Influence of assurance on trust antecedent in the transport sector	Perceived Value, Perceived trust, and Behavioural intention
29	Sukwadi, R., &Teofilus, G., 2015	Behavioural intention and its relation with SQ, CS and involvement,	Perceived Value, Involvement, Satisfaction, and behavioural intention
30	Amponsah, 2016	SQ and Commuters' satisfaction with public transport	Perceived value and satisfaction
31	Chen, HK, 2016	Structural interrelationships of group service quality, customer satisfaction, and behavioural intention	Satisfaction, Behavioural intention
32	Fan Y, 2016	Riders' perception of bus transport service	Perceived value and Satisfaction
33	Joewono, 2016	Road-based urban public transport SQ	Customer Satisfaction
34	Machado-Leon et al., 2016	Urban transport (LRT) SQ	Customer involvement, Behavioural intention, Continual intention, WoM
35	Mambu, E, 2016	Service quality effect on customers' trust and purchase intention	Perceived Value, Perceived trust, and Purchase intention
36	Ravi Prakash, 2016	Public Road Transport services SQ	Complaint behaviour, corporate image
37	Van Lierop & EI-Geneidy, 2016	Perceived service quality in PTS	Perceived value, Satisfaction, Trust, Involvement, and behavioural intention
38	Chang, Y. H., & Yeh, C. H, 2017	Customer loyalty in intercity bus services	Customer Involvement, Perceived value, Loyalty, and behavioural intention
39	Efthymiou & Antoniou, 2017	The financial crisis and passenger satisfaction in PTS	satisfaction, Use and re-use intention (Continual intention)
40	Ngoc, A. M.et al., 2017	Public Transport service standards	Behavioural intention

Sl. No.	Authors	The topic of the studies	Observed Outcomes
41	Yilmaz, V., & Ari, E., 2017	SQ, Image and Satisfaction effect on Customer complaints and loyalty	Satisfaction, Customer Complaints, Customer Trust (loyalty)
42	Cheng X et al, 2018	Bus traffic transfer SQ	Perceived value and satisfaction
43	Enoch F Sam et al, 2018	City Bus Service Quality	Perceived value and satisfaction
44	Gao Y, 2018	Passenger satisfaction and personality traits	behavioural intention, psychological disposition, complaint, and compromise
45	Irtema, H. I. M., et al, 2018	The behavioural intention of public transit passengers	Perceived Value, Involvement, Satisfaction, and behavioural intention
46	Li et al., 2018	Public Transport SQ	Loyalty, Involvement, retention, trust, and Behavioural intention
47	Putrianti, A. S., & Samuel, H., 2018	The analysis of e-service quality, customer trust, perceived value, and behavioural intention	Perceived value, Customers Trust, Satisfaction and Behavioural intention
48	Sam, E. F., Hamidu, O., & Daniels, S, 2018	Service Quality of Public bus transportation	Customers satisfaction
49	Weng J et al., 2018	Bus service quality and Transport Choice	Satisfaction, Choice, and Behavioural intention
50	Allen, Munoz & Ortuzar, 2019(b)	Bus Transport Service quality (Urban)	Satisfaction, behavioural intention, WoM, Continual intention
51	Catherine Prentice & Mariam Kadan, 2019	Role of SQ in Airport and destination revisit	Satisfaction, Re-use (Continual intention)
52	Nur Najmah et al, 2019	factors affecting customer satisfaction and SQ	Satisfaction, perceived value, and perceived trust
53	Ojo, TK, 2019	Service quality and Passenger satisfaction	Satisfaction
54	Yuan et al., 2019	Urban Bus transport Quality	Satisfaction, Loyalty, Involvement, behavioural

Sl. No.	Authors	The topic of the studies	Observed Outcomes
			intention, WoM and Continual intention
55	Agyeman & Cheng L, 2020	Hindrances to Bus service quality	Satisfaction and perceived value
56	Bellizzi et al. 2020	Heterogeneity in Bus transit SQ	Perceived Value, Satisfaction, Involvement, Behavioural intention, and re-use intention
57	D'Ona J, 2020	Role of involvement in public transport	Satisfaction, Involvement, perceived value, and Behavioural intention
58	Jonas De Vos et al, 2020	Public transport using the desire	Satisfaction and Re-use intention
59	Suhail, P & Srinivasalu, Y, 2020	Perception of SQ, CS and BI	Perceived value, satisfaction, and Behavioural intention
60	Vicente P et al, 2020	Passengers' loyalty and satisfaction in the Public Transport system	Satisfaction, Loyalty, and Involvement
61	Nasir, M et al, 2021	The synergetic effect of after-sales service, customer satisfaction, loyalty and BI.	Satisfaction, Loyalty, Re-use (continual) intention and WoM intention
62	Fu, X, 2022	SQ and Complaint redressal and re-use intention of passengers	Perceived Value, Perceived image, Complaint interaction and Passengers' re-use intention

A review of existing literature sheds light on the significant and positive relationship between service quality and resulting perceived value, perceived trust, customer (passenger) satisfaction, customer (passenger) complaints, customer (passenger) involvement, and behavioural intention – continuance intention and WoM intention.

4.7.1 Service Quality and Perceived Value: Customers' Perceived value is an important notion that has recently been receiving attraction from service /industrial marketing research (Boksberger & Melsen, 2011; Fiol and Alcaniz, 2009; Sanchez et al., 2006; Eggert and Ulaga, 2006; and Teas & Agarwal, 2000). As a standard criterion, offering relatively high value to the customers is the key factor in creating

and maintaining long-term relationships between customers and suppliers (Fiol & Alcaniz, 2009). The customers' perceived value is the comparison of weighted "get" and "give" attributes (Heskett et al., 1994). According to Roig et al (2009), perceived value is a construct that is made up of two components-the financial/social/relational benefits received and the sacrifices of the customer in terms of price /time/effort/risk /convenience.

A customer's perceived value is what the customer wants from a product or service. In many instances, customers' perceived value is determined and driven by the suppliers' service quality and offered customer benefits (Bolton & Drew, 1991; Zeithaml, 1988). A lot of studies support the relationship between service quality and perceived value. (E.g., Allen Klose & Todd Finkle, 1995; Andreassen & Lindestad, 1998; Chang and Wang, 2011; Chang, Y. H., & Yeh, C. H, 2017; Bellizzi et al. 2020 etc.)

4.7.2 Service quality and Customer (passenger) perceived trust: Customers' trust is recognized as the belief or sentiment which comes from the reliability dimension (Yousaf et al., 2020; Zubair et al., 2019). It is perceived to build confidence among customers based on the integrity and reliability of the services (Morgan & Hunt, 1994). Trust is an essential factor to gain customers' loyalty (Reichheld & Scheffer, 2000). Perceived trust acts as a powerful mediator of customer loyalty (Purwanto et al., 2020; Yousaf et al., 2020). More perceived trust in a service provider means less loyalty to other service providers (Nelson and Kim, 2021). Service quality, Perceived trust and perceived value significantly correlated and affects behavioural intention positively (Putrianti, A. S., & Samuel, H., 2018). Many other researchers have attested to a strong association between service quality and perceived trust and its impact on behavioural intention (e.g., Singh, S, 2010; Sirdeshmukh et al., 2002; Nelson and Kim, 2021; Purwanto et al., 2020). Perceived trust and perceived SQ of customers result in a high level of loyalty and involvement (Jalili, 2008). In addition, customer trust impacts customer reliability and commitment (involvement) that redefines the relationship with behavioural-continual and WoM intentions (Shahbaz et al., 2020)

4.7.3 Service quality and Customer (passenger) satisfaction: Satisfaction can be defined as “the consumer’s fulfillment response”- a customer’s post-consumption judgment that availed service provides him/her a pleasing level of consumption-linked fulfillment, includes under- or over-fulfillment (Oliver, 1997). Satisfaction is not inherent in the product or service itself; Instead, it depends primarily on the customer's perceptions of the attributes of the product or service and how these attributes are important to them (Boshoff & Gray, 2004). So, different customers will express different levels of satisfaction with the same product or experience or service (Ueltschy et al, 2007). Fornell et al., (1996) state that the main two determinants of customer satisfaction are perceived quality and perceived value.

Service quality and passenger (customer) satisfaction are the key concepts evinced from most studies to be measured and corrected for the competitive survival of service concerns. Every business unit needs to know the satisfaction of customers regarding the products and services sold. Customer satisfaction is a vital determinant of the success and growth of every service concern. Customers of transport services are generally called passengers. Passengers' satisfaction with service quality is agreed as one of the key factors in increasing the market share of any transport operator. So, passenger satisfaction is crucial for the existence of any transport service provider. Bus transport service is used by all sections of society like businessmen, government and private salaried employees, farmers, housewives, students, and workers. They are a different group of passengers. As passengers, they change their opinion according to their experiences, perceptions, and demographical and social background. The public transport sector must cater for the transit requirements of various passenger groups for ensuring maximum passenger satisfaction. Passengers’ satisfaction can be defined as “an emotional response to the transport experiences provided by /associated with the particular transport services availed” (Yi, 1990).

Better passenger satisfaction through superior service quality motivates passengers to recommend used transport services and thereby increases promotion through positive word-of-mouth communication (Lin, H.F., 2021). Passenger satisfaction is a measure of how passenger (the users of transport services) feels when

using and interacting with a particular transport service. Passenger satisfaction can be influenced by the factors; perceived service quality, perceived value, and perceived trust. The main two determinants of customer satisfaction are perceived quality and perceived value (Fornell et al., 1996). There also exists multiple empirical evidence states the positive and direct relationship between perceived value, trust, and satisfaction (For example, Allen Klose & Todd Finkle, 1995; Bellizzi et al. 2020; Chang & Wang, 2011; Cronin et al., 2000; Edward & Sahadev, 2011; Fallenson, M & Friman, M, 2008; Lai et al., 2009; Nandakumar Mekoth, 1997; Roig et al., 2009; Singh S, 2010; Yang & Peterson, 2004 and many more).

4.7.4 Service quality and Customer (passenger) complaint: The term customer complaint measures customers' dissatisfaction with the quality of the product used or service availed. Customers have various alternatives to discharging their dissatisfactions and one among them is complaining (Singh, 2000). If the product or service quality is unobservable in the past, customer complaints may be driven by the customers' expectations and experienced level of quality (Forbes, S.J., 2008). Service quality (exogenous variable), perceived value, and customer satisfaction, along with brand image directly influence customer complaint behaviour (endogenous variable) and in turn, customer complaint in association with former variables (SQ, PV, CS, and image) determines the loyalty and behavioural intention (Yilmaz, V., & Ari, E, 2017). Lower perceived SQ leads to customer dissatisfaction which leads to more complaint interaction and the levels of complaint affect customer loyalty and re-use intention (Fu, X, 2022). Many studies have put forth the interrelationship among customer complaint behaviour SQ, Perceived Value, Perceived Trust, satisfaction, involvement, and behavioural intention. (For example; Allen Klose & Todd Finkle, 1995; Gao Y, 2018; Saha & Theingi, 2009; Singh, S, 2010; Wijaya, D, H., 2009; Yuan et al., 2019 etc.)

4.7.5 Service quality and customer (passenger) involvement: Customer involvement is a state of mind that consumer experiences while dealing with a product or service. It makes the customer analyse and rationalize their purchase or use or re-use choice. Customer involvement can be induced by external factors. Customer involvement is

the embodiment of the time, effort, consideration, and enjoyment a customer receives when choosing a product or service. It is a mental state that induces a customer to use or re-use a service and the level of importance he attached in his mind towards that service. There are various levels of involvement a customer can have while the process of making a purchase (re-use) decision and there are different factors that influence customers' involvement (Savannah, S, 2017).

Customer involvement is closely related to service quality and behavioural intention and involvement is the factor that has the highest effect on customers' re-use and WoM intention (BI), followed by SQ and Satisfaction (Lai, W. T., & Chen, C. F, 2011). Service quality is found to be the strongest predictor of customer satisfaction (CS) and behavioural intention (BI), followed by involvement and motivation (Lee, J., & Beeler, C, 2009). Customer satisfaction is a complete mediator between SQ and involvement, and at the same time, involvement is a complete mediator between customer satisfaction and behavioural intentions (De Oña, J, 2020). Service quality influenced trust, differentiation, and loyalty, customer trust was found to make a difference in service and such differentiation led to customer involvement and which ultimately had an impact on satisfaction and word-of-mouth (Chenet, P et al., 2010). Service quality and customer involvement (commitment) are observed to be potential antecedents of WoM recommendation (Harrison-Walker, L. J, 2001)

4.7.6 Service quality and Continual intention: Continual intention and WoM have been treated as sub-dimensions of consumer loyalty and these repurchase or continual intention is the personal intention of the customer to maintain the relationship with the service provider and to obtain the next service from the same service provider (Jones & Taylor, 2005). Continual Intention refers to the situation in which a customer identifies a continual use of a product/service for an action or purpose that he/she has taken (Chen et al., 2013). The customers intend to repeatedly use or re-use products or services. A customer intends to continually use a product/service or reuse a product or service (Bhattacharjee, 2001). Continued use intention is a fundamental and critical indicator of customers' loyalty and it is one of the primary post-adoption behaviours (Hu, P. J. H et al., 2009). The continual intention is primarily determined by the

service quality, perceived usefulness, and satisfaction of customers (Chen, 2012). The continual intention is observed as the best measure of customer loyalty towards a service (Goodman, 2009).

Customers' continual intention is closely related to other variables like service quality, perceived value, trust, customer satisfaction, customer involvement or commitment etc. SQ and perceived value significantly influence customers' trust, customer satisfaction, and continual use intention, and in turn, customer satisfaction and self-efficacy significantly impact users' continual intention (Susanto, A et al., 2016). Several studies have stated the interrelationship among continual intention, service quality, trust, involvement, perceived value, WoM and customer satisfaction (Examples- Zeithaml, V, A et al., 1996; Lee H et al, 2000; Newman, K, 2001; Caruana A, 2002; Yuvas U et al, 2004; Wen et al., 2005; Saha, GC, 2009; Saha, G, C.,2009; Saha & Theingi, 2009; Minser, J., & Webb, V., 2010; Singh, S, 2010; Van Lierop & El-Geneidy, 2016; Chang, Y. H., & Yeh, C. H, 2017; Yuan et al., 2019; D' Ona J, 2020; Nasir, M et al., 2021 and many others)

4.7.7 Service quality and Word-of-mouth (WoM) intention: Word-of-mouth (WoM) can be defined as one informal (grape wine) source of communication about specific goods or services between its senders and receivers (Murray, K., 1991). WoM is identified as a primary informational influence source in customers repurchase (re-use) decision-making as well as a channel for expressing satisfaction or dissatisfaction with their service experience (Repo, KL., 1999). WoM may be positive or negative. It is positive when the customer recommends the goods or services to other people on the other hand, when a customer blame or complains to others about the service, it is negative WoM. A positive WoM is more important for marketers as it is nine times more effective than traditional advertisements (Mazzarol, T et al., 2007)

A positive relationship found exists between service quality, word-of-mouth (WoM) and repurchase (re-use) intention and WoM significantly influences continual intention (Leonard S.E, 2017). Passenger satisfaction on the service-quality dimensions is noted to be very important while explaining behavioural intentions. Satisfied passengers mostly engage in positive WoM recommendations and hence

have high repurchase (continual) intentions (Theingi, 2009). Service quality is related to word-of-mouth (WOM) and repeat intention, and SQ and WoM are mediated by the perceived value (Chih-Hsing Sam Liu & Tingko Lee., 2016).

4.8 SQ Outcomes and their relevance in the present Study

People are more mobile now and expect efficient and high-quality public transport services. To meet the increased mobility demand, public transport service organizations must tailor their services to the needs and expectations of their current and/or potential customers. The main source of information on the service quality of public transport service is the passenger satisfaction survey, where satisfaction in public transport services is subject to different conditions than in other sectors. Satisfaction is not a single factor influencing passenger behavioural intention, as it is also affected by many personal factors like perception (perceived value), trustworthiness, complaining behaviour, involvement or commitment and other factors such as accessibility to a particular mode of transport in a particular situation. Also, as far as local public transport is concerned, especially in Kerala, a commuter has enough freedom to choose between public and private modes of transport.

4.9. Conclusion

An awareness of service quality, its dimensions, and its consequences clarifies how and to what extent these are interrelated and helps in making appropriate interventions by the concerned. Theoretical review constitutes that lower service quality leads to low perceived value and trust, then results in dissatisfaction or complaining behaviour, and low involvement of passengers and thereby negatively impacts behavioural intention and service switching behaviour. This process will turn out to be favourable in terms of high service quality. This understanding is essential for anyone who excels in customer service. The present study primarily assumed that service quality is becoming a critical concern for transport service organizations in their mission to enhance service performance and to maintain passenger loyalty, and behavioural intention.

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CHAPTER 5

COMPARISON OF SERVICE QUALITY OF STATE-OWNED AND PRIVATELY OWNED BUS SERVICES IN KERALA

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CHAPTER 5

COMPARISON OF SERVICE QUALITY OF STATE-OWNED AND PRIVATELY OWNED BUS SERVICES IN KERALA

5.1 Introduction

This section investigates and compares the service quality offered by KSRTC and privately owned bus services in Kerala. Network and time design, cleanliness, journey comfort, convenience, safety, staff Behaviour, grievance redressal system, economy, empathy, information quality, the ambience of the bus station and reliability are considered as the factors of service quality of bus transportation services in Kerala. Ownership of the bus, type of bus, type of journey and areas where are taken as categorical factors in the bus transportation services for the cross-comparison analysis.

***Objective 1:** To investigate and compare the service quality offered by the KSRTC and privately owned bus transportation services in Kerala*

This objective has been attained using mean, standard deviation, one sample t-test, independent t-test and analysis of variance (ANOVA) with Tukey's HSD post hoc analysis.

5.1.2 Constructs selected for the analysis

The following factors have been chosen to examine the service quality of bus transportation services in Kerala

- (1) *Network and time design*
- (2) *Cleanliness*
- (3) *Journey comfort*
- (4) *Convenience*
- (5) *Safety*

- (6) *Staff behaviour*
- (7) *Grievance redressal system*
- (8) *Economy*
- (9) *Empathy*
- (10) *Information quality*
- (11) *Ambiance of the bus station*
- (12) *Reliability*

The following categorical factors have been selected for cross-comparison with the service quality of private and KSRTC bus transportation services in Kerala.

- (1) *Ownership of the bus*
- (2) *Type of bus*
- (3) *Type of journey*
- (4) *Areas where bus operating*

I. SERVICE QUALITY OF PRIVATE AND KSRTC BUS SERVICES IN KERALA

5.2 *The extent of service quality offered by the Private bus services in Kerala*

H0 5.1: Private bus service in Kerala offer average level service quality to their passengers

Table 5.1

Mean score and one sample t-test of private bus service in Kerala

SI No	Factors	Mean	Standard Deviation	Mean difference	T value	P Value
1	Network and Time design	3.52	0.82	0.52	13.25	<0.001**
2	Cleanliness	3.49	0.78	0.49	13.10	<0.001**
3	Journey Comfort	3.18	0.87	0.18	4.37	<0.001**
4	Convenience	3.35	0.69	0.35	10.51	<0.001**

SI No	Factors	Mean	Standard Deviation	Mean difference	T value	P Value
5	Safety	3.13	0.82	0.13	3.34	0.001
6	Staff Behaviour	3.17	0.88	0.17	4.09	<0.001**
7	Grievance Redressal System	3.06	0.88	0.06	1.63	0.103 ^{NS}
8	Economy	3.32	0.74	0.32	9.00	<0.001**
9	Empathy	3.27	0.84	0.27	6.85	<0.001**
10	Information quality	3.18	0.73	0.18	5.10	<0.001**
11	The ambience of the Bus Station	2.81	0.95	-0.18	-4.01	<0.001**
12	Reliability	3.39	0.78	0.39	10.51	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the null hypothesis is rejected at 1% for the factors of the service quality offered by the private bus transportation service in Kerala to their customers that Network and time design, Cleanliness, Journey comfort, Convenience, Safety, Staff behaviour, Economy, Empathy, Information quality, Ambience of the bus station and Reliability. It indicates that the service quality offered by the private bus transportation service to their passengers is either below average or above average (3 is the average value). In order to examine whether the service quality offered by the private bus service in Kerala is above average or below average, the mean score examination has been done. The mean scores of the factors indicate that these mean scores are above 3 except for the factor i.e., the ambience of the bus station. It denotes that private bus service in Kerala offers an above-average level of service quality to the passengers on the dimensions: Network and time design, Cleanliness, Journey comfort, Convenience, Safety, Staff behaviour, Economy, Empathy, Information Quality and Reliability. It is also found that the ambience of the bus station is not much good in the private bus stations in Kerala

Since the P value is higher than 0.05, the null hypothesis is accepted for the factor, Grievance Redressal System. It denotes that, the grievance redressal system of the private bus service is only at an average level.

5.3 *The extent of service quality offered by the KSRTC bus services in Kerala*

H0 5.2: KSRTC bus service in Kerala offer average level service quality to their passengers

Table 5.2

Mean score and one sample t-test of KSRTC bus service in Kerala

SI No	Factors	Mean	Standard Deviation	Mean difference	T value	P Value
1	Network and Time design	3.26	0.79	0.26	5.27	<0.001**
2	Cleanliness	3.35	0.80	0.35	6.88	<0.001**
3	Journey Comfort	3.45	0.82	0.45	8.76	<0.001**
4	Convenience	3.44	0.73	0.44	9.54	<0.001**
5	Safety	3.24	0.73	0.24	5.39	<0.001**
6	Staff Behaviour	3.44	0.80	0.44	8.78	<0.001**
7	Grievance Redressal System	3.09	0.83	0.09	1.88	0.060 ^{NS}
8	Economy	3.21	0.76	0.21	4.53	<0.001**
9	Empathy	3.28	0.83	0.28	5.36	<0.001**
10	Information quality	3.07	0.72	0.07	1.59	0.112 ^{NS}
11	Ambience of Bus Station	2.64	0.95	-0.35	-5.88	<0.001**
12	Reliability	3.22	0.81	0.22	4.46	<0.001**

** denotes significant at a 1% level

Since the P value is less than 0.01, the null hypothesis is rejected at 1% for the factors of the service quality offered by the KSRTC bus transportation service in Kerala to their customers that Network and time design, Cleanliness, Journey comfort, Convenience, Safety, Staff behaviour, Economy, Empathy, Ambience of the bus

station and Reliability. It indicates that the service quality offered by the KSRTC bus transportation service to their customers is either below average or above average (3 is the average value). In order to examine whether the service quality offered by the KSRTC bus service in Kerala is above average or below average, the mean score examination has been done. The mean scores of all factors indicate that these mean scores are above 3 except for the factor the ambience of the bus station. It denotes that the KSRTC bus service in Kerala offers above average level of service quality to the passengers in the factors, Network and time design, Cleanliness, Journey comfort, Convenience, Safety, Staff behaviour, Economy, Empathy, and Reliability. It is also found that the ambience of the bus station is not much good in the KSRTC bus stations in Kerala.

Since the P value is higher than 0.05, it failed to reject the null hypothesis for Grievance Redressal System and Information quality factors. It denotes that, the grievance redressal system and information quality offered by the KSRTC to their passengers are only at an average level.

5.4 Service quality offered by private and KSRTC buses across various categorical factors of the bus transportation services

5.4.1. SERVICE QUALITY OF PRIVATE AND KSRTC BUSES – A COMPARISON

H0.5.3: There is no significant differences between private and KSRTC buses concerning the factors of service quality

Table 5.3

T-test for significant differences between private and KSRTC buses concerning the factors of service quality.

Factors of service quality of bus transportation services	Ownership of the bus				T value	P value
	Private bus		KSRTC			
	Mean	SD	Mean	SD		
Network and Time design	3.52	0.82	3.26	0.79	4.09	<0.001**
Cleanliness	3.49	0.78	3.35	0.80	2.29	0.022*
Journey Comfort	3.18	0.87	3.45	0.82	-4.00	<0.001**
Convenience	3.35	0.69	3.44	0.73	-1.65	0.098 ^{NS}
Safety	3.13	0.82	3.24	0.73	-1.86	0.063 ^{NS}
Staff Behaviour	3.17	0.88	3.44	0.80	-3.98	<0.001**
Grievance Redressal System	3.06	0.88	3.09	0.83	-0.42	0.669 ^{NS}
Economy	3.32	0.74	3.21	0.76	1.73	0.082 ^{NS}
Empathy	3.27	0.84	3.28	0.83	-0.06	0.951 ^{NS}
Information quality	3.18	0.73	3.07	0.72	1.86	0.063 ^{NS}
Ambiance of Bus Station	2.81	0.95	2.64	0.95	2.24	0.025*
Reliability	3.39	0.78	3.22	0.81	2.65	0.008**

Note: 1. ** refers to 1% significant
2. * refers to a 5% significant
3. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% significance level for the factors of service quality of private and KSRTC buses such as network and time design, journey comfort, staff behaviour and reliability. So null

hypothesis is rejected at 1% significance level with regard to these factors. As a result, there is a significant difference between private and KSRTC buses in terms of factors of service quality such as network and time design, journey comfort, staff behaviour and reliability. In other words, private and KSRTC buses are not the same in terms of the above-mentioned factors.

In terms of network and time design, journey comfort, staff behaviour and reliability, the P value is less than 0.05. Hence the null hypothesis is rejected at 5% level of significance. It indicates that there is a significant difference between private and KSRTC buses with regard to the factors of service quality such as network and time design, journey comfort, staff behaviour and reliability. It denotes that, in terms of network and time design, journey comfort, staff behaviour and reliability, private and KSRTC buses are not the same.

Regarding the factors of service quality of the transportation system in Kerala such as convenience, safety, grievance redressal system, economy, empathy and information quality, the P value is greater than 0.05. So, there is failed to reject the null hypothesis with regard to convenience, safety, grievance redressal system, economy, empathy, and information quality of private and KSRTC buses. Therefore, there is no significant difference between private and KSRTC buses with respect to the factors of service quality such as convenience, safety, grievance redressal system, economy, empathy, and information quality. It is obvious that the service quality of private and KSRTC buses is the same in terms of convenience, safety, grievance redressal system, economy, empathy, and information quality.

According to the mean score, private buses outperform KSRTC buses in terms of reliability, cleanliness, good bus station ambience, and network and time design when compared to factors affecting service quality. Also, KSRTC offers more comfortable journeys and better staff behaviour than private buses.

5.4.2. SERVICE QUALITY OF PRIVATE BUSES WITH REGARD TO THE TYPES OF BUS

H.0. 5.4 There is no significant difference among the types of private buses with respect to factors of service quality.

Table 5.4

ANOVA for the significant difference in various types of private buses with respect to the factors of service quality.

Factors of service quality	Type of private bus				F value	P value
	Ordinary	Limited stop	Fast passenger	Semi sleeper non-AC		
	Mean and SD	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.51 (0.81)	3.63 (0.81)	3.72 (1.15)	3.13 (0.84)	2.365	0.070 ^{NS}
Cleanliness	3.49 (0.75)	3.56 (0.87)	3.62 (0.78)	3.77 (0.70)	1.581	0.193 ^{NS}
Journey Comfort	3.18 (0.83)	3.04 (0.99)	3.39 (0.78)	3.72 (0.66)	3.869	0.009**
Convenience	3.33 (0.67)	3.26 (0.72)	4.06 (0.73)	3.62 (0.63)	4.553	0.004**
Safety	3.14 (0.78)	3.04 (0.94)	3.18 (0.96)	3.36 (0.73)	0.958	0.412 ^{NS}
Staff Behaviour	3.15 (0.89)	3.15 (0.88)	3.52 (0.50)	3.30 (0.84)	0.626	0.598 ^{NS}
Grievance Redressal System	3.09 (0.88)	2.94 (0.91)	3.56 (0.89)	3.04 (0.80)	1.484	0.218 ^{NS}
Economy	3.34 (0.70)	3.33 (0.72)	3.00 (1.17)	3.00 (1.02)	2.031	0.109 ^{NS}
Empathy	3.27 (0.83)	3.20 (0.90)	3.45 (0.69)	3.54 (0.74)	1.076	0.359 ^{NS}

Factors of service quality	Type of private bus				F value	P value
	Ordinary	Limited stop	Fast passenger	Semi sleeper non-AC		
	Mean and SD	Mean and SD	Mean and SD	Mean and SD		
Information quality	3.16 (0.71)	3.15 (0.82)	3.29 (0.75)	3.54 (0.64)	1.989	0.115 ^{NS}
Ambiance of Bus Station	2.84 (0.94)	2.66 (1.00)	2.87 (1.15)	3.04 (0.87)	1.334	0.263 ^{NS}
Reliability	3.40 (0.78)	3.32 (0.79)	3.35 (0.89)	3.62 (0.71)	0.880	0.452 ^{NS}

Note: 1. ** refers to 1% significant
2. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level with regard to factors of service quality of private buses such as journey comfort and convenience. Hence, there is a significant difference among types of private buses in terms of journey comfort and convenience. This shows that there are differences among the different types of private buses in terms of the journey comfort and convenience.

In terms of network and time design, cleanliness, safety, staff behaviour, grievances redressal system, economy, empathy, information quality, the ambience of the bus station and reliability the P value is greater than 0.05. So, the researcher failed to reject the null hypothesis. That is, there is no significant difference between the type of private buses with respect to factors of service quality such as network and time design, cleanliness, safety, staff behaviour, grievances redressal system, economy, empathy, information quality, the ambience of the bus station and reliability. It denotes that various types of private buses are the same in the above-mentioned factors.

Post-hoc test of ANOVA

Even though the test shows that there is a significant difference, it does not imply that each group is significantly different from all other groups. To know which groups are significantly different, a 'Post Hoc' test is carried out using 'Tukey HSD' method. The result is shown below.

Table 5.5

Post Hoc Test for significant differences among the type of private buses with respect to service quality

Factors of service quality	Types of private buses (I)	Types of private buses (J)	Mean difference (I-J)	Std. error	P value
Journey comfort	Ordinary	Limited stop	0.134	0.101	0.548 _{NS}
		Fast passenger	-0.215	0.309	0.898 _{NS}
		Semi sleeper non-AC	-0.546	0.190	0.022*
	Limited stop	Fast passenger	-0.349	0.317	0.689 _{NS}
		Semi sleeper non-AC	-0.681	0.204	0.005**
		Fast passenger	-0.331	0.356	0.789 _{NS}
Convenience	Ordinary	Limited stop	0.067	0.080	0.837 _{NS}
		Fast passenger	-0.725	0.245	0.017*
		Semi sleeper non-AC	-0.291	0.151	0.218 _{NS}
	Limited stop	Fast passenger	-0.793	0.252	0.010**
		Semi sleeper non-AC	-0.359	0.162	0.122 _{NS}
		Fast passenger	0.433	0.283	0.420 _{NS}

Note: 1. ** refers to 1% significant
 2. * refers to 5% significant
 3. ^{NS} refers to not significant

According to the results of the Tukey HSD post hoc test, there are the following significant differences found in the type of private buses in terms of service quality. In the case of journey comfort, ordinary private buses are significantly different from semi-sleeper non-AC while private limited-stop buses are significantly different from semi-sleeper non-AC. In the case of convenience, ordinary private buses differ significantly from fast-passenger private buses. Private limited-stop buses significantly differed from fast-passenger private buses

According to the mean score, semi-sleeper non-AC buses provide better journey comfort than ordinary private buses. Semi-sleeper buses provide more journey comfort than private limited-stop buses. In the case of convenience, limited-stop buses provide more convenience than ordinary private buses. Fast-passenger private buses are more convenient than private limited-stop buses.

5.4.3. SERVICE QUALITY OF KSRTC BUSES WITH REGARD TO THE TYPES OF BUS

H.0. 5.5 There is no significant difference among types of KSRTC buses with respect to factors of service quality.

Table 5.6

ANOVA for the significant difference in various types of KSRTC buses with respect to the factors of service quality.

Factors of service quality	Type of KSRTC buses				F value	P value
	Ordinary	Limited stop	Fast passenger	Semi sleeper non-AC		
	Mean and SD	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.15 (0.74)	3.62 (0.55)	3.34 (0.83)	3.11 (0.83)	3.746	0.012*
Cleanliness	3.28 (0.80)	3.38 (0.72)	3.22 (0.80)	3.57 (0.83)	2.524	0.058 ^{NS}

Factors of service quality	Type of KSRTC buses				F value	P value
	Ordinary	Limited stop	Fast passenger	Semi sleeper non-AC		
	Mean and SD	Mean and SD	Mean and SD	Mean and SD		
Journey Comfort	3.36 (0.80)	3.76 (0.66)	3.33 (0.90)	3.55 (0.77)	2.656	0.049*
Convenience	3.19 (0.70)	3.75 (0.86)	3.53 (0.70)	3.48 (0.67)	5.591	0.001**
Safety	3.15 (0.76)	3.58 (0.72)	3.13 (0.78)	3.34 (0.54)	3.724	0.012*
Staff Behaviour	3.25 (0.86)	3.79 (0.67)	3.38 (0.77)	3.59 (0.73)	4.503	0.004**
Grievance Redressal System	3.00 (0.80)	3.33 (0.84)	3.10 (0.93)	3.10 (0.71)	1.178	0.319 ^{NS}
Economy	3.20 (0.68)	3.45 (0.82)	3.24 (0.82)	3.09 (0.74)	1.427	0.236 ^{NS}
Empathy	3.12 (0.85)	3.61 (0.72)	3.24 (0.92)	3.38 (0.69)	3.049	0.029*
Information quality	2.94 (0.66)	3.28 (0.80)	2.97 (0.73)	3.25 (0.68)	3.542	0.015*
Ambiance of Bus Station	2.66 (0.86)	2.88 (0.78)	2.46 (1.14)	2.72 (0.88)	1.695	0.169 ^{NS}
Reliability	3.11 (0.87)	3.52 (0.66)	3.15 (0.85)	3.32 (0.69)	2.448	0.064 ^{NS}

Note: 1. ** refers to 1% significant
 2. * refers to 5% significant
 3. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level with regard to factors of service quality of KSRTC buses such as convenience and staff behaviour. Hence, there is a significant difference among types of KSRTC buses in terms of convenience and staff behaviour. This shows that there are differences among the types of KSRTC buses in terms of convenience and staff behaviour.

P value is less than 0.05 for the factors of service quality such as network and time design, journey comfort, safety, empathy, and information quality. So, the null hypothesis is rejected at 5% level regarding the above-mentioned factors. It reveals that there is a significant difference among the type of KSRTC buses in terms of network and time design, journey comfort, safety, empathy, and information quality.

In terms of cleanliness, grievances redressal system, economy, the ambience of the bus station and reliability the P value is greater than 0.05. So, it failed to reject the null hypothesis. That is, there is no significant difference between types of KSRTC buses with respect to factors of service quality such as network and time design, cleanliness, safety, staff behaviour, grievances redressal system, economy, empathy, information quality, the ambience of the bus station and reliability.

Post-hoc test of ANOVA

Table 5.7

Post Hoc Test for significant differences among the type of KSRTC buses with respect to service quality

Factors of service quality	Types of KSRTC buses (I)	Types of KSRTC buses (J)	Mean difference (I-J)	Std. error	P value
Network and Time design	Ordinary	Limited stop	-0.468	0.164	0.025*
		Fast passenger	-0.184	0.123	0.443 NS
		Semi sleeper non-AC	0.041	0.131	0.989 NS
	Limited stop	Fast passenger	0.284	0.164	0.314 NS
		Semi sleeper non-AC	0.509	0.171	0.017*
		Fast passenger	Semi sleeper non-AC	0.225	0.131
Journey Comfort	Ordinary	Limited stop	-0.396	0.172	0.101 NS
		Fast passenger	0.027	0.129	0.997 NS

Factors of service quality	Types of KSRTC buses (I)	Types of KSRTC buses (J)	Mean difference (I-J)	Std. error	P value	
	Limited stop	Semi sleeper non-AC	-0.192	0.137	0.504 NS	
		Fast passenger	0.423	0.172	0.070 NS	
		Semi sleeper non-AC	0.204	0.179	0.666 NS	
		Fast passenger	-0.219	0.138	0.388 NS	
Convenience	Ordinary	Limited stop	-0.560	0.152	0.002**	
		Fast passenger	-0.335	0.114	0.018*	
		Semi sleeper non-AC	-0.291	0.121	0.081 NS	
	Limited stop	Fast passenger	0.224	0.152	0.456 NS	
		Semi sleeper non-AC	0.268	0.158	0.326 NS	
		Fast passenger	0.044	0.121	0.983 NS	
	Safety	Ordinary	Limited stop	-0.433	0.152	0.024*
			Fast passenger	0.012	0.114	0.999 NS
Semi sleeper non-AC			-0.192	0.121	0.394 NS	
Limited stop		Fast passenger	0.446	0.152	0.019*	
		Semi sleeper non-AC	0.241	0.158	0.422 NS	
		Fast passenger	-0.204	0.122	0.338 NS	
Staff Behaviour	Ordinary	Limited stop	-0.541	0.166	0.007**	
		Fast passenger	-0.132	0.124	0.713 NS	
		Semi sleeper non-AC	-0.337	0.132	0.056 NS	
	Limited stop	Fast passenger	0.408	0.166	0.069 NS	

Factors of service quality	Types of KSRTC buses (I)	Types of KSRTC buses (J)	Mean difference (I-J)	Std. error	P value	
Empathy	Fast passenger	Semi sleeper non-AC	0.203	0.172	0.642 NS	
		Semi sleeper non-AC	-0.205	0.133	0.413 NS	
	Ordinary	Limited stop	-0.492	0.175	0.027*	
		Fast passenger	-0.120	0.131	0.796 NS	
	Limited stop	Semi sleeper non-AC	-0.263	0.140	0.238 NS	
		Fast passenger	0.372	0.175	0.149 NS	
		Semi sleeper non-AC	0.229	0.182	0.591 NS	
		Fast passenger	-0.143	0.140	0.738 NS	
	Information quality	Ordinary	Limited stop	-0.337	0.150	0.117 NS
			Fast passenger	-0.026	0.113	0.995 NS
		Limited stop	Semi sleeper non-AC	-0.304	0.120	0.059 NS
			Fast passenger	0.310	0.151	0.172 NS
Semi sleeper non-AC			0.032	0.156	0.997 NS	
Fast passenger			-0.278	0.121	0.102 NS	

Note: 1. ** refers to 1% significant
 2. * refers to 5% significant
 3. ^{NS} refers to not significant

According to the results of the Tukey HSD post hoc test, there are the following significant differences are found in the type of KSRTC buses in terms of service quality. In the case of network and time design, ordinary KSRTC buses differed significantly from KSRTC limited-stop buses. While KSRTC limited stop buses are significantly different from semi-sleeper non-AC. In terms of convenience, KSRTC ordinary buses are significantly different from the limited stop and fast

passenger buses. When it comes to safety, KSRTC limited-stop buses differ significantly from fast passengers while ordinary buses significantly differed from limited-stop KSRTC buses. Based on staff behaviour, ordinary KSRTC buses differ significantly from KSRTC limited-stop buses. Considering empathy, ordinary KSRTC buses significantly differed from KSRTC limited-stop buses.

According to the mean score, semi-sleeper non-AC buses provide better journey comfort than ordinary KSRTC buses. Semi-sleeper buses provide more journey comfort than KSRTC limited-stop buses. In the case of convenience, limited-stop buses provide more convenience than ordinary KSRTC buses. Fast-passenger KSRTC buses are more convenient than KSRTC limited-stop buses. According to the mean score, limited-stop buses provide better network and time design than ordinary KSRTC buses. Limited stop buses provide better network and timing than semi-sleeper non a/c buses. Ordinary buses are more convenient than KSRTC limited-stop buses. At the same time, fast-passenger KSRTC buses are more convenient than ordinary buses. While comparing limited stop and fast passengers, KSRTC fast passengers provide more safety. In the case of staff behaviour, KSRTC limited stop buses have better staff behaviour than ordinary KSRTC buses. Limited-stop KSRTC buses are more empathetic than KSRTC ordinary buses.

5.4.4. SERVICE QUALITY OF PRIVATE BUSES WITH REGARD TO THE TYPES OF JOURNEYS

H.0. 5.6 There is no significant difference among the type of journey in private buses with respect to factors of service quality.

Table 5.8

ANOVA for the significant differences in the various types of journeys in private buses with respect to the factors of service quality.

Factors of service quality	Type of journey in private buses			F value	P value
	Within district	Between district	Interstate		
	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.58 (0.79)	3.36 (0.93)	2.52 (0.45)	10.264	<0.001**
Cleanliness	3.46 (0.75)	3.57 (0.92)	4.04 (0.52)	3.086	0.047*
Journey Comfort	3.17 (0.83)	3.13 (1.03)	3.65 (0.92)	1.555	0.212 ^{NS}
Convenience	3.35 (0.69)	3.32 (0.71)	3.46 (0.73)	0.193	0.824 ^{NS}
Safety	3.12 (0.80)	3.15 (0.93)	3.25 (0.54)	0.133	0.876 ^{NS}
Staff Behaviour	3.15 (0.87)	3.28 (0.96)	3.24 (0.57)	0.679	0.508 ^{NS}
Grievance Redressal System	3.07 (0.85)	3.10 (1.05)	2.70 (0.88)	0.930	0.395 ^{NS}
Economy	3.34 (0.69)	3.31 (0.91)	2.41 (0.71)	7.885	<0.001**
Empathy	3.26 (0.80)	3.36 (1.04)	3.30 (0.58)	0.467	0.627 ^{NS}

Factors of service quality	Type of journey in private buses			F value	P value
	Within district	Between district	Interstate		
	Mean and SD	Mean and SD	Mean and SD		
Information quality	3.17 (0.70)	3.20 (0.90)	3.21 (0.31)	0.048	0.953 ^{NS}
Ambiance of Bus Station	2.84 (0.92)	2.68 (1.12)	2.72 (0.59)	0.865	0.422 ^{NS}
Reliability	3.37 (0.77)	3.48 (0.87)	3.43 (0.55)	0.625	0.536 ^{NS}

Note: 1. ** refers to 1% significant
 2. * refers to 5% significant
 3. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level regarding factors of service quality of private buses such as network and time design and economy. Hence, there is a significant difference among the type of journey of private buses in terms of network and time design and economy. This shows that there are differences between the various travel types provided by private buses in terms of the service quality components including network and time design and economy.

The P value is less than 0.05 for the factor of service quality such as cleanliness. So, the null hypothesis is rejected at 5% level of significance. Hence there is a significant difference among the type of the journey of private buses in terms of cleanliness.

In terms of journey comfort, convenience, safety, staff behaviour, grievances redressal system, empathy, information quality, the ambience of the bus station and reliability, the P value is greater than 0.05. So, It is failed to reject the null hypothesis. That is there is no significant difference between types of the journey of private buses with respect to factors of service quality such as journey comfort, convenience, safety, staff behaviour, grievances redressal system, empathy, information quality, the ambience of the bus station and reliability.

Post-hoc test of ANOVA

Table 5.9

Post Hoc Test for significant differences among the types of journeys of private buses with respect to service quality

Factors of service quality	Type of journey in private buses (I)	Type of journey in private buses (J)	Mean difference (I-J)	Std. error	P value
Network and Time design	Within district	Between district	0.228	0.104	0.076 ^{NS}
		Interstate	1.069	0.260	<0.001**
	Between district	Interstate	0.841	0.273	0.006**
Cleanliness	Within district	Between district	-0.109	0.101	0.524 ^{NS}
		Interstate	-0.577	0.250	0.056 ^{NS}
	Between district	Interstate	-0.467	0.263	0.180 ^{NS}
Economy	Within district	Between district	0.036	0.094	0.920 ^{NS}
		Interstate	0.932	0.234	<0.001**
	Between district	Interstate	0.895	0.247	<0.001**

Note: 1. ** refers to 1% significant
2. ^{NS} refers to not significant

According to the results of the Tukey HSD post hoc test, there are the following significant differences are found in the type of journey served by private buses in terms of service quality. Private buses that run within a district have a significantly different network and time design than those with interstate routes. While the private buses' journeys between districts differ greatly from their interstate counterparts. When it comes to the economy, private buses with within-district route

types and interstate journey types differ greatly. Private buses that travel between districts and those that travel interstate significantly differ from one another.

Private buses that operate within a district have superior network and time designs than those that operate on interstate routes, according to the mean score. Compared to interstate buses, private transportation between districts offers superior network and time designs. Private buses that run on district routes are more cost-effective than those that run on interstate routes. Private transportation between districts is more affordable when compared to interstate buses.

5.4.5 SERVICE QUALITY OF KSRTC BUSES WITH REGARD TO THE TYPES OF JOURNEYS

H.0. 5.7 There is no significant difference among types of journeys in KSRTC buses with respect to factors of service quality.

Table 5.10

ANOVA for the significant difference in the various types of journeys in KSRTC buses with respect to the factors of service quality

Factors of service quality	Type of journey in KSRTC buses			F value	P value
	Within district	Between district	Interstate		
	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.23 (0.76)	3.36 (0.80)	2.81 (0.85)	2.640	0.073 ^{NS}
Cleanliness	3.30 (0.78)	3.36 (0.83)	3.80 (0.74)	1.926	0.148 ^{NS}
Journey Comfort	3.43 (0.79)	3.47 (0.85)	3.50 (0.96)	0.105	0.901 ^{NS}
Convenience	3.35 (0.69)	3.56 (0.76)	3.54 (0.99)	2.576	0.078 ^{NS}
Safety	3.21 (0.75)	3.30 (0.70)	3.16 (0.67)	0.561	0.571 ^{NS}

Factors of service quality	Type of journey in KSRTC buses			F value	P value
	Within district	Between district	Interstate		
	Mean and SD	Mean and SD	Mean and SD		
Staff Behaviour	3.41 (0.78)	3.46 (0.82)	3.63 (0.82)	0.453	0.636 NS
Grievance Redressal System	3.06 (0.81)	3.17 (0.84)	2.81 (0.93)	1.160	0.315 NS
Economy	3.27 (0.74)	3.13 (0.79)	3.22 (0.72)	0.976	0.378 NS
Empathy	3.23 (0.78)	3.35 (0.90)	3.32 (0.97)	0.567	0.568 NS
Information quality	3.01 (0.69)	3.12 (0.74)	3.45 (0.80)	2.310	0.101 NS
Ambiance of Bus Station	2.61 (0.95)	2.67 (0.99)	2.74 (0.70)	0.155	0.857 NS
Reliability	3.16 (0.82)	3.34 (0.80)	3.06 (0.69)	1.757	0.175 NS

Note: ^{NS} refers to not significant

Since the P value is greater than 0.05, So here the researcher failed to reject null hypothesis with regard to factors of service quality of KSRTC buses such as network and time design, cleanliness, journey comfort, convenience, safety, staff Behaviour, grievance redressal system, economy, empathy, information quality, the ambience of the bus station and reliability. Hence, there is no significant difference among types of journeys in KSRTC buses in terms of network and time design, cleanliness, journey comfort, convenience, safety, staff Behaviour, grievance redressal system, economy, empathy, information quality, the ambience of the bus station and reliability.

5.4.6 SERVICE QUALITY OF PRIVATE BUSES WITH REGARD TO THE AREAS WHERE BUSES OPERATING

H.0.5.8 There is no significant difference among areas of private buses operating with respect to factors of service quality.

Table 5.11

ANOVA for significant differences among areas of private buses operating with respect to factors of service quality.

Factors of service quality	Areas where private buses operating			F value	P value
	Rural	Semi-Urban	Urban		
	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.46 (0.80)	3.53 (0.84)	3.70 (0.84)	2.182	0.114 ^{NS}
Cleanliness	3.50 (0.71)	3.48 (0.77)	3.48 (1.03)	0.013	0.987 ^{NS}
Journey Comfort	3.14 (0.82)	3.21 (0.84)	3.23 (1.05)	0.439	0.645 ^{NS}
Convenience	3.23 (0.65)	3.42 (0.69)	3.56 (0.75)	7.516	<0.001**
Safety	3.14 (0.78)	3.12 (0.81)	3.10 (0.96)	0.054	0.947 ^{NS}
Staff Behaviour	3.15 (0.86)	3.12 (0.82)	3.34 (1.07)	1.416	0.244 ^{NS}
Grievance Redressal System	3.13 (0.87)	2.98 (0.84)	3.05 (1.04)	1.316	0.269 ^{NS}
Economy	3.35 (0.69)	3.28 (0.75)	3.29 (0.88)	0.452	0.637 ^{NS}
Empathy	3.29 (0.84)	3.21 (0.80)	3.38 (0.95)	0.979	0.376 ^{NS}
Information quality	3.11 (0.74)	3.23 (0.67)	3.26 (0.84)	1.556	0.212 ^{NS}

Factors of service quality	Areas where private buses operating			F value	P value
	Rural	Semi-Urban	Urban		
	Mean and SD	Mean and SD	Mean and SD		
Ambiance of Bus Station	2.79 (0.97)	2.85 (0.93)	2.87 (0.98)	0.517	0.597 ^{NS}
Reliability	3.40 (0.78)	3.40 (0.74)	3.35 (0.88)	0.097	0.908 ^{NS}

Note: 1. ** refers to significant at 1% level
2. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level with regard to the factor of service quality of private buses such as convenience. Hence, there is a significant difference among areas of private buses in terms of convenience. That means different areas where private bus operation is different regarding the factor of service quality such as convenience.

In terms of network and time design, cleanliness, journey comfort, safety, staff behaviour, grievance redressal system, economy, empathy, information quality, the ambience of the bus station and reliability the P value is greater than 0.05. So, it failed to reject the null hypothesis. That is there is no significant difference among the different areas where private buses operate with respect to factors of service quality such as network and time design, cleanliness, journey comfort, safety, staff behaviour, grievance redressal system, economy, empathy, information quality, the ambience of bus station and reliability.

Post-hoc test of ANOVA**Table 5.12**

Post Hoc Test for significant differences among the different areas where private buses operate with respect to service quality

Factors of service quality	Areas where private buses operate (I)	Areas where private buses operate (J)	Mean difference (I-J)	Std. error	P value
Convenience	Rural	Semi-urban	-.19444*	0.07	0.020*
		Urban	-.33775*	0.09	0.002**
	Semi-urban	Urban	-.14330	0.10	0.334 ^{NS}

Note: 1. ** refers to 1% significant
 2. * refers to 5% significant
 3. ^{NS} refers to not significant

In terms of convenience, private buses that operate in rural areas differ significantly from those in semi-urban and urban communities. Private buses in rural locations reportedly offer less convenience than those from semi-urban and urban areas, according to the mean score.

5.4.7 SERVICE QUALITY OF KSRTC BUSES WITH REGARD TO THE AREAS WHERE BUSES OPERATING

H.0.5.9 There is no significant difference among areas of KSRTC buses operating with respect to factors of service quality.

Table 5.13

ANOVA for significant differences among areas of KSRTC buses operating with respect to factors of service quality.

Factors of service quality	Areas where KSRTC buses operating			F value	P value
	Rural	Semi-Urban	Urban		
	Mean and SD	Mean and SD	Mean and SD		
Network and Time design	3.16 (0.82)	3.38 (0.69)	3.21 (0.85)	2.000	0.137 ^{NS}
Cleanliness	3.38 (0.83)	3.31 (0.69)	3.35 (0.91)	0.170	0.843 ^{NS}
Journey Comfort	3.49 (0.89)	3.44 (0.74)	3.41 (0.83)	0.204	0.816 ^{NS}
Convenience	3.36 (0.75)	3.56 (0.70)	3.37 (0.75)	2.132	0.121 ^{NS}
Safety	3.28 (0.77)	3.26 (0.70)	3.18 (0.71)	0.375	0.688 ^{NS}
Staff Behaviour	3.45 (0.80)	3.50 (0.76)	3.34 (0.85)	0.832	0.436 ^{NS}
Grievance Redressal System	3.11 (0.82)	3.22 (0.84)	2.89 (0.81)	3.095	0.047*
Economy	3.32 (0.67)	3.22 (0.84)	3.07 (0.74)	2.104	0.124 ^{NS}
Empathy	3.26 (0.79)	3.36 (0.84)	3.19 (0.87)	0.904	0.406 ^{NS}
Information quality	3.03 (0.68)	3.14 (0.73)	3.01 (0.76)	0.834	0.436 ^{NS}

Factors of service quality	Areas where KSRTC buses operating			F value	P value
	Rural	Semi-Urban	Urban		
	Mean and SD	Mean and SD	Mean and SD		
Ambiance of Bus Station	2.59 (0.95)	2.71 (0.96)	2.62 (0.96)	0.390	0.677 ^{NS}
Reliability	3.29 (0.82)	3.35 (0.80)	2.95 (0.75)	5.364	0.005**

Note: 1. ** refers to 1% significant

2. * refers to 5% significant

3. ^{NS} refers to not significant

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level regarding factors of service quality of KSRTC buses such as reliability. Hence, there is a significant difference among areas of KSRTC buses operating in terms of reliability. That means different areas of KSRTC buses operating are different regarding the factor of service quality such as reliability.

The P value is less than 0.05 for the factor of service quality such as the grievances redressal system. So, the null hypothesis is rejected at 5% level of significance. Hence there is a significant difference among areas of KSRTC buses operating in Kerala in terms of the grievances redressal system. It indicates that KSRTC buses vary depending on the areas the buses operate in terms of service quality, such as the way complaints are handled.

In terms of network and time design, cleanliness, journey comfort, convenience, safety, staff behaviour, economy, empathy, information quality, and the ambience of the bus station, the P value is greater than 0.05. So, here failed to reject the null hypothesis. That is there is no significant difference between areas of KSRTC buses operating concerning factors of service quality such as network and time design, cleanliness, journey comfort, convenience, safety, staff behaviour, grievance redressal system, economy, empathy, information quality, the ambience of bus station.

Post-hoc test of ANOVA

Table 5.14

Post Hoc Test for significant differences among the area of KSRTC buses operating with respect to service quality

Factors of service quality	Areas of KSRTC buses operating (I)	Areas of KSRTC buses operating (J)	Mean difference (I-J)	Std. error	P value
Grievance Redressal System	Rural	Semi-Urban	-0.112	0.121	0.625 ^{NS}
		Urban	0.214	0.133	0.244 ^{NS}
	Semi-Urban	Urban	0.327	0.131	0.037*
Reliability	Rural	Semi-Urban	-0.56	0.117	0.882 ^{NS}
		Urban	0.340	0.128	0.024*
	Semi-Urban	Urban	0.396	0.127	<0.00**

Note: 1. ** refers to 1% significant
 2. * refers to a 5% significant
 3. ^{NS} refers to not significant

According to the results of the Tukey HSD post hoc test, there are the following significant differences in the areas served by KSRTC buses in terms of service quality. In terms of grievance redressal system KSRTC buses of semi-urban regions differ significantly from those in urban areas. In terms of reliability, the KSRTC buses in rural areas differ significantly from those in urban areas, meanwhile, KSRTC buses in semi-urban areas differ significantly from those in urban areas.

KSRTC buses in urban locations reportedly offer less grievance redressal system than those from semi-urban, according to the mean score. KSRTC buses operating in rural areas provide more reliable service than those from urban areas. The KSRTC buses of semi-urban areas are much more reliable than those from urban areas.

5.5 Conclusion

This chapter addressed the first objective of the study, which was to analyse and compare the service quality provided by the KSRTC (State-owned bus service) and privately-owned bus transportation services in Kerala. Service quality factors include network and time design, cleanliness, journey comfort, convenience, safety, staff behaviour, grievance redressal system, economy, empathy, information quality, bus station ambience, and reliability. For the cross-comparison analysis, the owner of the bus, bus type, journey type, and areas of bus operation are considered.

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CHAPTER 6

**ANALYSIS OF POST-SERVICE BEHAVIOUR OF
BUS PASSENGERS IN KERALA**

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CHAPTER 6

ANALYSIS OF POST-SERVICE BEHAVIOUR OF BUS PASSENGERS IN KERALA

6.1 Introduction

This section contains the second objective of the study that to investigate the level of post-service behaviour of passengers of the state-owned and privately-owned bus transportation services in Kerala. Passengers' trust, perceived value, passengers' satisfaction, passengers' complaint, passengers' involvement, continual intention, and WOM intention are the factors considered as post-service behaviour of the passengers in this study. Ownership of the bus, Gender, age, type of bus and, type of journey are taken as categorical factors for the cross-analysis in this section.

The following are the factors of post-service behaviour of passengers:

- (1) *Passengers' trust*
- (2) *Perceived value*
- (3) *Passengers' satisfaction*
- (4) *Passengers' complaints*
- (5) *Passengers' involvement*
- (6) *Continual intention*
- (7) *WOM intention*

Categorical factors are taken for the analysis:

- (1) *Ownership of the bus*
- (2) *Gender*
- (3) *Age*
- (4) *Types of bus*
- (5) *Type of journey*

6.2 Objective covered in this chapter

Objective 2: *To examine the post-service behaviour of passengers of the KSRTC and privately-owned bus transportation services in Kerala.*

PART- I

6.3 THE LEVEL OF POST-SERVICE BEHAVIOR OF PASSENGERS OF PRIVATELY-OWNED BUS TRANSPORTATION SERVICES IN KERALA

The following are the factors of post-service behaviour of passengers.

- (1) *Passengers' trust*
- (2) *Perceived value*
- (3) *Passengers' satisfaction*
- (4) *Passengers' complaints*
- (5) *Passengers' involvement*
- (6) *Continual intention*
- (7) *Word-of-Mouth intention*

H.0.6.1 **There is no significant difference among the levels of passengers' trust towards private bus services in Kerala.**

Table 6.1

Shows the levels of passengers' trust towards private bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of Passengers' Trust	116 (26.7%)	205 (47.2%)	113 (26%)	434 (100%)	37.77	<0.001**

** denotes significance at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' trust in private bus services in Kerala is not equally distributed. Therefore, the null

hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' trust in private bus services in Kerala.

From the above table, it can be observed that 26.7 per cent of passengers have a low level of trust towards private bus services in Kerala. 47.2 per cent of passengers have a moderate level of trust towards private bus services. 26 per cent of passengers feel a high level of trust towards private bus services. It shows that there is a moderate level of trust among passengers regarding private bus services in Kerala.

H.0.6.2 There is no significant difference among the levels of passengers' perceived value of private bus services in Kerala.

Table 6.2

Shows the level of passengers' perceived value of private bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of Passengers' Perceived Value	100 (23%)	236 (54.4%)	98 (22.6%)	434 (100%)	50.16	<0.001**

*** denotes significant at 1% level*

Since the P value is less than 0.01, the proportionate level of the perceived value of private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at the 1% level. It indicates that there is a significant difference regarding the levels of the perceived value of private bus services in Kerala.

From the above table, it can be observed that 23 per cent of passengers feel a low level of perceived value factors towards private bus services in Kerala. 54.4 per cent of passengers have a moderate level of perceived value towards private bus services. 22.6 per cent of passengers consider the high level of perceived value towards private bus services. It shows that there is a moderate level of perceived value among passengers in private bus services in Kerala.

H.0.6.3 There is no significant difference among the levels of passengers' satisfaction towards private bus services in Kerala.

Table 6.3

Shows the level of passengers' satisfaction towards private bus services in Kerala.

Attribute	Low Level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of Passengers' Satisfaction	87 (20%)	225 (51.8%)	122 (28.1%)	434 (100%)	71.14	<0.001**

*** denotes significant at 1% level*

Since the P value is less than 0.01, the proportionate level of passengers' satisfaction towards private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at the 1% level. It indicates that there is a significant difference regarding the levels of passengers' satisfaction towards private bus services in Kerala.

It is possible to see from the above table that 20 per cent of passengers feel a low level of satisfaction towards private bus services in Kerala. 51.8 per cent of passengers have a moderate level of satisfaction. 28.1 per cent of passengers experience a high level of satisfaction. It reveals that passengers in Kerala are moderately satisfied with private bus services in Kerala.

H.0.6.4 There is no significant difference among the levels of passengers' complaints towards private bus services in Kerala.

Table 6.4

Shows the level of passengers' complaints towards private bus services in Kerala.

Attribute	Low Level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' complaints	120 (27.6%)	188 (43.3%)	126 (29%)	434 (100%)	19.59	<0.001**

*** denotes significant at 1% level*

Since the P value is less than 0.01, the proportionate level of passengers' complaints towards private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' complaints towards private bus services in Kerala.

From the above table, it can be examined that 27.6 per cent of passengers have a low level of complaints towards private bus services in Kerala. 43.3 per cent of passengers have a moderate level of complaints towards private bus services. 29 per cent of passengers have high level of complaints towards private bus services. It demonstrates that passengers in Kerala have a moderate level of complaints with private bus services in Kerala.

H.0.6.5 There is no significant difference among the levels of passengers' involvement towards private bus services in Kerala.

Table 6.5

Shows the level of passengers' involvement towards private bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Involvement	106 (24.4%)	218 (50.2%)	110 (25.3%)	434 (100%)	55.81	<0.001**

*** denotes significant at 1% level*

Since the P value is less than 0.01, the proportionate level of passenger involvement towards private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' involvement towards private bus services in Kerala.

It is possible to see from the above table that 24.4 per cent of passengers have a low level of involvement towards private bus services in Kerala. 50.2 per cent of passengers feel moderate level of involvement towards private bus services. 25.3 per

cent of passengers have high level of involvement towards private bus services. It demonstrates that passengers in Kerala have a moderate level of involvement in private bus services in Kerala.

H.0.6.6 There is no significant difference among the levels of passengers' continual intention towards private bus services in Kerala.

Table 6.6

Shows the level of passengers' continual intention towards private bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passenger Continual Intention	103 (23.7%)	189 (43.5%)	142 (32.7%)	434 (100%)	25.63	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' continual intention towards private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' continual intention towards private bus services in Kerala.

It is possible to see from the above table that 23.7 per cent of passengers having a low level of continual intention towards private bus services in Kerala. 43.5 per cent of passengers feeling the moderate level of continual intention towards private bus services. 32.7 per cent of passengers have a high level of continual intention towards private bus services. It demonstrates that passengers in Kerala have a moderate level of continual intention towards private bus services in Kerala.

H.0.6.7 There is no significant difference among the levels of passengers' WOM intention towards private bus services in Kerala.

Table 6.7

Shows the level of passengers' WOM intention towards private bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' WOM intention	119 (27.4%)	125 (28.8%)	190 (43.8%)	434 (100%)	21.43	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' WOM intention towards private bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It reveals that there is a significant difference regarding the levels of passengers' WOM intention towards private bus services in Kerala.

As may be seen from the preceding table, 27.4 per cent of passengers have a low level of WOM intention towards private bus services in Kerala. 28.8 per cent of passengers feeling a moderate level of WOM intention towards private bus services. 43.8 per cent of passengers having a high level of WOM intention towards private bus services. It reveals that passengers in Kerala have a high level of WOM intention towards private bus services.

6.4 POST SERVICE BEHAVIOR OF THE PASSENGERS ACROSS OWNERSHIP OF BUS SERVICES (PRIVATE AND KSRTC)

H.0.6.8 There is no significant difference between ownership of bus service and the level of passengers' trust towards bus services in Kerala

Table 6.8

Chi-square test for association between ownership of bus service and level of passengers' trust towards bus services in Kerala

Ownership of bus service	Level of passengers' trust			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	116 (26.7%) [66.7%]	205 (47.2%) [61.2%]	113 (26%) [63.8%]	434 (100%)	1.51	0.470 ^{NS}
KSRTC	58 (23%) [33.3%]	130 (51.6%) [38.8%]	64 (25.4%) [36.2%]	252 (100%)		
Total	174	335	177	686		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, here, it is failed to reject null hypothesis. It shows that there is no significant association between ownership of bus services and the level of passengers' trust towards bus services in Kerala.

H.0.6.9 There is no significant difference between ownership of bus service and the level of passengers' perceived value towards bus services in Kerala

Table 6.9

Chi-square test for association between ownership of bus service and level of passengers' perceived value towards bus services in Kerala

Ownership of bus service	Level of perceived value			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	99 (22.8%) [63.1%]	216 (49.8%) [61.2%]	119 (27.4%) [67.6%]	434 (100%)	2.08	0.352 ^{NS}
KSRTC	58 (23%) [36.9%]	137 (54.4%) [38.8%]	57 (22.6%) [32.4%]	252 (100%)		
Total	157	353	176	686		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, it is failed to reject hypothesis. It implies that there is no significant association between ownership of bus services and the level of passengers' perceived value towards bus services in Kerala.

H.0.6.10 There is no significant difference between ownership of bus service and level of passengers' satisfaction towards bus services in Kerala

Table 6.10

Chi-square test for association between ownership of bus service and level of passengers' satisfaction towards bus services in Kerala

Ownership of bus service	Level of passengers' satisfaction			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	120 (27.6%) [63.4%]	192 (63.5%) [44.2%]	122 (28.1%) [62.6%]	434 (100%)	6.00	0.051 ^{NS}
KSRTC	69 (27.4%) [36.5%]	110 (43.7%) [36.4%]	73 (29%) [37.4%]	252 (100%)		
Total	189	302	195	686		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is higher than 0.05, it is failed to reject the null hypothesis. It indicates that there is no significant association between ownership of bus service and level of passengers' satisfaction towards private bus service.

H.0.6.11 There is no significant difference between ownership of bus service and level of passengers' complaints towards bus services in Kerala

Table 6.11

Chi-square test for association between ownership of bus service and level of passengers' complaint towards bus services in Kerala

Ownership of bus service	Level of passengers' complaint			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	120 (27.6%) [65.9%]	188 (43.3%) [62%]	126 (29%) [62.7%]	434 (100%)	0.78	0.677 ^{NS}
KSRTC	62 (24.6%) [34.1%]	115 (45.6%) [38%]	75 (29.8%) [37.3%]	252 (100%)		
Total	182	303	201	686		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it reveals that there is no significant association between ownership of bus service and level of passengers' complaints towards bus services in Kerala.

H.0.6.12 There is no significant difference between ownership of bus services and the level of passengers' involvement towards bus services in Kerala

Table 6.12

Chi-square test for association between ownership of bus service and level of passengers' involvement towards bus services in Kerala

Ownership of bus service	Level of passengers' involvement			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	106 (24.4%) [64.6%]	218 (50.2%) [68.8%]	110 (25.3%) [53.7%]	434 (100%)	12.40	0.002**
KSRTC	58 (23%) [35.4%]	99 (39.3%) [31.2%]	95 (37.7%) [46.3%]	252 (100%)		
Total	164	317	205	686		

Note: 1. ** denotes significant at 1% level
2. The value within () refers to the row percentage
3. The value within [] refers to the Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. Accordingly, it indicates that there is a significant association between ownership of bus service and the level of passengers' involvement towards private bus service. As per the row percentage, among privately owned bus service, 24.4 per cent of passengers feels a low level of involvement towards private bus service. 50.2 per cent of them sense moderate level of involvement in private bus service, whereas 25.3 per cent of passengers have high level of involvement in private bus service. In the case of KSRTC, 23 per cent of them having low level of involvement towards private bus service. 39.3 per cent of them felt a moderate level of involvement and 37.7 per cent of passengers felt a high level of involvement in the KSRTC bus service.

According to these findings, low levels of passengers' involvement more common among privately owned bus services, while high level of passengers' involvement is more frequent among KSRTC. As a result, it can be stated that passenger involvement is greater among KSRTC compared with privately owned bus services.

H.0.6.13 There is no significant difference between ownership of bus service and the level of passengers' continual intention towards bus services in Kerala

Table 6.13

Chi-square test for association between ownership of bus service and level of passengers' continual intention towards bus services in Kerala

Ownership of bus service	Level of Continual intention			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	103 (23.7%) [63.2%]	189 (43.5%) [64.3%]	142 (32.7%) [62%]	434 (100%)	0.28	0.866 ^{NS}
KSRTC	60 (23.8%) [36.8%]	105 (41.7%) [35.7%]	87 (34.5%) [38%]	252 (100%)		
Total	163	294	229	686		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between ownership of bus service and level of passengers' continual intention towards bus services in Kerala.

H.0.6.14 There is no significant difference between ownership of bus service and level of passengers' WOM intention towards bus services in Kerala

Table 6.14

Chi-square test for association between ownership of bus service and level of passengers' WOM intention towards bus services in Kerala

Ownership of bus service	Level of WOM intention			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Privately owned bus service	119 (27.4%) [69.6%]	125 (28.8%) [63.8%]	190 (43.8%) [59.6%]	434 (100%)	4.84	0.089 ^{NS}
KSRTC	52 (20.6%) [30.4%]	71 (28.2%) [36.2%]	129 (51.2%) [40.4%]	252 (100%)		
Total	171	196	319	686		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Hence, it shows that there is no significant association between ownership of bus service and the level of passengers' WOM intention towards bus services in Kerala.

6.5 POST SERVICE BEHAVIOR OF PRIVATE BUS PASSENGERS ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

6.5.1 PASSENGERS' TRUST IN PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.15 There is no significant difference between gender and the level of passengers' trust towards private bus service in Kerala.

Table 6.15

Chi-square test for association between gender and the level of passengers' trust towards private bus service in Kerala.

Gender	Level of passengers' trust towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	47 (21.4%) [40.5%]	109 (49.5%) [52.2%]	64 (29.1%) [56.6%]	220	6.90	0.032*
Female	69 (32.2%) [59.5%]	96 (44.9%) [46.8%]	49 (22.9%) [43.4%]			
Total	116	205	113	343		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to the row percentage
 3. The value within [] refers to the Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Hence, it reveals that there is a significant association between gender and the level of passengers' trust towards private bus service. As per the row percentage, among the male passengers, 21.4 per cent of them feels low level of trust towards private bus service. 49.5 per cent of them have a moderate level of trust towards private bus service, whereas 29.1 per cent of male passengers have a high level of trust towards private bus service. In the case of female passengers, 32.2 per cent of them have a low

level of trust towards private bus service. 44.9 per cent of them feeling moderate level of trust and 22.9 per cent of female passengers feeling a high level of trust towards private bus service.

The findings suggest that low levels of trust on private bus service are more prevalent among female passengers, whereas high level of trust on private bus service is more frequent among male passengers. As a result, it is possible to conclude that male passengers are more trusted in private bus service than female passengers.

H.0.6.16 There is no significant difference between age and the level of passengers' trust towards private bus service in Kerala

Table 6.16

Chi-square test for association between age and the level of passengers' trust towards private bus service in Kerala

Age	Level of passengers' trust towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	80 (29.5%) [69%]	119 (43.9%) [58%]	72 (26.6%) [63.7%]	271 (100%)	10.33	0.035*
41 to 60	33 (23.9%) [28.4%]	67 (48.6%) [32.7%]	38 (27.5%) [33.6%]	138 (100%)		
Above 60	3 (12%) [2.6%]	19 (76%) [9.3%]	3 (12%) [2.7%]	25 (100%)		
Total	116	205	113	434		
Total	116	205	113	343		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Hence, it demonstrates that there is a significant association between age and the level of passengers' trust towards private bus service. As per the row percentage, among the passengers in the age group of 21 to 40, 29.5 per cent of them feels low level of trust towards private bus service. 43.9 per cent of them sense moderate level of trust towards private bus service, whereas 26.6 per cent of passengers having high level of trust towards private bus service. In the case of passengers in the age group of 41 to 60, 23.9 per cent of them having low level of trust towards private bus service. 48.6 per cent of them feeling moderate level of trust and 27.5 per cent of passengers feeling high level of trust towards private bus service. Considering the passengers with age group of above 60, 12 per cent of them having low level of trust towards bus services, 76 per cent of passengers feeling moderate level of trust and 12 per cent of them having high level of trust towards private bus services in Kerala.

According to these findings, low levels of trust in private bus service is greater among passengers in the age group of 21 to 40, whereas a high level of trust on private bus service is more frequent among passengers in the age group of 41 to 60. As a result, it is possible to conclude that passengers in the age group of 41 to 60 trust private bus services more than passengers in the age category of 21 to 40 and above 60.

H.0.6.17 There is no significant difference between the type of bus service and level of passengers' trust towards private bus service in Kerala

Table 6.17

Chi-square test for association between type of bus service and level of passengers' trust towards private bus service in Kerala

Type of bus service	Level of passengers' Trust towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	81 (26.1%) [69.8%]	141 (45.5%) [68.8%]	88 (28.4%) [77.9%]	310 (100%)	5.69	0.458 ^{NS}
Limited stop	29 (30.9%) [25%]	47 (50%) [22.9%]	18 (19.1%) [15.9%]	94 (100%)		
Fast Passenger	1 (12.5%) [0.9%]	4 (50%) [2%]	3 (37.5%) [2.7%]	8 (100%)		
Semi sleeper non-AC	5 (22.7%) [4.3%]	13 (59.1%) [6.3%]	4 (18.2%) [3.5%]	22 (100%)		
Total	116	205	113	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it proves that there is no significant association between the type of bus and the level of passengers' trust towards private bus service in Kerala.

H.0.6.18 There is no significant difference between the type of journey and the level of passengers' trust towards private bus services in Kerala

Table 6.18

Chi-square test for association between type of journey and level of passengers' trust towards private bus services in Kerala

Type of journey	Level of passengers' trust towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	90 (25.6%) [77.6%]	170 (48.3%) [82.9%]	92 (26.1%) [81.4%]	352 (100%)	2.87	0.579 ^{NS}
Between District	22 (30.6%) [19%]	30 (41.7%) [14.6%]	20 (27.8%) [17.7%]	72 (100%)		
Interstate	4 (40%) [3.4%]	5 (50%) [2.4%]	1 (10%) [0.9%]	10 (100%)		
Total	116	205	113	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a conclusion, there is no significant association between types of journeys and level of passengers' trust towards private bus service in Kerala.

6.5.2 PERCEIVED VALUE OF PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.19 There is no significant difference between gender and the level of passengers' perceived value towards private bus services in Kerala.

Table 6.19

Chi-square test for association between gender and level of passengers' perceived value towards private bus services in Kerala.

Gender	Perceived value towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	37 (16.8%) [37.4%]	108 (49.1%) [50%]	75 (34.1%) [63%]	220	14.30	0.001**
Female	62 (29%) [62.6%]	108 (50.5%) [50%]	44 (20.6%) [37%]	214		
Total	99	216	119	434		

Note: 1. **denotes significant at 1% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. So, it is clear that there is a significant association between gender and level of passengers' perceived value towards private bus service. As per the row percentage, among the male passengers, 16.8 per cent of them feels low level of perceived value towards private bus service. 49.1 per cent of them sense moderate level of perceived value towards private bus service, whereas 34.1 per cent of male passengers having high level of perceived value towards private bus service. In the case of female passengers, 29 per cent of them having low level of perceived value towards private bus service. 50.5 per cent of them feeling moderate level of perceived value and 20.6

per cent of female passengers feeling high level of perceived value towards private bus service.

According to these findings, low levels of perceived value on private bus service is more prevalent among female passengers, whereas high level of perceived value on private bus service is more frequent among male passengers. As a result, it is possible to conclude that male passengers have more perceived value towards private bus services than female passengers.

H.0.6.20 There is no significant difference between the age and the level of passengers' perceived value towards private bus services in Kerala.

Table 6.20

Chi-square test for association between the age and the level of passengers' perceived value towards private bus services in Kerala.

Age group of passengers	Level of perceived value towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
21 to 40	62 (22.9%) [62.6%]	128 (47.2%) [59.3%]	81 (29.9%) [68.1%]	271 (100%)	6.42	0.170 ^{NS}
41 to 60	33 (23.9%) [33.3%]	70 (50.7%) [32.4%]	35 (25.4%) [29.4%]	138 (100%)		
Above 60	4 (16%) [4%]	18 (72%) [8.3%]	3 (12%) [2.5%]	25 (100%)		
Total	99	216	119	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a result, it demonstrates that there is no significant association between age and the level of passengers' perceived value towards private bus service in Kerala.

H.0.6.21 There is no significant difference between the type of bus service and the level of passengers' perceived value towards private bus service in Kerala

Table 6.21

Chi-square test for association between type of bus service and the level of passengers' perceived value towards private bus service in Kerala

Type of bus service	Level of perceived value towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	65 (21%) [65.7%]	162 (52.3%) [75%]	83 (26.8%) [69.7%]	310 (100%)	11.64	0.071 ^{NS}
Limited stop	31 (33%) [31.3%]	38 (40.4%) [17.6%]	25 (26.6%) [21%]	94 (100%)		
Fast Passenger	2 (25%) [2%]	4 (50%) [1.9%]	2 (25%) [1.7%]	8 (100%)		
Semi sleeper non-AC	1 (4.5%) [1%]	12 (54.5%) [5.6%]	9 (40.9%) [7.6%]	22 (100%)		
Total	99	216	119	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a result, it exhibits that there is no significant association between the type of bus service and the level of passengers' perceived value towards private bus service in Kerala.

H.0.6.22 There is no significant difference between the type of journey and the level of passengers' perceived value towards private bus services in Kerala

Table 6.22

Chi-square test for association between the type of journey and the level of passengers' perceived value towards private bus services in Kerala.

Type of journey	Level of perceived value towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	72 (20.5%) [72.7%]	189 (53.7%) [87.5%]	91 (25.9%) [76.5%]	352 (100%)	15.74	0.003**
Between District	26 (36.1%) [26.3%]	23 (31.9%) [10.6%]	23 (31.9%) [19.3%]	72 (100%)		
Interstate	1 (10%) [1%]	4 (40%) [1.9%]	5 (50%) [4.2%]	10 (100%)		
Total	99	216	119	434		

Note: 1. ** denotes significant at 1% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. Thus, it follows that there is a significant association between the type of journey and the level of passengers' perceived value towards private bus service. As per the row percentage, among the private buses operates within district, 20.5 per cent of passengers feels low level of perceived value towards private bus service. 53.7 per cent of them sense moderate level of perceived value towards private bus service, whereas 25.9 per cent of passengers having high level of perceived value towards private bus service. In the case of private buses operates between district, 36.1 per cent of them having low level of perceived value towards private bus service. 31.9 per cent of them feeling moderate level of perceived value and 31.9 per cent of passengers

feeling high level of perceived value towards private bus service. In terms of interstate buses, 10 per cent of passengers having low level of perceived value towards private bus services. 40 per cent of them feeling moderate level of perceived value and 50 per cent them having high level of perceived value towards private bus services in Kerala.

According to these data, low levels of perceived value on private bus service are more common among private buses that run between districts, whereas high levels of perceived value on private bus service are more common among interstate buses. As a result, travellers have more perceived value towards interstates buses in private bus services in Kerala.

6.5.3 PASSENGER SATISFACTION OF PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.2.23 There is no significant difference between gender and level of passengers' satisfaction towards private bus services in Kerala.

Table 6.23

Chi-square test for association between gender and level of passengers' satisfaction towards private bus services in Kerala.

Gender	Level of passengers' Satisfaction towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	36 (16.4%) [41.4%]	108 (49.1%) [48%]	76 (34.5%) [62.3%]	220	10.24	0.006**
Female	51 (23.8%) [58.6%]	117 (54.7%) [52%]	46 (21.5%) [37.7%]			
Total	87	225	122	434		

Note: 1. * *denotes significant at 1% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. Accordingly, it indicates that there is a significant association between gender and level of passengers' satisfaction towards private bus service in Kerala. As per the row percentage, among the male passengers, 16.4 per cent of them feels low level of satisfaction towards private bus service. 49.1 per cent of them sense moderate level of satisfaction towards private bus service, whereas 34.5 per cent of male passengers having high level of satisfaction towards private bus service in Kerala. In the case of female passengers, 23.8 per cent of them having low level of satisfaction towards private bus service. 54.7 per cent of them feeling moderate level of satisfaction and 21.5 per cent of female passengers feeling high level of satisfaction towards private bus service in Kerala.

According to these findings, low levels of satisfaction on private bus service is more prevalent among female passengers, whereas high level of satisfaction on private bus service is more frequent among male passengers. As a result, it is possible to conclude that male passengers are more satisfaction with private bus services than female passengers in Kerala.

H.0.6.24 There is no significant difference between the age and the level of passengers' satisfaction towards private bus service in Kerala

Table 6.24

Chi-square test for association between the age and the level of passengers' satisfaction towards private bus service in Kerala

Age	Level of passengers' satisfaction towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	55 (20.3%) [63.2%]	139 (51.3%) [61.8%]	77 (28.4%) [63.1%]	271 (100%)	3.54	0.472 ^{NS}
41 to 60	30 (21.7%) [34.5%]	69 (50%) [30.7%]	39 (28.3%) [32%]	138 (100%)		
Above 60	2 (8%) [2.3%]	17 (68%) [7.6%]	6 (24%) [4.9%]	25 (100%)		
Total	87	225	122	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it indicates that there is no significant association between age and level of passengers' satisfaction towards private bus service in Kerala.

H.0.6.25 There is no significant difference between type of bus service and level of passengers' satisfaction towards private bus services in Kerala

Table 6.25

Chi-square test for association between type of bus service and level of passengers' satisfaction towards private bus services in Kerala

Type of bus	Level of passengers' satisfaction towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Ordinary	63 (20.3%) [72.4%]	152 (49%) [67.6%]	95 (30.6%) [77.9%]	310 (100%)	8.01	0.237 ^{NS}
Limited stop	19 (20.2%) [21.8%]	52 (55.3%) [23.1%]	23 (24.5%) [18.9%]	94 (100%)		
Fast Passenger	2 (25%) [2.3%]	4 (50%) [1.8%]	2 (25%) [1.6%]	8 (100%)		
Semi sleeper non AC	3 (13.6%) [3.4%]	17 (77.3%) [7.6%]	2 (9.1%) [1.6%]	22 (100%)		
Total	87	225	122	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it shows that there is no significant association between type of bus service and level of passengers' satisfaction towards private bus service in Kerala.

H.0.6.26 There is no significant difference between type of journey and the level of passengers' satisfaction towards private bus services in Kerala

Table 6.26

Chi-square test for association between type of journey and the level of passengers' satisfaction towards private bus services in Kerala

Type of journey	Level of passengers' satisfaction towards private bus services			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	62 (17.6%) [71.3%]	191 (54.3%) [84.9%]	99 (28.1%) [81.1%]	352 (100%)	4.24	0.055 ^{NS}
Between District	23 (31.9%) [26.4%]	28 (38.9%) [12.4%]	21 (29.2%) [17.2%]	72 (100%)		
Interstate	2 (20%) [2.3%]	6 (60%) [2.7%]	2 (20%) [1.6%]	10 (100%)		
Total	87	225	122	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it reveals that there is no significant association between the types of journeys and the level of passengers' satisfaction towards private bus service in Kerala.

6.5.4 PASSENGER COMPLAINT TOWARDS PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.27 There is no significant difference between gender and the level of passengers' complaint towards private bus service in Kerala.

Table 6.27

Chi-square test for association between gender and the level of passengers' complaint towards private bus service in Kerala.

Gender	Level of passengers' complaint towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	56 (25.5%) [46.7%]	90 (40.9%) [47.9%]	74 (33.6%) [58.7%]	220	4.63	0.099 ^{NS}
Female	64 (29.9%) [53.3%]	98 (45.8%) [52.1%]	52 (24.3%) [41.3%]	214		
Total	120	188	126	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Therefore, it indicates that there is no significant association between gender and the level of passengers' complaint towards private bus service in Kerala.

H.0.6.28 There is no significant difference between age and the level of passengers' complaint towards private bus service in Kerala

Table 6.28

Chi-square test for association between age and the level of passengers' complaint towards private bus service in Kerala

Age	Level of passengers' complaint towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	81 (29.9%) [67.5%]	104 (38.4%) [55.3%]	86 (31.7%) [68.3%]	271 (100%)	8.05	0.090 ^{NS}
41 to 60	34 (24.6%) [28.3%]	69 (50%) [36.7%]	35 (25.4%) [27.8%]	138 (100%)		
Above 60	5 (20%) [4.2%]	15 (60%) [8%]	5 (20%) [4%]	25 (100%)		
Total	120	188	126	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between age and the level of passengers' complaints towards private bus service in Kerala.

H.0.6.29 There is no significant difference between the type of bus service and the level of passengers' complaints towards private bus services in Kerala

Table 6.29

Chi-square test for association between type of bus service and the level of passengers' complaints towards private bus services in Kerala

Types of bus	Level of Passengers' complaints towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Ordinary	84 (27.1%) [70%]	138 (44.5%) [73.4%]	88 (28.4%) [69.8%]	310 (100%)		
Limited stop	28 (29.8%) [23.3%]	38 (40.4%) [20.2%]	28 (29.8%) [22.2%]	94 (100%)		
Fast Passenger	3 (37.5%) [2.5%]	3 (37.5%) [1.6%]	2 (25%) [1.6%]	8 (100%)	1.55	0.956 ^{NS}
Semi sleeper non AC	5 (22.7%) [4.2%]	9 (40.9%) [4.8%]	8 (36.4%) [6.3%]	22 (100%)		
Total	120	188	126	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it exhibits that there is no significant association between the type of bus service and the level of passengers' complaints towards private bus service in Kerala.

H.0.6.30 There is no significant difference between type of journey and the level of passengers' complaint towards private bus services in Kerala

Table 6.30

Chi-square test for association between type of journey and the level of passengers' complaint towards private bus services in Kerala

Type of journey	Level of passengers' complaint towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Within District	95 (27%) [79.2%]	161 (45.7%) [85.6%]	96 (27.3%) [76.2%]	352 (100%)	11.35	0.023*
Between District	24 (33.3%) [20%]	25 (34.7%) [13.3%]	23 (31.9%) [18.3%]	72 (100%)		
Interstate	1 (10%) [0.8%]	2 (20%) [1.1%]	7 (70%) [5.6%]	10 (100%)		
Total	120	188	126	434		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 1% level. Accordingly, it indicates that there is a significant association between type of journey and the level of passengers' complaints towards private bus service. As per the row percentage, among the private buses operates within district, 27 per cent of passengers have low level of complaints towards private bus service. 45.7 per cent of them feels moderate level of complaints towards private bus service, whereas 27.3 per cent of passengers having high level of complaints towards private bus services in Kerala. In the case of private buses operates between district, 33.3 per cent of them having low level of complaints towards private bus service. 34.7 per cent of them feeling moderate level of complaints and 31.9 per cent of passengers feeling high level of complaints towards private bus service. In terms of interstate buses, 10 per cent of

passengers having low level of complaints towards private bus services. 20 per cent of them feeling moderate level of complaints and 70 per cent them having high level of complaints towards private bus services in Kerala.

According to these data, low levels of passengers' complaints on private bus service are more common among private buses that run between districts, whereas high levels of passengers' complaints on private bus service are more common among interstate buses. As a result, travellers have more complaints towards interstates buses in private bus services in Kerala.

6.5.5 PASSENGERS INVOLVEMENT OF PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.31 There is no significant difference between gender and the level of passengers' involvement in the private bus service in Kerala.

Table 6.31

Chi-square test for association between gender and the level of passengers' involvement in the private bus service in Kerala.

Gender	Level of passengers' involvement in the private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Male	44 (20%) [41.5%]	110 (50%) [50.5%]	66 (30%) [60%]	220 (100%)	7.39	0.025*
Female	62 (29%) [58.5%]	108 (50.5%) [49.5%]	44 (20.6%) [40%]	214 (100%)		
Total	106	218	110	434		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between gender and the level of passengers' involvement in the private bus service. As per the row percentage, among the male passengers, 20 per cent of them feels low level of involvement towards private bus service. 50 per cent of them have moderate level of involvement in the private bus service, whereas 30 per cent of male passengers having high level of involvement. In the case of female passengers, 29 per cent of them having low level of involvement. 50.5 per cent of them feeling moderate level of involvement and 20.6 per cent of female passengers feeling high level of involvement in the private bus service.

According to these findings, low levels of involvement on private bus service is more common among female passengers, while high level of involvement on private bus service is more frequent among male passengers. As a result, male passengers appear to be more involved in private bus services in Kerala than female passengers.

H.0.6.32 There is no significant difference between age and the level of passengers' involvement towards private bus service in Kerala

Table 6.32

Chi-square test for association between age and the level of passengers' involvement towards private bus service in Kerala

Age	Level of passengers' involvement towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	70 (25.8%) [61.9%]	122 (45%) [58.6%]	79 (29.2%) [71.8%]	271 (100%)	9.72	0.045*
41 to 60	31 (22.5%) [27.4%]	79 (57.2%) [37.9%]	28 (20.3%) [25.5%]	138 (100%)		

Age	Level of passengers' involvement towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Above 60	12 (48%) [10.61%]	7 (28%) [3.36%]	3 (12%) [2.7%]	25 (100%)		
Total	113	208	110	434		

Note: 1. * denotes significant at 5% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between age and level of passengers' involvement towards private bus service. As per the row percentage, among the passengers with age group of 21 to 40, 25.8 per cent of them feels low level of involvement in the private bus service. 45 per cent of them have moderate level of involvement towards private bus service, whereas 29.2 per cent of passengers having high level of involvement. In the case of passengers with age group of 41 to 60, 22.5 per cent of them having low level of involvement. 57.2 per cent of them feeling moderate level of involvement and 20.3 per cent of passengers feeling high level of involvement towards private bus service. Considering the passengers with age group of above 60, 48 per cent of them having low level of involvement, 28 per cent of passengers feeling moderate level of involvement and 12 per cent of them having high level of involvement in the private bus services in Kerala.

According to these findings, low levels of involvement on private bus service is greater among passengers with age group of above 60, whereas high level of involvement on private bus service is more frequent among passengers with age group of 21 to 40. As a result, it is possible to conclude that passengers with age group of 21 to 40 involvement private bus services more than passengers with age category of 41 to 60 and above 60.

H.0.6.33 There is no significant difference between type of bus service and the level of passengers' involvement towards private bus service in Kerala

Table 6.33

Chi-square test for association between type of bus service and the level of passengers' involvement towards private bus service in Kerala

Types of bus	Level of Passengers' involvement towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	75 (24.2%) [70.8%]	154 (49.7%) [70.6%]	81 (26.1%) [73.6%]	310 (100%)	3.34	0.764 ^{NS}
Limited stop	23 (24.5%) [21.7%]	46 (48.9%) [21.1%]	25 (26.6%) [22.7%]	94 (100%)		
Fast Passenger	2 (25%) [1.9%]	4 (50%) [1.8%]	2 (25%) [1.8%]	8 (100%)		
Semi sleeper non AC	6 (27.3%) [5.7%]	14 (63.6%) [6.4%]	2 (9.1%) [1.8%]	22 (100%)		
Total	106	218	110	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it follows that there is no significant association between type of bus service and the level of passengers' involvement towards private bus service in Kerala.

H.0.6.34 There is no significant difference between type of journey and the level of passengers' involvement towards private bus services in Kerala

Table 6.34

Chi-square test for association between type of journey and the level of passengers' involvement towards private bus services in Kerala

Type of journey	Level of passengers' involvement towards private bus service			Total	Chi-square Value	P value
	Low Level	Moderate level	High Level			
Within District	83 (23.6%) [78.3%]	185 (52.6%) [84.9%]	84 (23.9%) [76.4%]	352 (100%)	5.44	0.244 ^{NS}
Between District	19 (26.4%) [17.9%]	29 (40.3%) [13.3%]	24 (33.3%) [21.8%]	72 (100%)		
Interstate	4 (40%) [3.8%]	4 (40%) [1.8%]	2 (20%) [1.8%]	10 (100%)		
Total	106	218	110	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it suggests that there is no significant association between types of journeys and the level of passengers' involvement towards private bus service in Kerala.

6.5.6 PASSENGERS CONTINUAL INTENTION OF PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.35 There is no significant difference between gender and the level of continual intention towards private bus service in Kerala.

Table 6.35

Chi-square test for association between gender and the level of continual intention towards private bus service in Kerala.

Gender	Level of continual intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate Level	High Level			
Male	46 (20.9%) [44.7%]	93 (42.3%) [49.2%]	81 (36.8%) [57%]	220 (100%)	3.95	0.138 ^{NS}
Female	57 (26.6%) [55.3%]	96 (44.9%) [50.8%]	61 (28.5%) [43%]	214 (100%)		
Total	103	189	142	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it reveals that there is no significant association between gender and the level of passengers' continual intention towards private bus service in Kerala.

H.0.6.36 There is no significant difference between age and the level of passengers' continual intention towards private bus services in Kerala

Table 6.36

Chi-square test for association between age and the level of passengers' continual intention towards private bus services in Kerala

Age	Level of continual intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	66 (24.4%) [58.4%]	101 (37.3%) [56.4%]	104 (38.4%) [73.2%]	271 (100%)	19.66	0.001**
41 to 60	43 (31.1%) [38%]	59 (42.7%) [32.9%]	36 (26.1%) [25.4%]	138 (100%)		
Above 60	4 (16%) [3.5%]	19 (76%) [10.6%]	2 (8%) [1.4%]	25 (100%)		
Total	113	179	142	434		

Note: 1. ** denotes significant at 5% level

2. The value within () refers to row percentage

3. The value within [] refers to Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. Accordingly, it indicates that there is a significant association between age and the level of passengers' continual intention towards private bus services. As per the row percentage, among the passengers with age group of 21 to 40, 24.4 per cent of them have low level of continual intention towards private bus service. 37.3 per cent of them have moderate level of continual intention towards private bus service, whereas 38.4 per cent of passengers having high level of continual intention towards private bus services in Kerala. In the case of passengers with age group of 41 to 60, 31.1 per cent of them having low level of continual intention towards private bus services. 42.7 per cent of them feels moderate level of continual intention and 26.1 per cent of passengers have high level of continual intention towards private bus services in Kerala. Considering the passengers with age group of above 60, 16 per cent of them having low level of continual intention towards private bus services, 76 per cent of

passengers feeling moderate level of continual intention and 8 per cent of them having high level of continual intention towards private bus services in Kerala.

According to these findings, low levels of continual intention on private bus services is greater among passengers with age group of 41 to 60, whereas high level of continual intention on private bus service is more frequent among passengers with age group of 21 to 40. As a result, travellers between the ages of 21 and 40 are more likely to use private bus services in Kerala than passengers between the ages of 41 and 60 and above 60.

H.0.6.37 There is no significant difference between type of bus service and the level of passengers' continual intention towards private bus service in Kerala

Table 6.37

Chi-square test for association between type of bus service and the level of passengers' continual intention towards private bus service in Kerala

Types of bus	Level of Continual intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	66 (21.3%) [64.1%]	137 (44.2%) [72.5%]	107 (34.5%) [75.4%]	310 (100%)	7.20	0.302 ^{NS}
Limited stop	25 (26.6%) [24.3%]	41 (43.6%) [21.7%]	28 (29.8%) [19.7%]	94 (100%)		
Fast Passenger	3 (37.5%) [2.9%]	2 (25%) [1.1%]	3 (37.5%) [2.1%]	8 (100%)		
Semi sleeper non AC	9 (40.9%) [8.7%]	9 (40.9%) [4.8%]	4 (18.2%) [2.8%]	22 (100%)		
Total	103	189	142	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a result, it considered that there is no significant association between type of bus service and the level of passengers' continual intention towards private bus service in Kerala.

H.0.6.38 There is no significant difference between type of journey and the level of passengers' continual intention towards private bus services in Kerala

Table 6.38

Chi-square test for association between type of journey and the level of passengers' continual intention towards private bus services in Kerala

Type of journey	Level of continual intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	77 (21.9%) [74.8%]	161 (45.7%) [85.2%]	114 (32.4%) [80.3%]	352 (100%)	5.25	0.262 ^{NS}
Between District	22 (30.6%) [21.4%]	25 (34.7%) [13.2%]	25 (34.7%) [17.6%]	72 (100%)		
Interstate	4 (40%) [3.9%]	3 (30%) [1.6%]	3 (30%) [2.1%]	10 (100%)		
Total	103	189	142	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Therefore, it follows that there is no significant association between types of journeys and the level of passengers' continual intention towards private bus service in Kerala.

6.5.7 PASSENGERS WORD OF MOUTH INTENTION OF PRIVATE BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.39 There is no significant difference between gender and the level of WOM intention towards private bus service in Kerala.

Table 6.39

Chi-square test for association between gender and the level of WOM intention towards private bus service in Kerala.

Gender	Level of WOM intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate Level	High level			
Male	55 (25%) [46.2%]	54 (24.5%) [43.2%]	111 (50.5%) [58.4%]	220 (100%)	8.30	0.016*
Female	64 (29.9%) [53.8%]	71 (33.2%) [56.8%]	79 (36.9%) [41.6%]	214 (100%)		
Total	119	125	190	434		

Note: 1. * denotes significant at 5% level

2. The value within () refers to row percentage

3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. As a result, it implies that there is a significant association between gender and the level of passengers' WOM intention towards private bus service. As per the row percentage, among the male passengers, 25 per cent of them have low level of WOM intention towards private bus service. 24.5 per cent of them have moderate level of WOM intention towards private bus service, whereas 50.5 per cent of male passengers having high level of WOM intention towards private bus service. In the case of female passengers, 29.9 per cent of them having low level of WOM intention towards private bus service. 33.2 per cent of them feeling moderate level of WOM intention and 36.9

per cent of female passengers feeling high level of WOM intention towards private bus service.

According to these findings, low levels of WOM intention on private bus service is more common among female passengers, while high level of WOM intention on private bus service is more frequent among male passengers. As a result, male passengers appear to be had more WOM intention in private bus services in Kerala than female passengers.

H.0.6.40 There is no significant difference between age and the level of passengers' WOM intention towards private bus service in Kerala

Table 6.40

Chi-square test for association between age and the level of passengers' WOM intention towards private bus service in Kerala

Age	Level of WOM intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	67 (24.7%) [56.3%]	74 (27.3%) [59.2%]	130 (48%) [68.4%]	271 (100%)	7.71	0.103 ^{NS}
41 to 60	45 (32.6%) [37.8%]	40 (29%) [32%]	53 (38.4%) [27.9%]	138 (100%)		
Above 60	7 (28%) [5.9%]	11 (44%) [8.8%]	7 (28%) [3.7%]	25 (100%)		
Total	119	125	190	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it can be concluded that there is no significant association between age and the level of passengers' WOM intention towards private bus service in Kerala.

H.0.6.41 There is no significant difference between type of bus service and the level of passengers' WOM intention towards private bus service in Kerala

Table 6.41

Chi-square test for association between type of bus service and the level of passengers' WOM intention towards private bus service in Kerala

Types of bus	Level of WOM intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	85 (27.4%) [71.4%]	84 (27.1%) [67.2%]	141 (45.5%) [74.2%]	310 (100%)	7.62	0.267 ^{NS}
Limited stop	26 (27.7%) [21.8%]	29 (30.9%) [23.2%]	39 (41.5%) [20.5%]	94 (100%)		
Fast Passenger	0 (0.0%) [0.0%]	5 (62.5%) [4%]	3 (37.5%) [1.6%]	8 (100%)		
Semi sleeper non AC	8 (36.4%) [6.7%]	7 (31.8%) [5.6%]	7 (31.8%) [3.7%]	22 (100%)		
Total	119	125	190	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it reveals that there is no significant association between type of bus service and the level of passengers' WOM intention towards private bus service in Kerala.

H.0.6.42 There is no significant difference between type of journey and the level of passengers' WOM intention towards private bus services in Kerala

Table 6.42

Chi-square test for association between type of journey and the level of passengers' WOM intention towards private bus services in Kerala

Type of journey	Level of WOM intention towards private bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Within District	96 (27.3%) [80.7%]	101 (28.7%) [80.8%]	155 (44%) [81.6%]	352 (100%)	0.46	0.977 ^{NS}
Between District	21 (29.2%) [17.6%]	21 (29.2%) [16.8%]	30 (41.7%) [15.8%]	72 (100%)		
Interstate	2 (20%) [1.7%]	3 (30%) [2.4%]	5 (50%) [2.6%]	10 (100%)		
Total	119	125	190	434		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between types of journeys and the level of passengers' WOM intention towards private bus service in Kerala.

PART- II

6.6 THE LEVEL OF POST SERVICE BEHAVIOR OF PASSENGERS OF KSRTC BUS TRANSPORTATION SERVICES IN KERALA

The following are the factors of post service behavior of KSRTC passengers.

- (1) *Passengers' trust*
- (2) *Perceived value*
- (3) *Passengers' satisfaction*
- (4) *Passengers' complaints*
- (5) *Passengers' involvement*
- (6) *Continual intention*
- (7) *WOM intention*

H.0.6.43 There is no significant difference among the levels of passengers' trust towards KSRTC bus services in Kerala.

Table 6.43

Shows the level of passengers' trust towards KSRTC bus services in Kerala

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Trust	58 (23%)	130 (51.6%)	64 (25.4%)	252 (100%)	38.00	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' trust towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It reveals that there is a significant difference regarding the levels of passengers' trust towards KSRTC bus services in Kerala.

As shown in the above table, 23 per cent of passengers having low level of trust towards KSRTC bus services in Kerala. 51.6 per cent of passengers feeling moderate level of trust towards KSRTC bus services. 25.4 per cent of passengers

having high level of trust towards KSRTC bus services. It reveals that passengers in Kerala have a moderate level of trust towards KSRTC bus services.

H.0.6.44 There is no significant difference among the levels of passengers' perceived value towards KSRTC bus services in Kerala.

Table 6.44

Shows the level of passengers' perceived value towards KSRTC bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Perceived value	58 (23%)	137 (54.4%)	57 (22.6%)	252 (100%)	50.16	<0.001**

*** denotes significant at 1% level*

Since the P value is less than 0.01, the proportionate level of perceived value of KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' perceived value towards KSRTC bus services in Kerala.

From the above table, it can be observed that 23 per cent of passengers have low level of perceived value towards KSRTC bus services in Kerala. 54.4 per cent of passengers feeling moderate level of perceived value towards KSRTC bus services. 22.6 per cent of passengers consider high level of perceived value towards KSRTC bus services. It shows that there is a moderate level of perceived value having among passengers about KSRTC bus services in Kerala.

H.0.6.45 There is no significant difference among the levels of passengers' satisfaction towards KSRTC bus services in Kerala.

Table 6.45

Shows the level of passengers' satisfaction towards KSRTC bus services in Kerala.

Attribute	Low Level	Moderate level	High Level	Total	Chi-Square Value	P value
Levels of passengers' satisfaction	69 (27.4%)	110 (43.7%)	73 (29%)	252 (100%)	12.16	0.002**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' satisfaction towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' satisfaction towards KSRTC bus services in Kerala.

It is possible to see from the above table that 27.4 per cent of passengers feeling low level of satisfaction towards KSRTC bus services in Kerala. 43.7 per cent of passengers feeling moderate level of satisfaction towards KSRTC bus services. 29 per cent of passengers experiencing high level of satisfaction towards KSRTC bus services. It reveals that passengers in Kerala are moderately satisfied with KSRTC bus services in Kerala.

H.0.6.46 There is no significant difference among the levels of passengers' complaints towards KSRTC bus services in Kerala.

Table 6.46

Shows the level of passengers' complaints towards KSRTC bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Complaint	62 (24.6%)	115 (45.6%)	75 (29.8%)	252 (100%)	18.16	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' complaints towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' complaints towards KSRTC bus services in Kerala.

From the above table, it can be examining that 24.6 per cent of passengers having low level of complaints towards KSRTC bus services in Kerala. 45.6 per cent of passengers feeling moderate level of complaints towards KSRTC bus services. 29.8 per cent of passengers having high level of complaints towards KSRTC bus services. It demonstrates that passengers in Kerala have a moderate level of complaints with KSRTC bus services in Kerala.

H.0.6.47 There is no significant difference among the levels of passengers' involvement towards KSRTC bus services in Kerala.

Table 6.47

Shows the level of passengers' involvement towards KSRTC bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Involvement	58 (23%)	99 (39.3%)	95 (37.7%)	252 (100%)	12.16	0.002**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' involvement towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' involvement towards KSRTC bus services in Kerala.

It is possible to see from the above table that 23 per cent of passengers having low level of involvement towards KSRTC bus services in Kerala. 39.3 per cent of passengers feeling moderate level of involvement towards KSRTC bus services. 37.7 per cent of passengers having high level of involvement towards KSRTC bus services. It demonstrates that passengers in Kerala have a moderate level of involvement in KSRTC bus services in Kerala.

H.0.6.48 There is no significant difference among the levels of passengers' continual intention towards KSRTC bus services in Kerala.

Table 6.48

Shows the level of passengers' continual intention towards KSRTC bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of passengers' Continual intention	60 (23.8%)	105 (41.7%)	87 (34.5%)	252 (100%)	12.21	0.002**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' continual intention towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It indicates that there is a significant difference regarding the levels of passengers' continual intention towards KSRTC bus services in Kerala.

It is possible to see from the above table that 23.8 per cent of passengers having low level of continual intention towards KSRTC bus services in Kerala. 41.7 per cent of passengers feeling moderate level of continual intention towards KSRTC bus services. 34.5 per cent of passengers having high level of continual intention towards KSRTC bus services. It demonstrates that passengers in Kerala have a moderate level of continual intention towards KSRTC bus services in Kerala.

H.0.6.49 There is no significant difference among the levels of passengers' WOM intention towards KSRTC bus services in Kerala.

Table 6.49

Shows the level of passengers' WOM intention towards KSRTC bus services in Kerala.

Attribute	Low level	Moderate Level	High Level	Total	Chi-square Value	P value
Levels of WOM Intention	52 (20.6%)	71 (28.2%)	129 (51.2%)	252 (100%)	38.31	<0.001**

** denotes significant at 1% level

Since the P value is less than 0.01, the proportionate level of passengers' WOM intention towards KSRTC bus services in Kerala is not equally distributed. Therefore, the null hypothesis is rejected at 1% level. It reveals that there is a significant difference regarding the levels of passengers' WOM intention towards KSRTC bus services in Kerala.

As may be seen from the preceding table, 20.6 per cent of passengers having low level of WOM intention towards KSRTC bus services in Kerala. 28.2 per cent of passengers feeling moderate level of WOM intention towards KSRTC bus services. 51.2 per cent of passengers having high level of WOM intention towards KSRTC bus services. It reveals that passengers in Kerala have a high level of WOM intention towards KSRTC bus services in Kerala.

6.7 POST SERVICE BEHAVIOR OF KSRTC BUS PASSENGERS ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

The following five factors are considered as categorical factors of passengers and bus services for the analysis.

1. *Ownership of the bus*
2. *Gender*
3. *Age*
4. *Types of bus*
5. *Type of journey*

Factors of post purchase behavior of passengers of KSRTC transportation services in Kerala

1. *Passengers' trust*
2. *Perceived value*
3. *Passengers' satisfaction*
4. *Passengers' complaints*
5. *Passengers' involvement*
6. *Continual intention*
7. *WOM intention*

6.7.1 PASSENGERS TRUST OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.50 There is no significant difference between gender and the level of passengers' trust towards KSRTC bus services in Kerala

Table 6.50

Chi-square test for association between gender and the level of passengers' trust towards KSRTC bus services in Kerala

Gender	Level of passengers' trust towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	36 (23.4%) [62.1%]	81 (52.6%) [62.3%]	37 (24%) [57.8%]	154 (100%)	0.39	0.821 ^{NS}
Female	22 (22.4%) [37.9%]	49 (50%) [37.7%]	27 (27.6%) [42.2%]	98 (100%)		
Total	58	130	64	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between gender and level of passengers' trust towards KSRTC bus services in Kerala.

H.0.6.51 There is no significant difference between age and the level of passengers' trust towards KSRTC bus service in Kerala

Table 6.51

Chi-square test for association between age and the level of passengers' trust towards KSRTC bus service in Kerala

Age	Level of passengers' Trust towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	36 (25.5%) [62.1%]	67 (47.5%) [51.5%]	38 (27%) [59.4%]	141 (100%)	9.30	0.054 ^{NS}
41 to 60	21 (22.1%) [36.2%]	49 (51.6%) [37.7%]	25 (26.3%) [39.1%]	95 (100%)		
Above 60	1 (6.3%) [1.7%]	14 (87.5%) [10.8%]	1 (6.3%) [1.6%]	16 (100%)		
Total	58	130	64	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it can be concluded that there is no significant association between age and the level of passengers' trust towards KSRTC bus services in Kerala.

H.0.6.52 There is no significant difference between type of bus and the level of passengers' trust towards KSRTC bus services in Kerala.

Table 6.52

Chi-square test for association between type of bus and the level of passengers' trust towards KSRTC bus service in Kerala.

Types of bus	Level of passengers' Trust towards KSRTC bus service			Total	Chi-square Value	P value
	Low Level	Moderate level	High level			
Ordinary	27 (33.8%) [46.2%]	38 (47.5%) [29.9%]	15 (18.8%) [23.4%]	80 (100%)	14.70	0.023*
Limited stop	5 (16.1%) [8.19%]	13 (41.9%) [10.2%]	13 (41.9%) [20.3%]	31 (100%)		
Fast Passenger	19 (24.1%) [31.14%]	42 (53.2%) [33%]	18 (22.8%) [28.1%]	79 (100%)		
Semi sleeper/non-AC	10 (16.1%) [16.3%]	34 (54.8%) [26.7%]	18 (29%) [28.1%]	62 (100%)		
Total	61	127	64	252		

Note: 1. * denotes significant at 5% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between types of bus and level of passengers' trust towards KSRTC bus service in Kerala. As per the row percentage, in case of ordinary bus, 33.8 per cent of passengers feels low level of trust towards KSRTC bus services. 47.5 per cent of passengers' sense moderate level of trust towards KSRTC bus services, whereas 18.8 per cent of passengers having high level of trust towards KSRTC bus service. In the case of limited stop buses, 16.1 per cent of them having low level of trust towards KSRTC bus service. 41.9 per cent of them feeling moderate level of trust and 41.9 per cent of passengers feeling high level of trust towards KSRTC bus services in Kerala. Considering the fast passenger buses,

24.1 per cent of them having low level of trust towards KSRTC bus services, 53.2 per cent of passengers feeling moderate level of trust and 22.8 per cent of passengers having high level of trust towards KSRTC bus services in Kerala. Regarding the semi sleeper/non-AC buses, 16.1 per cent of travellers have low level of trust on KSRTC bus services. 54.8 per cent of passengers feeling moderate level of trust and 29 per cent of them having high level of trust towards KSRTC bus services in Kerala.

According to these findings, low levels of passengers' trust is more prevalent among ordinary buses, meanwhile high level of passengers' trust is more frequent among limited stop buses. Therefore, passengers have more trust on limited stop buses than ordinary, fast passenger and semi sleeper/non-AC buses in KSRTC bus services in Kerala.

H.0 6.53 There is no significant difference between type of journey and the level of passengers' trust towards KSRTC bus services in Kerala.

Table 6.53

Chi-square test for association between type of journey and the level of passengers' trust towards KSRTC bus service in Kerala.

Type of journey	Level of passengers' trust towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	37 (25.7%) [63.8%]	74 (51.4%) [56.9%]	33 (22.9%) [51.6%]	144 (100%)	2.77	0.596 ^{NS}
Between District	20 (20.6%) [34.5%]	49 (50.5%) [37.7%]	28 (28.9%) [43.8%]	97 (100%)		
Interstate	1 (9.1%) [1.7%]	7 (63.6%) [5.4%]	3 (27.3%) [4.7%]	11 (100%)		
Total	58	130	64	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between types of journeys and the level of passengers' trust towards KSRTC bus services in Kerala.

6.7.2 PERCEIVED VALUE OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.54 There is no significant difference between gender and the level of passengers' perceived value towards KSRTC bus services in Kerala

Table 6.54

Chi-square test for association between gender and the level of passengers' perceived value towards KSRTC bus services in Kerala

Gender	Level of perceived value towards KSRTC bus service			Total	Chi- square Value	P value
	Low level	Moderate level	High level			
Male	42 (27.3%) [72.4%]	76 (49.4%) [55.5%]	36 (23.4%) [63.2%]	154 (100%)	5.05	0.080 ^{NS}
Female	16 (16.3%) [27.6%]	61 (62.2%) [44.5%]	21 (21.4%) [36.8%]	98 (100%)		
Total	58	137	57	252		

Note: 1. ^{NS} denotes not significant
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a result, it denotes that there is no significant association between gender and the level of passengers' perceived value towards KSRTC bus services in Kerala.

H.0.6.55 There is no significant difference between age and the level of passengers' perceived value towards KSRTC bus services in Kerala.

Table 6.55

Chi-square test for association between age and the level of passengers' perceived value towards KSRTC bus service in Kerala.

Age	Level of Perceived value towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
21 to 40	31 (22%) [53.4%]	80 (56.7%) [58.4%]	30 (21.3%) [52.6%]	141 (100%)	7.46	0.113 ^{NS}
41 to 60	27 (28.4%) [46.6%]	45 (47.4%) [32.8%]	23 (24.2%) [40.4%]	95 (100%)		
Above 60	0 (0.0%) [0.0%]	12 (75%) [8.8%]	4 (25%) [7%]	16 (100%)		
Total	58	137	57	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it signifies that there is no significant association between age and the level of passengers' perceived value towards KSRTC bus services in Kerala.

H.0.6.56 There is no significant difference between type of bus and the level of passengers' perceived value towards KSRTC bus services in Kerala.

Table 6.56

Chi-square test for association between type of bus and the level of passengers' perceived value towards KSRTC bus service in Kerala.

Type of bus	Level of perceived value towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Ordinary	20 (25%) [34.5%]	48 (60%) [35%]	12 (15%) [21.1%]	80 (100%)		
Limited stop	3 (9.7%) [5.2%]	17 (54.8%) [12.4%]	11 (35.5%) [19.3%]	31 (100%)		
Fast Passenger	25 (31.6%) [43.1%]	38 (48.1%) [27.7%]	16 (20.3%) [28.1%]	79 (100%)	13.05	0.042*
Semi sleeper non-AC	10 (16.1%) [17.2%]	34 (54.8%) [24.8%]	18 (29%) [31.6%]	62 (100%)		
Total	58	137	57	252		

Note: 1. * denotes significant at 5% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between types of bus and level of passengers' perceived value towards KSRTC bus service in Kerala. As per the row percentage, in case of ordinary bus, 25 per cent of passengers feels low level of perceived value towards KSRTC bus services. 60 per cent of passengers sense moderate level of perceived value towards KSRTC bus services, whereas 15 per cent of passengers having high level of perceived value towards KSRTC bus service. In

the case of limited stop buses, 9.7 per cent of them having low level of perceived value towards KSRTC bus service. 54.8 per cent of them feeling moderate level of perceived value and 35.5 per cent of passengers feeling high level of perceived value towards KSRTC bus services in Kerala. Considering the fast passenger buses, 31.6 per cent of them having low level of perceived value towards KSRTC bus services, 48.1 per cent of passengers feeling moderate level of perceived value and 20.3 per cent of passengers having high level of perceived value towards KSRTC bus services in Kerala. Regarding the semi sleeper/non-AC buses, 16.1 per cent of commuters have low level of perceived value on KSRTC bus services. 54.8 per cent of passengers feeling moderate level of perceived value and 29 per cent of them having high level of perceived value towards KSRTC bus services in Kerala.

According to these findings, low levels of passengers' perceived value is more prevalent among fast passenger buses, meanwhile high level of passengers' perceived value is more frequent among limited stop buses. Consequently, commuters have more perceived value on limited stop buses than ordinary, fast passenger and semi sleeper/non-AC buses in KSRTC bus services in Kerala.

H.0.6.57 There is no significant difference between type of journey and the level of passengers' perceived value towards KSRTC bus services in Kerala.

Table 6.57

Chi-square test for association between type of journey and the level of passengers' perceived value towards KSRTC bus service in Kerala.

Type of journey	Level of perceived value towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	33 (22.9%) [56.9%]	81 (56.3%) [59.1%]	30 (20.8%) [52.6%]	144 (100%)		
Between District	23 (23.7%) [39.7%]	51 (52.6%) [37.2%]	23 (23.7%) [40.4%]	97 (100%)		
Interstate	2 (18.2%) [3.4%]	5 (45.5%) [3.6%]	4 (36.4%) [7%]	11 (100%)	1.61	0.806 ^{NS}
Total	58	137	57	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between type of journey and the level of passengers' perceived value towards KSRTC bus services in Kerala.

6.7.3 PASSENGERS SATISFACTION OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.58 There is no significant difference between gender and the level of passengers' satisfaction towards KSRTC bus services in Kerala

Table 6.58

Chi-square test for association between gender and the level of passengers' satisfaction towards KSRTC bus services in Kerala

Gender	Level of passengers' satisfaction towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	43 (27.9%) [62.3%]	66 (42.9%) [60%]	45 (29.2%) [61.6%]	154 (100%)	0.10	0.947 ^{NS}
Female	26 (26.5%) [37.7%]	44 (44.9%) [40%]	28 (28.6%) [38.4%]	98 (100%)		
Total	69	110	73	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it shows that there is no significant association between gender and the level of passengers' satisfaction towards KSRTC bus services in Kerala.

H.0.6.59 There is no significant difference between age and the level of passengers' satisfaction towards KSRTC bus services in Kerala.

Table 6.59

Chi-square test for association between age and the level of passengers' satisfaction towards KSRTC bus service in Kerala.

Age	Level of passengers' satisfaction towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	38 (27%) [60.3%]	63 (44.7%) [56.2%]	40 (28.4%) [51.9%]	141 (100%)	11.80	0.019*
41 to 60	20 (21%) [31.7%]	43 (45.2%) [38.3%]	32 (33.7%) [41.5%]	95 (100%)		
Above 60	5 (31.5%) [7.9%]	6 (37.5%) [5.35%]	5 (31.5%) [6.4%]	16 (100%)		
Total	63	112	77	252		

Note: 1. * denotes significant at 5% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between age and the level of passengers' satisfaction towards KSRTC bus service. As per the row percentage, among the passengers with age group of 21 to 40, 27 per cent of them feels low level of satisfaction towards KSRTC bus services. 44.7 per cent of them sense moderate level of satisfaction towards KSRTC bus services, whereas 28.4 per cent of passengers having high level of satisfaction towards KSRTC bus service. In the case of passengers with age group of 41 to 60, 21 per cent of them having low level of satisfaction towards KSRTC bus service. 45.2 per cent of them feeling moderate level of satisfaction and 33.7 per cent of passengers feeling high level of satisfaction towards KSRTC bus services in Kerala. Considering the passengers with age group of above 60, 31.5 per cent of them having low level of satisfaction towards

KSRTC bus services, 37.5 per cent of passengers feeling moderate level of satisfaction and 31.5 per cent of them having high level of satisfaction towards KSRTC bus services in Kerala.

According to these findings, low levels of satisfaction on KSRTC bus service is greater among passengers with age group of above 60, whereas high level of satisfaction on KSRTC bus service is more frequent among passengers with age group of 41 to 60. Therefore, commuters between the ages of 41 and 60 are more satisfied with KSRTC bus services in Kerala than passengers between the ages of 21 and 40 and above 60.

H.0.6.60 There is no significant difference between type of bus and the level of passengers' satisfaction towards KSRTC bus services in Kerala.

Table 6.60

Chi-square test for association between type of bus and the level of passengers' satisfaction towards KSRTC bus service in Kerala.

Type of bus	Level of Passengers' satisfaction towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Ordinary	26 (32.5%) [37.7%]	40 (50%) [36.4%]	14 (17.5%) [19.2%]	80 (100%)	25.62	<0.001**
Limited stop	4 (12.9%) [5.8%]	9 (29%) [8.2%]	18 (58.1%) [24.7%]	31 (100%)		
Fast Passenger	29 (36.7%) [42%]	29 (36.7%) [26.4%]	21 (26.6%) [28.8%]	79 (100%)		
Semi sleeper non AC	10 (16.1%) [14.5%]	32 (51.6%) [29.1%]	20 (32.3%) [27.4%]	62 (100%)		
Total	69	110	73	252		

Note: 1. ** denotes significant at 1% level
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is less than 0.01, the null hypothesis is rejected at 1% level. Accordingly, it indicates that there is a significant association between types of bus and the level of passengers' satisfaction towards KSRTC bus services in Kerala. As per the row percentage, in case of ordinary bus, 32.5 per cent of passengers feels low level of satisfaction towards KSRTC bus services. 50 per cent of passengers sense moderate level of satisfaction towards KSRTC bus services, whereas 17.5 per cent of passengers having high level of satisfaction towards KSRTC bus service in Kerala. In the case of limited stop buses, 12.9 per cent of them having low level of satisfaction towards KSRTC bus service. 29 per cent of them feeling moderate level of satisfaction and 58.1 per cent of passengers feeling high level satisfaction towards KSRTC bus services in Kerala. Considering the fast passenger buses, 36.7 per cent of them having low level of satisfaction towards KSRTC bus services, 36.7 per cent of passengers feeling moderate level of satisfaction and 26.6 per cent of passengers having high level of satisfaction towards KSRTC bus services in Kerala. Regarding the semi sleeper/non-AC buses, 16.1 per cent of travellers have low level of satisfaction on KSRTC bus services. 51.6 per cent of passengers feeling moderate level of satisfaction and 32.3 per cent of them having high level of satisfaction towards KSRTC bus services in Kerala.

According to these findings, low levels of passengers' satisfaction is more prevalent among fast passenger buses, meanwhile high level of passengers' satisfaction is more frequent among limited stop buses. Consequently, travellers have more satisfaction on limited stop buses than ordinary, fast passenger and semi sleeper/non-AC buses in KSRTC bus services.

H.0.6.61 There is no significant difference between type of journey and the level of passengers' satisfaction towards KSRTC bus services in Kerala.

Table 6.61

Chi-square test for association between type of journey and the level of passengers' satisfaction towards KSRTC bus service in Kerala.

Type of journey	Level of passengers' satisfaction towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Within District	41 (28.5%) [59.4%]	65 (45.1%) [59.1%]	38 (26.4%) [52.1%]	144 (100%)	2.15	0.707 ^{NS}
Between District	26 (26.8%) [37.7%]	41 (42.3%) [37.3%]	30 (30.9%) [41.1%]	97 (100%)		
Interstate	2 (18.2%) [2.9%]	4 (36.4%) [3.6%]	5 (45.5%) [6.8%]	11 (100%)		
Total	69	110	73	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Consequently, it indicates that there is no significant association between type of journey and the level of passengers' satisfaction towards KSRTC bus services in Kerala.

6.7.4 PASSENGERS COMPLAINT OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.62 There is no significant difference between gender and the level of passengers' complaint towards KSRTC bus services in Kerala

Table 6.62

Chi-square test for association between gender and the level of passengers' complaint towards KSRTC bus services in Kerala

Gender	Level of passengers' complaint towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	37 (24%) [59.7%]	71 (46.1%) [61.7%]	46 (29.9%) [61.3%]	154 (100%)	0.07	0.964 ^{NS}
Female	25 (25.5%) [40.3%]	44 (44.9%) [38.3%]	29 (29.6%) [38.7%]	98 (100%)		
Total	62	115	75	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it suggests that there is no significant association between gender and the level of passengers' complaints towards KSRTC bus services in Kerala.

H.0.6.63 There is no significant difference between age and the level of passengers' complaint towards KSRTC bus services in Kerala.

Table 6.63

Chi-square test for association between age and the level of passengers' complaint towards KSRTC bus service in Kerala.

Age	Level of passengers' complaint towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	31 (22%) [50%]	68 (48.2%) [59.1%]	42 (29.8%) [56%]	141 (100%)	3.97	0.409 ^{NS}
41 to 60	29 (30.5%) [46.8%]	38 (40%) [33%]	28 (29.5%) [37.3%]	95 (100%)		
Above 60	2 (12.5%) [3.2%]	9 (56.3%) [7.8%]	5 (31.3%) [6.7%]	16 (100%)		
Total	62	115	75	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between age and the level of passengers' complaint towards KSRTC bus services in Kerala.

H.0.6.64 There is no significant difference between type of bus and the level of passengers' complaint towards KSRTC bus services in Kerala.

Table 6.64

Chi-square test for association between type of bus and the level of passengers' complaint towards KSRTC bus service in Kerala.

Type of bus	Level of Passengers' complaint towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Ordinary	25 (31.3%) [40.3%]	35 (43.8%) [30.4%]	20 (25%) [26.7%]	80 (100%)	13.84	0.031*
Limited stop	4 (12.9%) [6.5%]	16 (51.6%) [13.9%]	11 (35.5%) [14.7%]	31 (100%)		
Fast Passenger	25 (31.6%) [40.3%]	36 (45.6%) [31.3%]	18 (22.8%) [24%]	79 (100%)		
Semi sleeper non AC	8 (12.9%) [12.9%]	28 (45.2%) [24.3%]	26 (41.9%) [34.7%]	62 (100%)		
Total	62	115	75	252		

Note: 1. *denotes significant at 5% level
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is less than 0.05, the null hypothesis is rejected at 5% level. Accordingly, it indicates that there is a significant association between types of bus and the level of passengers' complaints towards KSRTC bus services in Kerala. As per the row percentage, in case of ordinary bus, 31.3 per cent of passengers feels low level of complaints towards KSRTC bus services. 43.8 per cent of passengers sense moderate level of complaints towards KSRTC bus services, whereas 25 per cent of passengers having high level of complaints towards KSRTC bus service in Kerala. In the case of limited stop buses, 12.9 per cent of them having low level of complaints towards KSRTC bus service. 51.6 per cent of them feeling moderate level of complaints and 35.5 per cent of passengers feeling high level complaints towards

KSRTC bus services in Kerala. Considering the fast passenger buses, 31.6 per cent of them having low level of complaints towards KSRTC bus services, 45.6 per cent of passengers feeling moderate level of complaints and 22.8 per cent of passengers having high level of complaints towards KSRTC bus services in Kerala. Regarding the semi sleeper/non-AC buses, 12.9 per cent of travellers have low level of complaints towards KSRTC bus services. 45.2 per cent of passengers feeling moderate level of complaints and 41.9 per cent of them having high level of complaints towards KSRTC bus services in Kerala.

According to these findings, low levels of passengers' complaints is more prevalent among fast passenger buses, meanwhile high level of passengers' complaints is more frequent among semi sleeper/non-AC buses. Therefore, travellers have more complaints on semi sleeper/non-AC buses than ordinary, fast passenger and limited stop buses in KSRTC bus services in Kerala.

H.0.6.65 There is no significant difference between type of journey and the level of passengers' complaint towards KSRTC bus services in Kerala.

Table 6.65

Chi-square test for association between type of journey and the level of passengers' complaint towards KSRTC bus service in Kerala.

Type of journey	Level of passengers' complaint towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
Within District	40 (27.8%) [64.5%]	63 (43.8%) [54.8%]	41 (28.5%) [54.7%]	144 (100%)	3.22	0.522 ^{NS}
Between District	20 (20.6%) [32.3%]	45 (46.4%) [39.1%]	32 (33%) [42.7%]	97 (100%)		
Interstate	2 (18.2%) [3.2%]	7 (63.6%) [6.1%]	2 (18.2%) [2.7%]	11 (100%)		
Total	62	115	75	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it concludes that there is no significant association between type of journey and the level of passengers' complaint towards KSRTC bus services in Kerala.

6.7.5 PASSENGERS INVOLVEMENT OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.66 There is no significant difference between gender and the level of passengers' involvement towards KSRTC bus services in Kerala

Table 6.66

Chi-square test for association between gender and the level of passengers' involvement towards KSRTC bus services in Kerala

Gender	Level of passengers' involvement towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	36 (23.4%) [62.1%]	61 (39.6%) [61.6%]	57 (37%) [60%]	154 (100%)	0.08	0.960 ^{NS}
Female	22 (22.4%) [37.9%]	38 (38.8%) [38.4%]	38 (38.8%) [40%]	98 (100%)		
Total	58	99	95	252		

Note: 1. ^{NS} denotes not significant
2. The value within () refers to row percentage
3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Consequently, it reveals that there is no significant association between gender and the level of passengers' involvement towards KSRTC bus services in Kerala.

H.0.6.67 There is no significant difference between age and the level of passengers' involvement towards KSRTC bus services in Kerala.

Table 6.67

Chi-square test for association between age and the level of passengers' involvement towards KSRTC bus service in Kerala.

Age	Level of passengers' involvement towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High Level			
21 to 40	35 (24.8%) [60.3%]	49 (34.8%) [49.5%]	57 (40.4%) [60%]	141 (100%)	5.43	0.246 ^{NS}
41 to 60	20 (21.1%) [34.5%]	40 (42.1%) [40.4%]	35 (36.8%) [36.8%]	95 (100%)		
Above 60	3 (18.8%) [5.2%]	10 (62.5%) [10.1%]	3 (18.8%) [3.2%]	16 (100%)		
Total	58	99	95	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it indicates that there is no significant association between age and the level of passengers' involvement towards KSRTC bus services in Kerala.

H.0.6.68 There is no significant difference between type of bus and the level of passengers' involvement towards KSRTC bus services in Kerala.

Table 6.68

Chi-square test for association between type of bus and the level of passengers' involvement towards KSRTC bus service in Kerala.

Type of bus	Level of Passengers' involvement towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	27 (33.8%) [46.6%]	25 (31.3%) [25.3%]	28 (35%) [29.5%]	80 (100%)	6.64	0.141 ^{NS}
Limited stop	6 (19.4%) [10.3%]	11 (35.5%) [11.1%]	14 (45.2%) [14.7%]	31 (100%)		
Fast Passenger	16 (20.3%) [27.6%]	34 (43%) [34.3%]	29 (36.7%) [30.5%]	79 (100%)		
Semi sleeper non AC	9 (14.5%) [15.5%]	29 (46.8%) [29.3%]	24 (38.7%) [25.3%]	62 (100%)		
Total	58	99	95	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Therefore, it indicates that there is no significant association between types of bus service and the level of passengers' involvement towards KSRTC bus services in Kerala.

H.0.6.69 There is no significant difference between type of journey and the level of passengers' involvement towards KSRTC bus services in Kerala.

Table 6.69

Chi-square test for association between type of journey and the level of passengers' involvement towards KSRTC bus services in Kerala.

Type of journey	Level of passengers' involvement towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	39 (27.1%) [67.2%]	52 (36.1%) [52.5%]	53 (36.8%) [55.8%]	144 (100%)	6.00	0.199 ^{NS}
Between District	17 (17.5%) [29.3%]	40 (41.2%) [40.4%]	40 (41.2%) [42.1%]	97 (100%)		
Interstate	2 (18.2%) [3.4%]	7 (63.6%) [7.1%]	2 (18.2%) [2.1%]	11 (100%)		
Total	58	99	95	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Consequently, it implies that there is no significant association between types of journeys and the level of passengers' involvement towards KSRTC bus services in Kerala.

6.7.6 PASSENGERS CONTINUAL INTENTION OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.70 There is no significant difference between gender and the level of passengers' continual intention towards KSRTC bus services in Kerala

Table 6.71

Chi-square test for association between gender and the level of passengers' continual intention towards KSRTC bus services in Kerala

Gender	Level of Continual intention towards KSRTC bus service			Total	Chi- square Value	P value
	Low level	Moderate level	High level			
Male	33 (21.4%) [55%]	69 (44.8%) [65.7%]	52 (33.8%) [59.8%]	154 (100%)	1.94	0.378 ^{NS}
Female	27 (27.6%) [45%]	36 (36.7%) [34.3%]	35 (35.7%) [40.2%]	98 (100%)		
Total	60	105	87	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between gender and level of passengers' continual intention towards KSRTC bus services in Kerala.

H.0.6.71 There is no significant difference between age and the level of passengers' continual intention towards KSRTC bus services in Kerala.

Table 6.71

Chi-square test for association between age and the level of passengers' continual intention towards KSRTC bus service in Kerala.

Age	Level of Continual intention towards KSRTC bus service			Total	Chi- square Value	P value
	Low level	Moderate level	High Level			
21 to 40	36 (25.5%) [60%]	52 (36.9%) [49.5%]	53 (37.6%) [60.9%]	141 (100%)	4.83	0.305 ^{NS}
41 to 60	21 (22.1%) [35%]	43 (45.3%) [41%]	31 (32.6%) [35.6%]	95 (100%)		
Above 60	3 (18.8%) [5%]	10 (62.5%) [9.5%]	3 (18.8%) [3.4%]	16 (100%)		
Total	60	105	87	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it indicates that there is no significant association between age and the level of passengers' continual intention towards KSRTC bus services in Kerala.

H.0.6.72 There is no significant difference between type of bus and the level of passengers' continual intention towards KSRTC bus services in Kerala.

Table 6.72

Chi-square test for association between type of bus and the level of passengers' continual intention towards KSRTC bus service in Kerala.

Type of bus	Level of Continual intention towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Ordinary	25 (31.3%) [41.7%]	24 (30%) [22.9%]	31 (38.8%) [35.6%]	80 (100%)	8.90	0.179 ^{NS}
Limited stop	5 (16.1%) [8.3%]	13 (41.9%) [12.4%]	13 (41.9%) [14.9%]	31 (100%)		
Fast Passenger	18 (22.8%) [30%]	37 (46.8%) [35.2%]	24 (30.4%) [27.6%]	79 (100%)		
Semi sleeper non AC	12 (19.4%) [20%]	31 (50%) [29.5%]	19 (30.6%) [21.8%]	62 (100%)		
Total	60	105	87	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Therefore, it reveals that there is no significant association between types of bus service and the level of passengers' continual intention towards KSRTC bus services in Kerala.

H.0.6.73 There is no significant difference between type of journey and the level of passengers' continual intention towards KSRTC bus services in Kerala.

Table 6.73

Chi-square test for association between type of journey and the level of passengers' continual intention towards KSRTC bus service in Kerala.

Type of journey	Level of Continual intention towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	36 (25%) [60%]	56 (38.9%) [53.3%]	52 (36.1%) [59.8%]	144 (100%)	2.85	0.583 ^{NS}
Between District	22 (22.7%) [36.7%]	42 (43.3%) [40%]	33 (34%) [37.9%]	97 (100%)		
Interstate	2 (18.2%) [3.3%]	7 (63.6%) [6.7%]	2 (18.2%) [2.3%]	11 (100%)		
Total	60	105	87	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it reveals that there is no significant association between types of journeys and the level of passengers' continual intention towards KSRTC bus services in Kerala.

6.7.7 PASSENGERS WORD OF MOUTH INTENTION OF KSRTC BUS SERVICE ACROSS VARIOUS CATEGORICAL FACTORS OF THE PASSENGERS AND BUS OPERATION.

H.0.6.74 There is no significant difference between gender and the level of passengers' WOM intention towards KSRTC bus services in Kerala

Table 6.74

Chi-square test for association between gender and the level of passengers' WOM intention towards KSRTC bus services in Kerala

Gender	Level of WOM intention towards KSRTC bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Male	33 (21.4%) [63.5%]	46 (29.9%) [64.8%]	75 (48.7%) [58.1%]	154 (100%)	1.00	0.605 ^{NS}
Female	19 (19.4%) [36.5%]	25 (25.5%) [35.2%]	54 (55.1%) [41.9%]	98 (100%)		
Total	52	71	129	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. So, it suggests that there is no significant association between gender and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

H.0.6.75 There is no significant difference between age and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

Table 6.75

Chi-square test for association between age and the level of passengers' WOM intention towards KSRTC bus service in Kerala.

Age	Level of WOM intention towards KSRTC bus service			Total	Chi- square Value	P value
	Low level	Moderate level	High Level			
21 to 40	28 (19.9%) [53.8%]	36 (25.5%) [50.7%]	77 (54.6%) [59.7%]	141 (100%)	4.95	0.292 ^{NS}
41 to 60	22 (23.2%) [42.3%]	27 (28.4%) [38%]	46 (48.4%) [35.7%]	95 (100%)		
Above 60	2 (12.5%) [3.8%]	8 (50%) [11.3%]	6 (37.5%) [4.7%]	16 (100%)		
Total	52	71	129	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. As a result, it implies that there is no significant association between age and the level of passengers' WOM towards KSRTC bus services in Kerala.

H.0.6.76 There is no significant difference between type of bus and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

Table 6.76

Chi-square test for association between type of bus and the level of passengers' WOM intention towards KSRTC bus service in Kerala.

Type of bus	Level of WOM intention towards KSRTC bus service			Total	Chi- square Value	P value
	Low level	Moderate level	High Level			
Ordinary	21 (26.3%) [40.4%]	26 (32.5%) [36.6%]	33 (41.3%) [25.6%]	80 (100%)	9.44	0.150 ^{NS}
Limited stop	6 (19.4%) [11.5%]	6 (19.4%) [8.5%]	19 (61.3%) [14.7%]	31 (100%)		
Fast Passenger	18 (22.8%) [34.6%]	18 (22.8%) [25.4%]	43 (54.4%) [33.3%]	79 (100%)		
Semi sleeper non AC	7 (11.3%) [13.5%]	21 (33.9%) [29.6%]	34 (54.8%) [26.4%]	62 (100%)		
Total	52	71	129	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Accordingly, it indicates that there is no significant association between types of bus service and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

H.0.6.77 There is no significant difference between type of journey and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

Table 6.77

Chi-square test for association between type of journey and the level of passengers' WOM intention towards KSRTC bus service in Kerala.

Type of journey	Level of WOM intention towards public bus service			Total	Chi-square Value	P value
	Low level	Moderate level	High level			
Within District	33 (22.9%) [63.5%]	45 (31.3%) [63.4%]	66 (45.8%) [51.2%]	144 (100%)	4.91	0.296 ^{NS}
Between District	17 (17.5%) [32.7%]	22 (22.7%) [31%]	58 (59.8%) [45%]	97 (100%)		
Interstate	2 (18.2%) [3.8%]	4 (36.4%) [5.6%]	5 (45.5%) [3.9%]	11 (100%)		
Total	52	71	129	252		

Note: 1. ^{NS} denotes not significant
 2. The value within () refers to row percentage
 3. The value within [] refers to Column percentage

Since the P value is greater than 0.05, It is failed to reject the null hypothesis. Thus, it follows that there is no significant association between types of journeys and the level of passengers' WOM intention towards KSRTC bus services in Kerala.

6.8 Conclusion

This chapter covered the second objective of the study, that to examine the post service behavior of passengers of the state owned (KSRTC) and privately-owned bus transportation services in Kerala. Passengers' trust, perceived value, passengers' complaint, passengers' involvement, passengers' satisfaction, continual intention and WOM intention are considered as factors of post service behaviors of passengers.

Ownership of the bus, Gender, age, types of bus and types of journeys are used as factors for cross comparison of the constructs selected for the study.

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CHAPTER 7

THE EFFECTS OF BUS OWNERSHIP IN THE RELATION BETWEEN SERVICE QUALITY AND PASSENGERS POST-SERVICE BEHAVIOUR

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CHAPTER 7

THE EFFECTS OF BUS OWNERSHIP IN THE RELATION BETWEEN SERVICE QUALITY AND PASSENGERS POST-SERVICE BEHAVIOUR

7.1 Introduction

The third objective of the research, which examines how the quality of bus transportation services in Kerala affects passengers' post-service behaviour using bus ownership as a moderating factor, is covered in this chapter. By applying the Co-variance Based Confirmatory Factor Analysis (CB-CFA) and structural equation modelling (SEM) methods to the test, this objective has been achieved. There are three sections in this chapter. The first section focuses on the development of structural equation models for bus transportation services in Kerala using several hypotheses derived from earlier empirical studies on the subject of passenger post-service behaviour and the service quality of transportation services. The Co-variance Based Confirmatory Factor Analysis (CB-CFA) is presented in the second section, and the proposed Structural Equation Model (SEM) is tested in the third section using SPSS AMOS 21's path analysis and Multi-Group Moderation analysis. The SEM method's summary is also included in this chapter. At the chapter's conclusion, a summary of hypotheses testing is also described.

7.2 Objective covered in this chapter

Objective 3: To explore the effect of bus ownership on the relationship between bus service quality and the post-service behaviour of passengers in Kerala.

The IBM SPSS AMOS 21 program was used along with Co-variance Based Confirmatory Factor Analysis (CB-CFA) and Structural Equation Modelling (SEM) methods using Multi-Group Moderation Analysis (ownership of the bus service) to achieve this objective. The chi-square differences test and critical ratios for

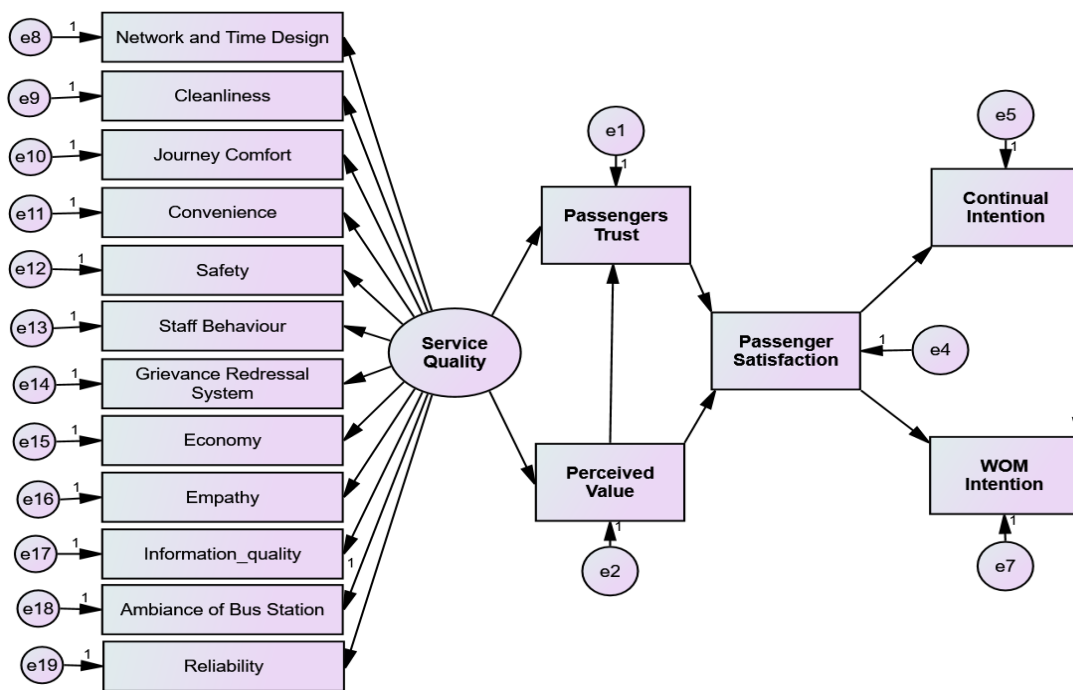
differences are used at the model level and the path level, respectively, to assess the significance of moderation effects.

Part A

7.3 DEVELOPING STRUCTURAL EQUATION MODEL (SEM) FOR THE BUS TRANSPORTATION SERVICES IN KERALA BY HYPOTHESES DEVELOPMENT

Figure 7.1

Hypothesized conceptual model for bus transportation services in Kerala which links the service quality of the bus services and post-service behaviour of the passengers using ownership of the bus as a moderating factor



PART – B

7.4 VALIDATING THE PROPOSED CONSTRUCTS FOR STRUCTURAL EQUATION MODELING USING CO-VARIANCE-BASED CONFIRMATORY FACTOR ANALYSIS (THE RELIABILITY AND VALIDITY ASSESSMENT FOR THE RESEARCH INSTRUMENT)

Confirmatory factor analysis is a subset of factor analysis that is most frequently utilized in the field of statistics to conduct social research. It is used to evaluate whether a researcher's understanding of the nature of a construct is consistent with the measures of that construct. The Confirmatory Factor Analysis, also known as CFA, is a multivariate statistical technique that is used to evaluate how well the measured variables represent a number of different constructs. The techniques of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are very similar. However, in exploratory factor analysis (EFA), the data is simply explored, and this exploration provides information about the number of factors that are necessary to represent the data. When conducting exploratory factor analysis, each of the observed variables is connected to each of the latent variables. In contrast, researchers can determine the number of factors that must be present in the data when conducting confirmatory factor analysis (CFA), as well as which measured variable is related to which latent variable. The measurement theory can be validated or disproved with the help of an instrument called confirmatory factor analysis, or CFA for short.

7.4.1 Assessment criteria of the CB-CFA models for final reliability and validity

Confirmatory factor analysis requires establishing both Construct validity (convergent and discriminant validity) and reliability (Composite reliability). CFA is a statistical method for validating the factor structure of a set of observed variables. CFA permits the researcher to examine the relationship between observed variables and their underlying latent constructs. (Suhr, 2009). The factors must exhibit sufficient validity and reliability. The following instruments are used to evaluate the measurement model:

(1) Composite Reliability (CR)

(2) Construct validity (a) Convergent Validity and (b) Discriminant Validity

Composite Reliability (CR) is a measure of the overall construct reliability. The value varies between 0 and 1. Good composite reliability values are >0.7 and above (Hair et al., 2010). Less-than-0.6 values indicate an absence of internal consistency.

Construct validity: There are two ways to measure construct validity: convergent validity and discriminant validity

(a) Convergent Validity – The indicators or observed variables in a specific construct should converge or share a high proportion of variance. According to Hair et al. (2010), convergent validity issues in the validity examination indicate that the observed variables do not adequately explain the latent factor. Malhotra et al. (2001) note that AVE is an even more conservative measure of convergent validity than CR. The researcher measured the convergent validity of this study using the average variance extracted (AVE). Utilizing standard factor loadings, the value of AVE is calculated. The AVE threshold value is >0.5 (Hair et. al., 2010). Item factor loadings also serve as a criterion for determining convergent validity. (Hair et. al., 2010). In this investigation, the standardized factor loading threshold for establishing item validity is >0.5 (Hair et. al., 2010). If the standard factor loadings and AVE values are greater than 0.5, then convergence has been achieved.

(b) Discriminant validity: - High discriminant validity indicates that a construct is unique and encompasses phenomena not represented by other constructs. If the discriminant validity test fails to produce the expected results, it indicates that the variables correlate strongly with variables of other constructs, i.e. the latent variable is better explained by other variables than by its observed variables. Fornell and Larcker's (1981) criterion is a conservative method for assessing discriminant validity. It compares the square root of AVE to the correlations between latent variables. Each construct's AVE should have a square root larger than its latent variable correlation with other constructs. This allows discriminant validity to be demonstrated.

7.4.2 Confirmatory Factor Analysis for service quality factors- CFA- I

Figure 7.2

Confirmatory Factor Analysis for service quality factors- CFA- I

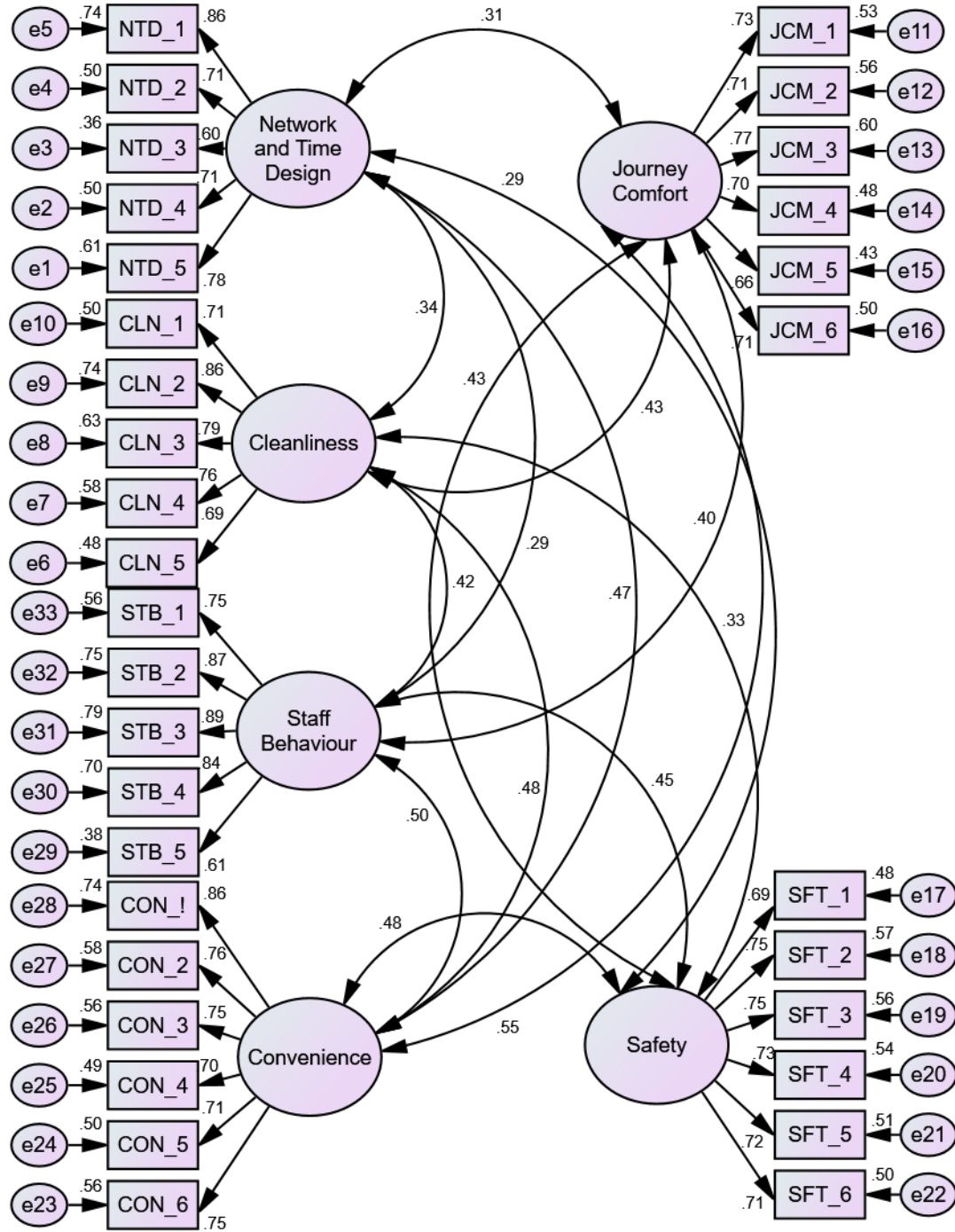


Table 7.1*Model fit indices for service quality factors- CFA- I*

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	3.985	0.000	0.945	0.919	0.962	0.071
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08
Literature support	Hair et al., (1998)	Barrett (2007)	Hair et al. (2006)	Hair et al. (2006)	Hu and Bentler (1999)	Hair et al. (2006)

The CFA model fit indices are shown in the data above to evaluate the overall model fit. For an acceptable model, the ratio of Chi-Square to degrees of freedom should be less than 5. In this instance, the value is 3.985, which is well within the suggested upper limit. The RMSEA score is 0.071, which is significantly below the accepted minimum score of 0.08. In addition, the GFI and AGFI values are greater than 0.9, and the CFI value is greater than 0.9, where 1.0 indicates an exact fit. Thus, the model is suitable and further analysis can be considered.

Table 7.2*Final Reliability and Validity of CFA Model for service quality of bus transportation services in Kerala. (CFA I)*

Factors of service quality CFA – I	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
Network and time design (NTD)	NTD 1	0.86**	0.84	0.54	0.85
	NTD 2	0.71**			
	NTD 3	0.60**			
	NTD 4	0.71**			
	NTD 5	0.78**			
Cleanliness (CLN)	CLN 1	0.71**	0.87	0.59	0.88
	CLN 2	0.86**			
	CLN 3	0.79**			
	CLN 4	0.76**			
	CLN 5	0.69**			

Factors of service quality CFA – I	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
Staff behaviour (STB)	STB 1	0.75**	0.89	0.64	0.90
	STB 2	0.87**			
	STB 3	0.89**			
	STB 4	0.84**			
	STB 5	0.61**			
Convenience (CON)	CON 1	0.86**	0.90	0.57	0.90
	CON 2	0.76**			
	CON 3	0.75**			
	CON 4	0.70**			
	CON 5	0.71**			
	CON 6	0.75**			
Safety (SFT)	SFT 1	0.69**	0.87	0.53	0.87
	SFT 2	0.75**			
	SFT 3	0.75**			
	SFT 4	0.73**			
	SFT 5	0.72**			
	SFT 6	0.71**			
Journey comfort (JCM)	JCM 1	0.73**	0.85	0.52	0.86
	JCM 2	0.71**			
	JCM 3	0.77**			
	JCM 4	0.70**			
	JCM 5	0.66**			
	JCM 6	0.71**			

*** denotes significant at 1% level*

From the table above, it can be inferred that all factor loadings are above the 0.5 threshold level, which establishes the construct item validity. The results of the Cronbach's Alpha reliability test and the Composite Reliability test indicate that all constructs have a high level of internal consistency reliability. In addition, the Average Variance Extracted (AVE) values exceed the recommended threshold value of >0.5. Therefore, it is possible to conclude that the constructs exhibit high levels of convergence. As all of the parameters meet the required value, the data is suitable for further examination and model development.

Table 7.3*Discriminant Validity among the constructs of service quality of bus services*

Constructs	NTD	CLN	STB	CON	SFT	JCM
NTD	(0.73)					
CLN	0.34	(0.77)				
STB	0.29	0.42	(0.80)			
CON	0.47	0.48	0.50	(0.75)		
SFT	0.29	0.33	0.45	0.48	(0.73)	
JCM	0.31	0.43	0.40	0.55	0.43	(0.72)

This table displays the square root of AVE values as well as the inter-construct latent variable correlations. The values enclosed in brackets represent the square root of the AVE scores, which must be greater than the inter-construct latent variable correlation values to rule out the existence of a relationship. From the table above, it can be inferred that there is no connection among the constructs of service quality.

7.4.3 Confirmatory Factor Analysis for factors of service quality of bus transportation service – CFA - II

Figure 7.3

Confirmatory Factor Analysis for factors of service quality of bus transportation service – CFA - II

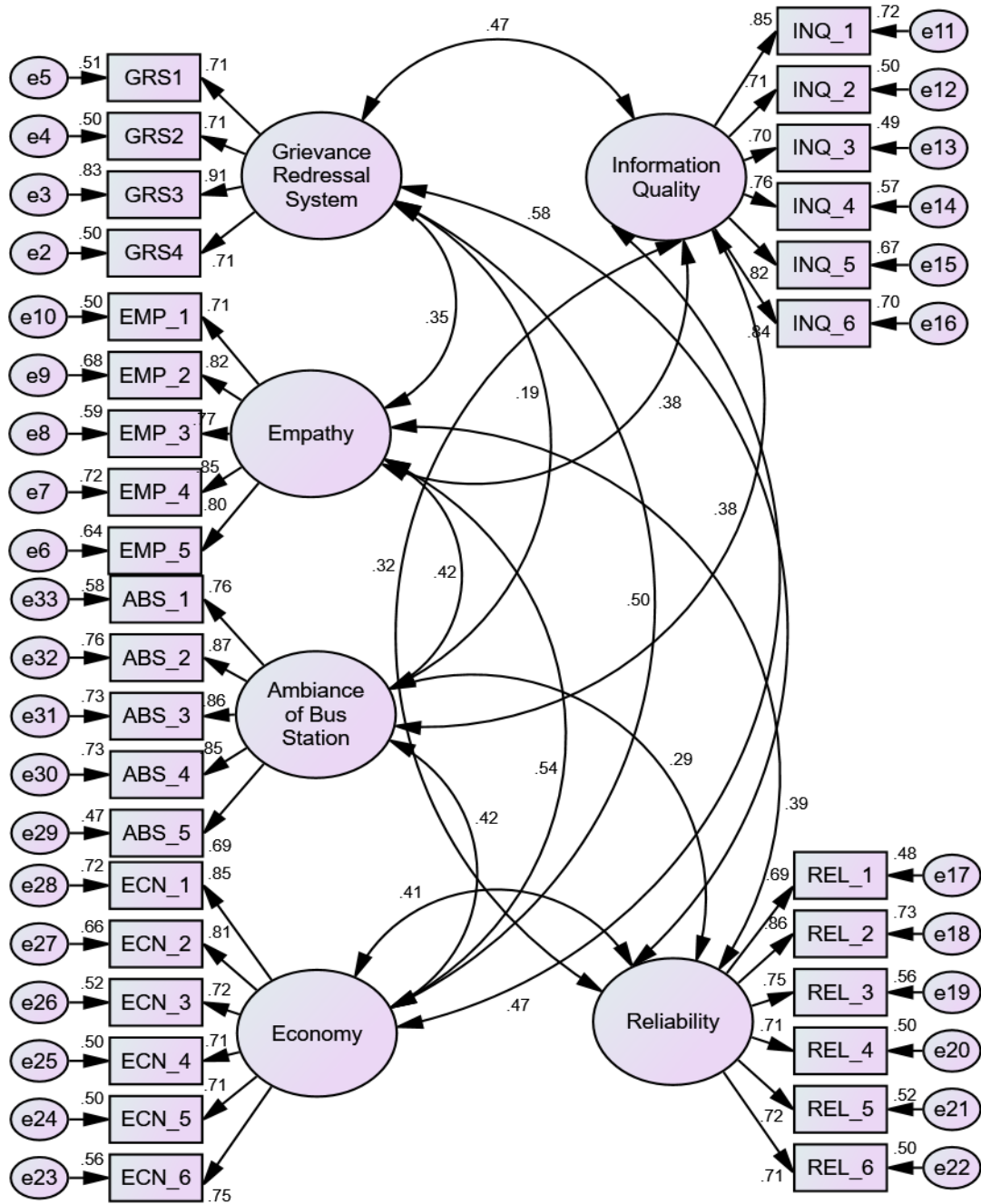


Table 7.4

Model fit indices for the Confirmatory Factor Analysis for factors of service quality of bus transportation service – CFA - II

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	4.624	0.000	0.942	0.908	0.971	0.067
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08
Literature support	Hair et al., (1998)	Barrett (2007)	Hair et al. (2006)	Hair et al. (2006)	Hu and Bentler (1999)	Hair et al. (2006)

The ratio of Chi-Square to degrees of freedom is 3.624, which is well within the upper limit that was suggested. The RMSEA score is 0.067, which is significantly below the accepted minimum score of 0.08. In addition, the GFI and AGFI values are greater than 0.9, and the CFI value is greater than 0.9, where 1.0 indicates an exact fit. Consequently, the CFA model II for service quality of bus transportation services is an appropriate fit and can be considered for further analysis.

Table 7.5

Final Reliability and Validity of CFA model for factors of service quality of bus transportation service – CFA – II

Factors of service quality – CFA II	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
Grievance redressal system (GRS)	GRS 1	0.71**	0.84	0.59	0.85
	GRS 2	0.71**			
	GRS 3	0.91**			
	GRS 4	0.71**			
Empathy (EMP)	EMP 1	0.71**	0.89	0.63	0.89
	EMP 2	0.82**			
	EMP 3	0.77**			
	EMP 4	0.85**			
	EMP 5	0.80**			

Factors of service quality – CFA II	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
The ambience of the bus station (ABS)	ABS 1	0.76**	0.89	0.65	0.90
	ABS 2	0.87**			
	ABS 3	0.86**			
	ABS 4	0.85**			
	ABS 5	0.69**			
Economy (ECN)	ECN 1	0.85**	0.89	0.58	0.89
	ECN 2	0.81**			
	ECN 3	0.72**			
	ECN 4	0.71**			
	ECN 5	0.71**			
	ECN 6	0.75**			
Reliability (REL)	REL 1	0.69**	0.87	0.55	0.88
	REL 2	0.86**			
	REL 3	0.75**			
	REL 4	0.71**			
	REL 5	0.72**			
	REL 6	0.71**			
Information quality (IN)	INQ 1	0.85**	0.89	0.61	0.90
	INQ 2	0.71**			
	INQ 3	0.70**			
	INQ 4	0.76**			
	INQ 5	0.82**			
	INQ 6	0.84**			

** denotes significant at 1% level

From the table above, it can be inferred that all factor loadings are above the 0.5 threshold level, which establishes the construct item validity. The values of Cronbach's Alpha are greater than 0.8, indicating that the variables used to measure the construct are reliable. The Composite Reliability values are greater than 0.90, indicating that all constructs possess a high level of internal consistency reliability. In addition, the Average Variance Extracted (AVE) values exceed the recommended

threshold value of >0.5 . Thus, it can be inferred that the levels of convergence between the constructs are quite high. As all of the parameters meet the required value, the data is suitable for model development.

Table 7.6

Discriminant Validity among the constructs of service quality factors

Constructs	GRS	EMP	ABS	ECN	REL	INQ
GRS	(0.77)					
EMP	0.35	(0.79)				
ABS	0.19	0.42	(0.81)			
ECN	0.50	0.54	0.42	(0.76)		
REL	0.58	0.39	0.29	0.41	(0.76)	
INQ	0.47	0.38	0.38	0.47	0.32	(0.78)

The preceding table displays the square root of AVE values and the inter-construct correlations between latent variables. From the above table, it can be observed that no relationship exists between the constructs and discriminant validity has been established among the service quality factors.

7.4.3 Confirmatory Factor Analysis for factors of post service behaviour of passengers-CFA III

Figure 7.4

Confirmatory Factor Analysis for factors of post-service behaviour of passengers

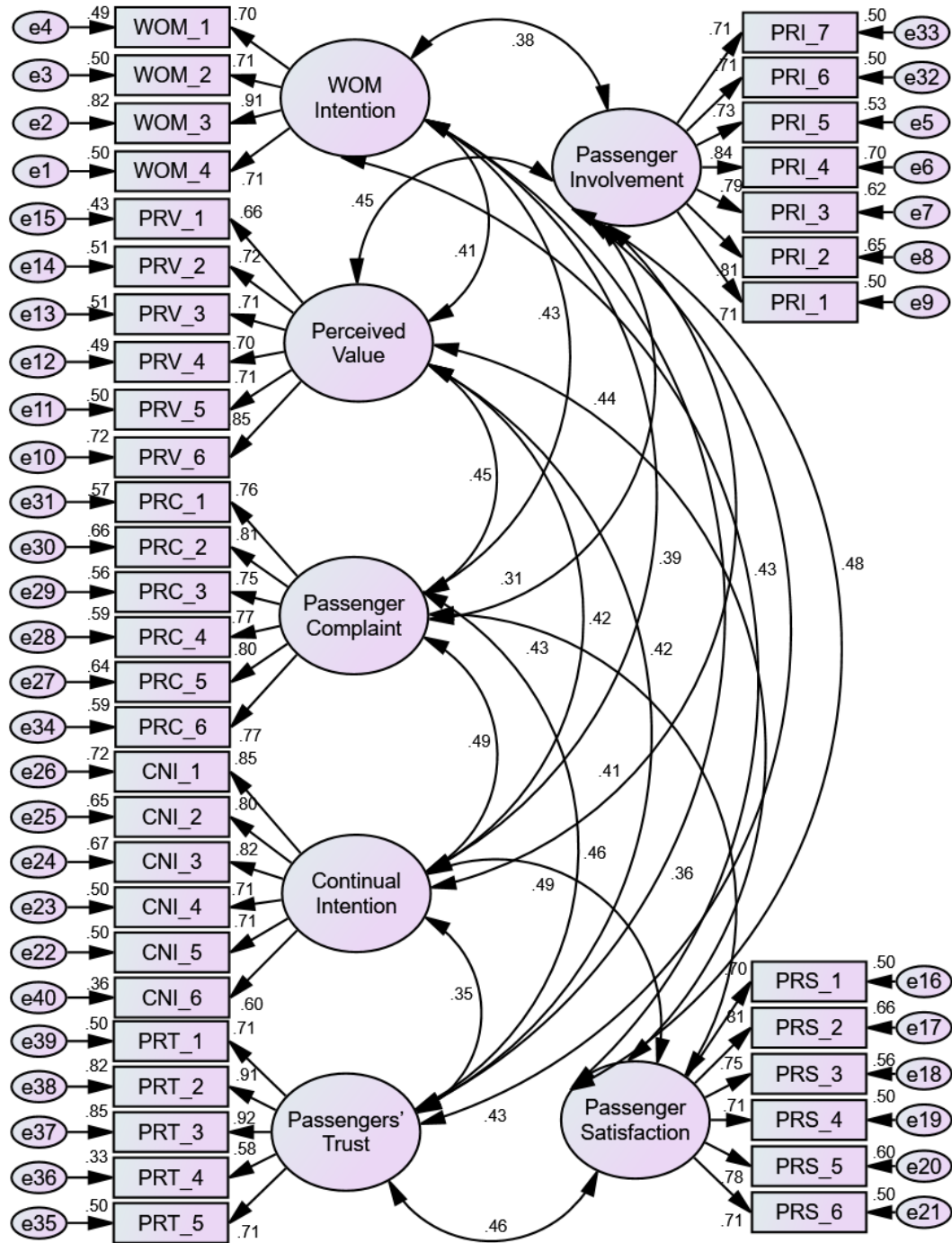


Table 7.7

Model fit indices for the Confirmatory Factor Analysis for factors of post-service behaviour of passengers

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	4.624	0.000	0.947	0.909	0.973	0.069
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08
Literature support	Hair et al., (1998)	Barrett (2007)	Hair et al. (2006)	Hair et al. (2006)	Hu and Bentler (1999)	Hair et al. (2006)

The Chi-Square to degrees of freedom ratio is 3.624, which is well within the recommended maximum number. The RMSEA value is 0.069, which is significantly lower than the accepted threshold score of 0.08. Furthermore, the GFI and AGFI values are greater than 0.9, and the CFI is greater than 0.9, with 1.0 indicating a perfect fit. As a result, the CFA model post-service behaviour is suitable and can be considered for further analysis.

Table 7.8

Final Reliability and Validity of CFA model for the factors of post-service behaviour of passengers

Factors of post-service behaviour of passengers	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
WOM Intention (WOM)	WOM 1	0.70**	0.84	0.58	0.85
	WOM 2	0.71**			
	WOM 3	0.91**			
	WOM 4	0.71**			
Perceived value (PRV)	PRV 1	0.66**	0.86	0.53	0.87
	PRV 2	0.72**			
	PRV 3	0.71**			
	PRV 4	0.70**			
	PRV 5	0.71**			
	PRV 6	0.85**			

Factors of post-service behaviour of passengers	Item code	Factor loading	Cronbach's Alpha Final	AVE	Composite Reliability
Passenger complaint (PRC)	PRC 1	0.76**	0.89	0.60	0.90
	PRC 2	0.81**			
	PRC 3	0.75**			
	PRC 4	0.77**			
	PRC 5	0.80**			
	PRC 6	0.77**			
Continual intention (CNI)	CNI 1	0.85**	0.89	0.57	0.89
	CNI 2	0.80**			
	CNI 3	0.82**			
	CNI 4	0.71**			
	CNI 5	0.71**			
	CNI 6	0.60**			
Passengers' trust (PRT)	PRT 1	0.71**	0.88	0.60	0.88
	PRT 2	0.91**			
	PRT 3	0.92**			
	PRT 4	0.58**			
	PRT 5	0.71**			
Passenger satisfaction (PRS)	PRS 1	0.70**	0.88	0.55	0.88
	PRS 2	0.81**			
	PRS 3	0.75**			
	PRS 4	0.71**			
	PRS 5	0.78**			
	PRS 6	0.71**			
Passenger involvement (PRI)	PRI 1	0.71**	0.89	0.57	0.90
	PRI 2	0.81**			
	PRI 3	0.79**			
	PRI 4	0.84**			
	PRI 5	0.73**			
	PRI 6	0.71**			
	PRI 7	0.71**			

** denotes significant at 1% level

According to the above table, all of the factor loadings are greater than 0.5, indicating that the constructs have item validity. Cronbach's Alpha values are found to be higher than 0.8, confirming the reliability of the variables used to measure the construct. The Composite Reliability values are greater than 0.9, implying that all of the constructs have a high degree of internal consistency reliability. The derived Average Variance Extracted (AVE) values are also found to be greater than the suggested threshold of >0.5 . As a result, the models have a high degree of convergence. Because all of the parameters are within the specified range, the data is suitable for model construction.

Table 7.9

Discriminant Validity among the constructs of post-service behaviour

Constructs	WOM	PRV	PRC	CNI	PRT	PRS	PRI
WOM	(0.76)						
PRV	0.41	(0.73)					
PRC	0.43	0.45	(0.77)				
CNI	0.39	0.42	0.49	(0.75)			
PRT	0.36	0.42	0.46	0.35	(0.81)		
PRS	0.43	0.44	0.43	0.49	0.46	(0.74)	
PRI	0.38	0.45	0.31	0.41	0.43	0.48	(0.75)

The table above shows the square root of AVE values as well as the inter-construct latent variable correlations. The above table indicates that there is no connection between the constructs and that discriminant validity among the post-service behaviour factors has been established.

PART – C

7.5 TESTING THE PROPOSED STRUCTURAL EQUATION MODEL FOR THE BUS TRANSPORTATION SERVICES IN IN KERALA USING OWNERSHIP OF THE BUS AS MODERATING FACTOR

7.5.1 Co-variance Based Structural Equation Modelling techniques

SEM is a method of multivariate statistical analysis used to examine structural relationships. It combines factor analysis with multiple regression analysis. This method is favoured by many researchers because it estimates the multiple and interdependent dependence in a single analysis. Endogenous variables (dependent construct) and exogenous variables (independent construct) predominate in this analysis. The Covariance Method Structural Equation Modelling is a confirmatory method primarily employed for verifying hypotheses and analysing a phenomenon-related structural theory. The IBM SPSS AMOS 21 software package was used to perform the SEM in this study.

This section examines the testing of a structural equation model for bus transportation services in Kerala that connects the service quality of the bus transportation with passengers' post-service behaviour using bus ownership as a moderator. To accomplish this, the following hypotheses must be evaluated:

Table 7.10

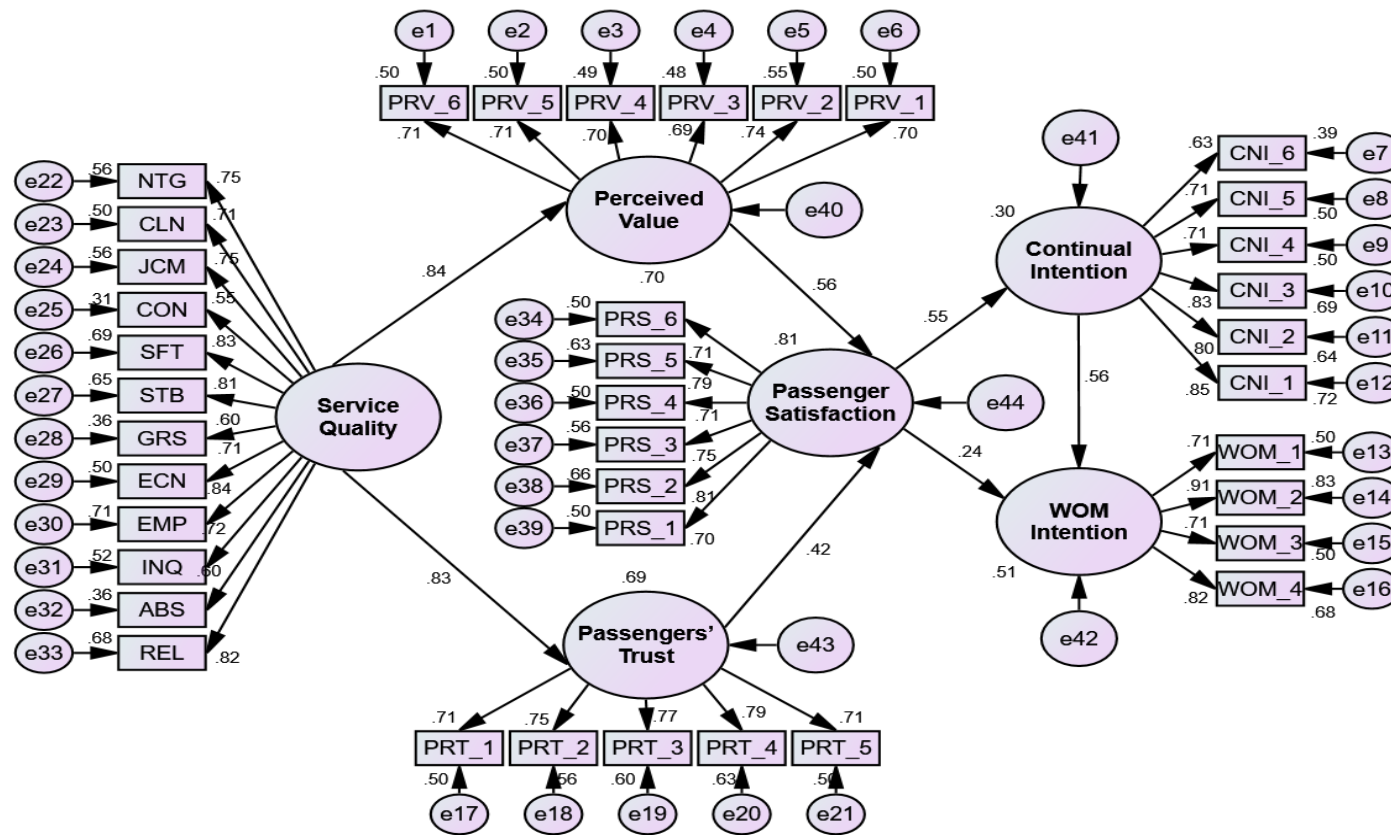
Shows the hypotheses for model building for the transportation services in Kerala

Hypotheses No.	Hypotheses for model building
SM.H1	Service quality of bus transportation services has a positive effect on passengers' trust and ownership of the bus moderates this relationship
SM.H2	Service quality of bus transportation services has a positive effect on perceived value and ownership of the bus moderates this relationship
SM.H3	Passengers' trust has a positive effect on passengers' satisfaction and ownership of the bus moderates this relationship
SM.H4	Perceived value has a positive effect on passengers' satisfaction and ownership of the bus moderates this relationship
SM.H5	Passenger satisfaction has a positive effect on continual intention and ownership of the bus moderates this relationship
SM.H6	Passenger satisfaction has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship
SM.H7	Continual intention has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship

SM.H1 to SM.H7 indicates Structural Model Hypotheses

Figure 7.5

Testing the hypothesized conceptual model for private bus transportation services in Kerala which links the service quality of the bus services and post-service behaviour of the passengers using ownership of the bus as moderating factor



7.6 Path analysis of the SEM for private bus transportation services in Kerala

Table 7.11

Values of path analysis and R² for the private bus transportation services in Kerala which links the service quality of the bus services and post-service behaviour of the passengers

Constructs path index			Standardized co-efficient (Beta)	R ² Value	Critical Ratio	P value	Result of hypothesis testing
Perceived value	←	Service quality	0.84	0.70	13.68	<0.001**	<i>Supported</i>
Passengers trust	←	Service quality	0.83	0.69	13.08	<0.001**	<i>Supported</i>
Passenger satisfaction	←	Perceived value	0.56	0.81	9.12	<0.001**	<i>Supported</i>
Passenger satisfaction	←	Passengers trust	0.42		7.65	<0.001**	<i>Supported</i>
Continual intention	←	Passenger satisfaction	0.55	0.30	8.65	<0.001**	<i>Supported</i>
Word-of-mouth intention	←	Passenger satisfaction	0.24	0.51	3.84	<0.001**	<i>Supported</i>
Word-of-mouth intention	←	Continual intention	0.56		9.19	<0.001**	<i>Supported</i>

** indicates significant at 1% level

7.6.1 Results of path analysis and hypotheses testing of private bus services in Kerala

SM.H1: Service quality of private bus transportation services has a positive effect on passengers' trust

The standardized beta coefficient of service quality of private bus service on passengers' trust is 0.83 representing the partial effect of service quality of private bus service passengers' trust, holding the other path variables as constant. The estimated positive sign implies that such an effect is positive and passengers' trust in the private

bus services in Kerala would increase by 0.84 for every unit of standard deviation increase in service quality of the private bus services in Kerala and this coefficient value is significant at 1% level. It indicates that if the service quality of private bus service increases, then the passengers' trust in that service will also improve.

SM.H2: Service quality of private bus transportation services has a positive effect on perceived value

The standardized beta coefficient of service quality of private bus service on perceived value is 0.84 represents the partial effect of service quality of private bus service on perceived value, holding the other path variables as constant. The estimated positive sign implies that such an effect is positive and the perceived value in the private bus services in Kerala would increase by 0.84 for every unit of standard deviation increase in service quality of the private bus services in Kerala and this coefficient value is significant at 1% level. It indicates that the passengers' perception of the value of the private bus services operating in Kerala will be improved as a result of improvements in the service quality offered by the private bus services.

SM.H3: Passengers' trust in private bus services has a positive effect on passengers' satisfaction

The standardized beta coefficient of passengers' trust on passenger satisfaction is 0.42 represents the partial effect of passengers' trust on passenger satisfaction, holding the other path variables as constant. The estimated positive sign implies that such an effect is positive and satisfaction of the passengers in the private bus services in Kerala would increase by 0.42 for every unit of standard deviation increase in perceived trust and this coefficient value is significant at 1% level. It indicates that passenger satisfaction with private bus services in Kerala will increase as the passengers feel better trust in private bus service.

SM.H4: Perceived value towards private bus service has a positive effect on passengers' satisfaction

The standardized beta coefficient of passengers' trust on passenger satisfaction is 0.56 represents the partial effect of perceived value on passenger

satisfaction, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and satisfaction of the passengers in the private bus services in Kerala would increase by 0.56 for every unit of standard deviation increase in perceived value and this coefficient value is significant at 1% level. It indicates that passenger satisfaction with private bus services in Kerala will increase as the passengers feel better value about private bus service.

SM.H5: Passenger satisfaction with private bus service has a positive effect on the continual intention

The standardized beta coefficient of passenger satisfaction on continual intention is 0.55 represents the partial effect of passenger satisfaction on continual intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' intention to continue with private bus services would increase by 0.55 for every unit of standard deviation increase in passenger satisfaction and this coefficient value is significant at 1% level. It indicates that passengers' intention to continue with private service will enhance if the passengers are satisfied with the private bus services.

SM.H6: Passenger satisfaction with private bus service has a positive effect on word-of-mouth intention

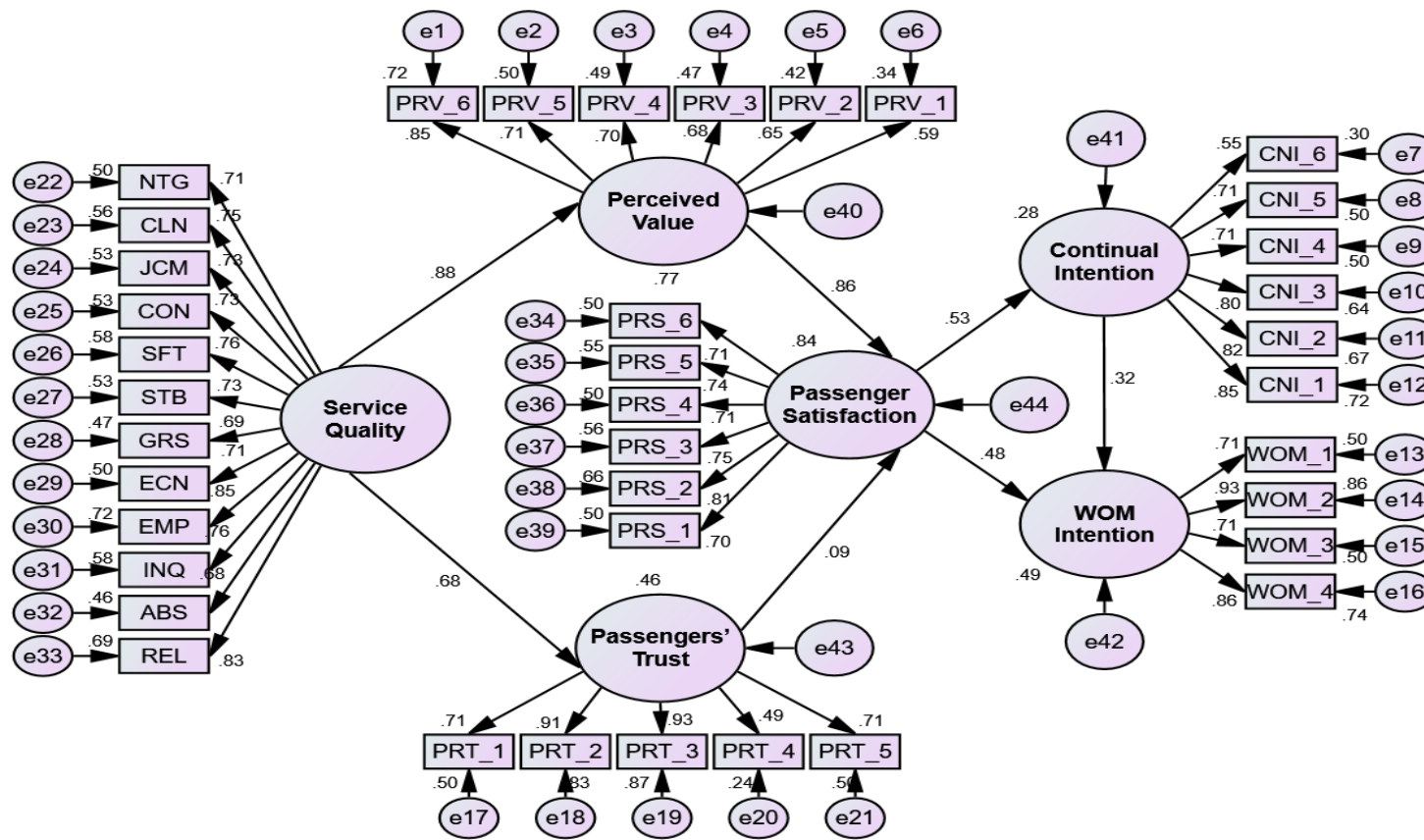
The standardized beta coefficient of passenger satisfaction on word-of-mouth intention is 0.24 represents the partial effect of passenger satisfaction on word-of-mouth intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' word-of-mouth intention towards the private bus services would increase by 0.24 for every unit of standard deviation increase in passenger satisfaction and this coefficient value is significant at 1% level. It demonstrates that passengers' intention to recommend private service to their friends and relatives will increase if they are satisfied with the service that they receive from private bus services.

SM.H7: Continual intention with private bus service has a positive effect on word-of-mouth intention

The standardized beta coefficient of continual intention on word-of-mouth intention is 0.56 representing the partial effect of continual intention on word-of-mouth intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' word-of-mouth intention towards the private bus services would increase by 0.56 for every unit of standard deviation increase in continual intention of the passengers with private bus transportation and this coefficient value is significant at 1% level. It suggests the intention of passengers to recommend private services to their friends and relatives will increase if the passengers themselves continue to use the services of private buses in Kerala.

Figure 7.6

Testing the hypothesized conceptual model for KSRTC bus transportation services in Kerala which links the service quality of the bus services and post-service behaviour of the passengers using ownership of the bus as moderating factor



7.7 Path analysis of the SEM for KSRTC bus transportation services in Kerala

Table 7.12

Values of path analysis and R² for the KSRTC bus transportation services in Kerala which links the service quality of the bus services and post-service behaviour of the passengers

Constructs path index		Standardized co-efficient (Beta)	R ² Value	Critical Ratio	P value	Result of hypothesis testing
Perceived value	← Service quality	0.88 – N	0.77	14.98	<0.001**	<i>Supported</i>
Passengers trust	← Service quality	0.68 – Y – P>K	0.46	10.48	<0.001**	<i>Supported</i>
Passenger satisfaction	← Perceived value	0.86 – Y – K>P	0.84	15.68	<0.001**	<i>Supported</i>
Passenger satisfaction	← Passengers trust	0.09 – Y – P>K		1.65	0.084 ^{NS}	<i>Not Supported</i>
Continual intention	← Passenger satisfaction	0.53 – N	0.28	8.12	<0.001**	<i>Supported</i>
Word-of-mouth intention	← Passenger satisfaction	0.48 – Y – K>P	0.49	5.68	<0.001**	<i>Supported</i>
Word-of-mouth intention	← Continual intention	0.32 – Y – P>K		4.15	<0.001**	<i>Supported</i>

*** indicates significant at 1% level*

7.7.1 Results of path analysis and hypotheses testing of KSRTC bus transportation services in Kerala

SM.H1: Service quality of KSRTC bus transportation services has a positive effect on passengers’ trust

The standardized beta coefficient of service quality of KSRTC bus service on passengers’ trust is 0.68 represents the partial effect of service quality of KSRTC bus service on passengers’ trust, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers’ trust in the

KSRTC bus services in Kerala would increase by 0.68 for every unit of standard deviation increase in service quality of the KSRTC bus services in Kerala and this coefficient value is significant at 1% level. It suggests that if the service quality of the KSRTC bus service improves, passengers' trust in KSRTC service will improve as well.

SM.H2: Service quality of KSRTC bus transportation services has a positive effect on perceived value

The standardized beta coefficient of service quality of KSRTC bus service on perceived value is 0.88 representing the partial effect of service quality of KSRTC bus service on perceived value, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and the perceived value in the KSRTC bus services in Kerala would increase by 0.88 for every unit of standard deviation increase in service quality of the KSRTC bus services in Kerala and this coefficient value is significant at 1% level. It is an indication that the customer's perception of the value of the KSRTC bus services operating in Kerala is improved as a result of improvements in the service quality provided by the KSRTC bus services. These improvements can be attributed to the fact that KSRTC bus services have been receiving positive feedback from passengers.

SM.H3: Passengers' trust towards KSRTC bus service has a positive effect on passengers' satisfaction

The standardized beta coefficient of passengers' trust on passenger satisfaction is 0.09 represents the partial effect of passengers' trust on passenger satisfaction, holding the other path variables as constant. But the hypothesis testing using SEM analysis shows that this co-efficient value is not statistically significant. Therefore, it can be concluded that passengers' trust towards KSRTC does not have any significant effect on passengers' satisfaction.

SM.H4: Perceived value towards the KSRTC bus has a positive effect on passengers' satisfaction

The standardized beta coefficient of passengers' trust on passenger satisfaction is 0.86 represents the partial effect of perceived value on passenger satisfaction, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and satisfaction of the passengers in the KSRTC bus services in Kerala would increase by 0.86 for every unit of standard deviation increase in perceived value and this coefficient value is significant at 1% level. It is a sign that the level of satisfaction experienced by passengers using the KSRTC bus services in Kerala will increase as a result of an improved perception of the value provided by the KSRTC bus service.

SM.H5: Passenger satisfaction with the KSRTC bus service has a positive effect on the continual intention

The standardized beta coefficient of passenger satisfaction on continual intention is 0.53 represents the partial effect of passenger satisfaction on continual intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' intention to continue with KSRTC bus services would increase by 0.53 for every unit of standard deviation increase in passenger satisfaction and this coefficient value is significant at 1% level. It appears that passengers' intentions to continue using KSRTC services will improve if they are happy with the quality of service provided by KSRTC bus services.

SM.H6: Passenger satisfaction in KSRTC bus has a positive effect on word-of-mouth intention

The standardized beta coefficient of passenger satisfaction on word-of-mouth intention is 0.48 represents the partial effect of passenger satisfaction on word-of-mouth intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' word-of-mouth intention towards the KSRTC bus services would increase by 0.48 for every unit of standard deviation increase in passenger satisfaction and this coefficient value is significant at

1% level. If customers are happy with the service, they receive from KSRTC buses, they are more likely to tell their friends and family about the KSRTC bus service.

SM.H7: Continual intention with KSRTC has a positive effect on word-of-mouth intention

The standardized beta coefficient of continual intention on word-of-mouth intention is 0.32 representing the partial effect of continual intention on word-of-mouth intention, holding the other path variables as constant. The estimated positive sign implies that such effect is positive and passengers' word-of-mouth intention towards the KSRTC bus services would increase by 0.32 for every unit of standard deviation increase in continual intention of the passengers with KSRTC bus transportation and this coefficient value is significant at 1% level. As a result, if KSRTC passengers in Kerala keep using the service, they are more likely to tell their friends and family about it.

7.8 Explanations of R² values of private and KSRTC bus service models

The ability of the structural equation model to explain phenomena is evaluated by calculating the R² value of the constructs that are dependent on the model. The R-squared coefficient is a measurement that determines what proportion of the observed variation can be explained by the model. (See Model figure and table). The coefficient of determination for the perceived value of private bus service in Kerala is 0.70. This value implies that about 70% of the variation in perceived value is explained by the service quality of the private services in Kerala. This value leads to the conclusion that other independent factors are necessary for predicting 100% variation in the perceived value factor. It's the same approach, the R squared coefficient value of passengers' trust is 0.69, passenger satisfaction is 0.81, the continual intention is 0.30 and word-of-mouth intention is 0.51.

In the KSRTC model, the R squared coefficient value of perceived value is 0.77, passengers' trust is 0.46, passenger satisfaction is 0.84, the continual intention is 0.28 and word-of-mouth intention is 0.49.

Table 7.13

Model fit indices of the Multi-Group Analysis (MGA) model for private and KSRTC bus transportation services in Kerala

Model	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	4.265	0.000	0.931	0.901	0.954	0.068
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08

Chi-Square's value for the degrees of freedom is 4.265, which is very close to the maximum value recommended. The RMSEA number is 0.068, which is lower than the accepted minimum of 0.08. Also, both GFI and AGFI are above 0.9, and CFI is also above 0.9. Several 1.0 means an exact fit. It shows that the SEM approach works well.

7.9 Testing the significance of Multi-Group Moderation analysis at the model level using the chi-square difference test.

The chi-square test for investigating the significance of moderating effects at the model level is provided below.

Table 7.14

Chi-square difference test for assessing the significance of Multi-Group Moderation analysis at the model level

Overall Model	Chi-square	df	p-value	Invariant?
<i>Unconstrained</i>	2049.72	483		
<i>Fully constrained</i>	2126.37	486		
<i>Number of groups</i>		2		
Difference	76.64	2	0.000	No

Under Multi-Group Analysis, the Chi-square difference test revealed that there is a significant difference between the unconstrained and fully constrained models (P value 0.01). It indicates that groups differ at the level of the model. It strengthens the model's moderating effects. In addition to the chi-square difference test, the study assessed the moderating effect on the path values using the critical ratios for difference tests in the model. It is presented below.

7.10 Critical ratios for differences tests for measuring the significance of the moderating effect in path values

To determine the significance of the model's moderation effect, critical ratios for differences tests were conducted. The table below displays the results of critical ratio analyses for differences. The following is the null hypothesis for investigating the moderation effects on the path values between private and KSRTC bus services in Kerala.

CR.H1: There is no significant difference between private and KSRTC bus transportation services estimate of service quality and post-service behaviour of the passengers

Table 7.15

Moderation testing in the service quality-post service behaviour of the passengers' model using the Critical Ratios for Differences method

Constructs path index			Private Vs KSRTC bus transportation services		
			Critical Ratios for Differences between Parameters		
Perceived value	←	Service quality	0.265 ^{NS}	No moderation effect	Private and KSRTC are equal
Passengers trust	←	Service quality	<0.001**	Moderation effect	Private is higher than KSRTC
Passenger satisfaction	←	Perceived value	<0.001**	Moderation effect	KSRTC is higher than Private

Constructs path index		Private Vs KSRTC bus transportation services		
		Critical Ratios for Differences between Parameters		
Passenger satisfaction	←	Passengers trust	<0.001**	Moderation effect Private is higher than KSRTC
Continual intention	←	Passenger satisfaction	0.652 ^{NS}	No moderation effect Private and KSRTC are equal
Word-of-mouth intention	←	Passenger satisfaction	<0.001**	Moderation effect KSRTC is higher than Private
Word-of-mouth intention	←	Continual intention	<0.001**	Moderation effect Private is higher than KSRTC

***denotes significant (Moderating effects); NS indicates Not Significant (No moderating effect). (Decision criteria: - If the critical ratios for differences are between -1.96 and +1.96 accept the null hypothesis. Else, reject the null hypothesis)*

7.11 Results of path analysis for testing moderating effects on the path values in the model

SM.H1: Service quality of bus transportation services has a positive effect on passengers' trust and ownership of the bus moderate this relationship

Since the values of critical ratios for differences between private and KSRTC are lies between the values -1.96 to +1.96, the null hypothesis is accepted. It means there is no moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of service quality of bus transportation services on passengers' trust.

SM.H2: Service quality of bus transportation services has a positive effect on perceived value and ownership of the bus moderates this relationship

Since the values of critical ratios for differences between private and KSRTC are not lying between the values -1.96 to +1.96, the null hypothesis is rejected. It means there is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of service quality of bus transportation services

on perceived value. The standardized beta co-efficient value denotes that Private bus transportation service is higher than KSRTC regarding the effect of service quality of bus transportation services on perceived value.

SM.H3: Passengers' trust has a positive effect on passengers' satisfaction and ownership of the bus moderate this relationship

Since the values of critical ratios for differences between private and KSRTC are not lying between the values -1.96 to +1.96, the null hypothesis is rejected. It means there is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of passengers' trust on passengers' satisfaction. The standardized beta co-efficient value denotes that the KSRTC transportation service is higher than the Private bus regarding the effect of passengers' trust on passengers' satisfaction.

SM.H4: Perceived value has a positive effect on passengers' satisfaction and ownership of the bus moderate this relationship

Since the values of critical ratios for differences between private and KSRTC are not lying between the values -1.96 to +1.96, the null hypothesis is rejected. It means there is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of perceived value on passengers' satisfaction. The standardized beta co-efficient value denotes that private transportation service is higher than KSRTC bus regarding the effect of perceived value on passengers' satisfaction.

SM.H5: Passenger satisfaction has a positive effect on continual intention and ownership of the bus moderate this relationship

Since the values of critical ratios for differences between private and KSRTC are lies between the values -1.96 to +1.96, the null hypothesis is accepted. It means there is no moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of passenger satisfaction on continual intention.

SM.H6: Passenger satisfaction has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship

Since the values of critical ratios for differences do not lie between the recommended threshold values of -1.96 to +1.96, the null hypothesis is rejected. It means there is a moderation effect between passenger satisfaction and word-of-mouth intention. The standardized beta co-efficient value denotes that KSRTC transportation service is higher than private bus regarding the effect between passenger satisfaction and word-of-mouth intention.

SM.H7: Continual intention has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship

Since the values of critical ratios for differences do not lie between the recommended threshold values of -1.96 to +1.96, the null hypothesis is rejected. It means there is a moderation effect between continual intention and word-of-mouth intention. The standardized beta co-efficient value denotes that private transportation service is higher than KSRTC bus regarding the effect between continual intention and word-of-mouth intention.

7.12 A comparative analysis of the effects of service quality of bus transportation services in Kerala on post-service behaviours of the passengers between private and KSRTC bus services.

Testing of the moderation analysis reveals the following relationships are higher in the private bus services than KSRTC service quality of bus transportation services has a positive effect on passengers' trust, Passengers' trust has a positive effect on passengers' satisfaction, passenger satisfaction has a positive effect on word-of-mouth intention and Continual intention has a positive effect on word-of-mouth intention.

Whereas, the hypotheses that, perceived value has a positive effect on passengers' satisfaction and Passenger satisfaction has a positive effect on word-of-mouth intention are higher in the KSRTC bus service than in private bus service.

Overall, it is possible to praise the fact that, in comparison, private bus transportation services are a little bit better in terms of the standard of service they provide and also better in terms of obtaining better positive responses from passengers. The analytical part of the moderation testing in detail is given below.

Table 7.16

Result summary of hypothesis testing for moderating effects

H. No.	Hypotheses	Moderation effect hypotheses decisions	
		Private and KSRTC	
SM.H1	Service quality of bus transportation services has a positive effect on passengers' trust and ownership of the bus moderates this relationship	<i>No moderation effect</i>	<i>Private and KSRTC are equal</i>
SM.H2	Service quality of bus transportation services has a positive effect on perceived value and ownership of the bus moderates this relationship	<i>Moderation effect</i>	<i>Private is higher than KSRTC</i>
SM.H3	Passengers' trust has a positive effect on passengers' satisfaction and ownership of the bus moderates this relationship	<i>Moderation effect</i>	<i>KSRTC is higher than Private</i>
SM.H4	Perceived value has a positive effect on passengers' satisfaction and ownership of the bus moderates this relationship	<i>Moderation effect</i>	<i>Private is higher than KSRTC</i>
SM.H5	Passenger satisfaction has a positive effect on continual intention and ownership of the bus moderates this relationship	<i>No moderation effect</i>	<i>Private and KSRTC are equal</i>
SM.H6	Passenger satisfaction has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship	<i>Moderation effect</i>	<i>KSRTC is higher than Private</i>
SM.H7	Continual intention has a positive effect on word-of-mouth intention and ownership of the bus moderates this relationship	<i>Moderation effect</i>	<i>Private is higher than KSRTC</i>

SM.H1 to SM.H7 indicates Structural Model Hypotheses

Table 7.17

Result summary of hypothesis testing for path analysis

Hypotheses No.	Hypotheses of the model developed	Result of Hypotheses testing	
		Private	KSRTC
SM.H1	Service quality of bus transportation services has a positive effect on passengers' trust	<i>Supported</i>	<i>Supported</i>
SM.H2	Service quality of bus transportation services has a positive effect on perceived value	<i>Supported</i>	<i>Supported</i>
SM.H3	Passengers' trust has a positive effect on passengers' satisfaction	<i>Supported</i>	<i>Supported</i>
SM.H4	Perceived value has a positive effect on passengers' satisfaction	<i>Supported</i>	<i>Not Supported</i>
SM.H5	Passenger satisfaction has a positive effect on the continual intention	<i>Supported</i>	<i>Supported</i>
SM.H6	Passenger satisfaction has a positive effect on word-of-mouth intention	<i>Supported</i>	<i>Supported</i>
SM.H7	Continual intention has a positive effect on word-of-mouth intention	<i>Supported</i>	<i>Supported</i>

SM.H1 to SM.H7 indicates Structural Model Hypotheses; highly supported means significant at 1% level; supported indicates significant at 5% level; Not supported denotes Not-Significant

7.13 Conclusion

In this chapter, seven hypotheses are put to the test, and a model for private and KSRTC bus service in Kerala is developed using multi-Group moderation analysis based on the findings of the testing of the hypotheses. The fit indices generated by the MGA indicate that the model has a satisfactory fit. Comparatively, the KSRTC bus services are unable to compete with the performance of the private bus services in terms of the standard of service provided and the number of passengers who provide positive feedback.

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CHAPTER 8

**THE ROLE OF PASSENGER SATISFACTION IN
SERVICE QUALITY-BEHAVIOURAL
INTENTION RELATIONSHIP**

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CHAPTER 8

THE ROLE OF PASSENGER SATISFACTION IN SERVICE QUALITY-BEHAVIOURAL INTENTION RELATIONSHIP

8.1 Introduction

This chapter describes the fourth research objective of the study. That is to examine the moderated mediation for a model with a single moderator and mediator, which investigates the role of passenger satisfaction and bus ownership in the relationship between service quality and behavioural intentions. A comprehensive review of studies conducted in many foreign countries shows that service quality affects customers' behavioural intentions and service quality affects customer satisfaction. Similarly, studies conducted in other fields have also established that customer satisfaction is a factor that significantly strengthens service quality and customers' behavioural intentions. The fourth objective of this study focuses on examining this phenomenon in bus service competition in Kerala.

8.2 Research Objective

Objective 4: To examine the role of passenger satisfaction and ownership of the bus in the relationship between bus service quality and behavioural intentions.

The analysis of moderated mediation was carried out with the help of the software programme IBM SPSS AMOS 21 and MS Excel. The chi-square difference test is utilised to test the significance of moderating effects at the model level. The heterogeneity test is utilized to test the significance of the moderated mediation effect in the model.

8.3 Moderated mediation analysis; an overview

Moderated mediation analysis is an effective method for determining whether an indirect effect depends on a moderating variable's value. The benefits of using

mediation and moderation analysis include the consistent inclusion of mediating and moderating variables, which has the potential to increase the quantity of information from outcome studies by generating practical statistics regarding interventions and testing principles.

A mediation model in statistics aims to identify and explain the mechanism or process underlying an observed relationship between an independent variable and a dependent variable by incorporating a mediator variable, a third hypothetical variable (also, a mediating variable, intermediary variable, or intervening variable). A mediation model proposes, as opposed to a direct causal relationship between the independent and dependent variables that the independent variable influences the mediator variable, which in turn influences the dependent variable. Consequently, the mediator variable clarifies the character of the relationship between the independent and dependent variables. Mediation analyses are used to comprehend a known relationship by investigating the mechanism or process by which one variable influences another variable via a mediator variable.

The researcher used Multi-Group Analysis to conduct a moderated mediation analysis in this study. The bootstrapping method, the chi-square difference test, and heterogeneity tests were used to examine the model's moderated mediation effect.

8.4 Hypotheses formulation

Sl. No.	Hypotheses
MM.H1	Service quality has a positive effect on behavioural intentions
MM.H2	Service quality has a positive effect on passenger satisfaction
MM.H3	Passenger satisfaction has a positive effect on behavioural intentions
MM.H4	Passenger satisfaction has a mediating role between service quality and behavioural intentions, and ownership of the bus moderates this relationship

8.5 Conceptual Model of Moderated mediation Analysis for Kerala Bus transportation services.

Figure 8.1

Moderated mediation analysis of bus transportation in Kerala- Conceptual model

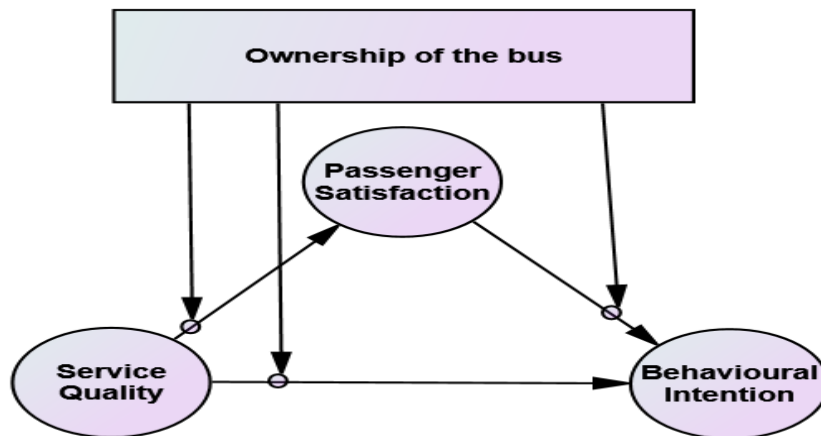


Figure 8.2

Testing of moderated mediation model for private bus service in Kerala with ownership of the bus as moderator and passenger satisfaction as a mediator in the relationship between service quality and behavioural intentions

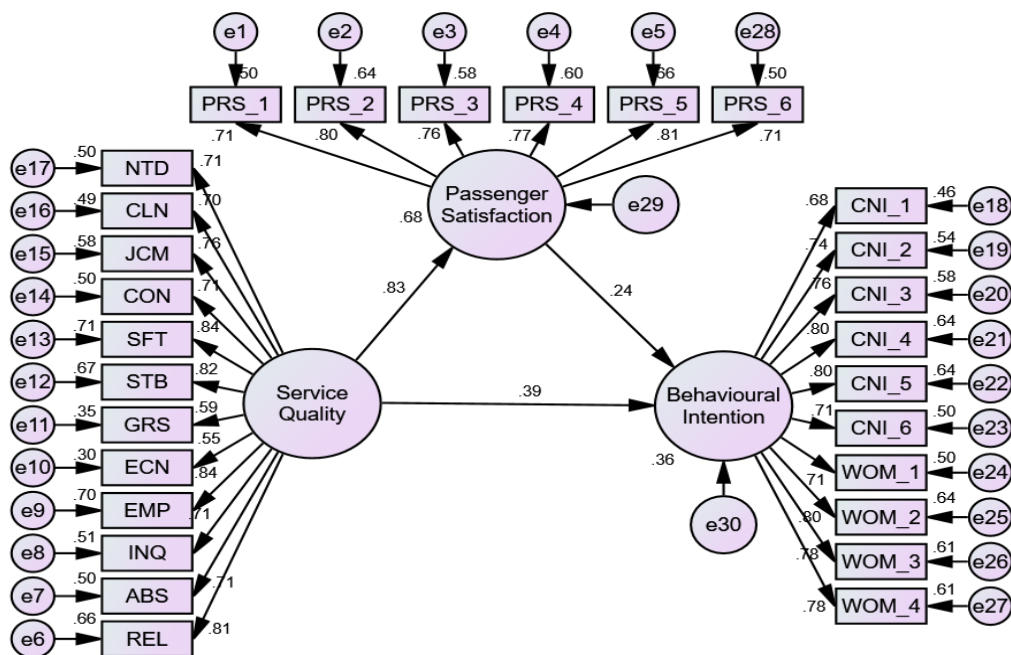


Table 8.1

Relationship between service quality and behavioural intentions with passenger satisfaction as the mediating variable for the private bus service in Kerala - Summary of estimates

Variables	Path	Variables	Beta Estimate	P value	Result
Behavioural intentions	←	Service quality	0.39	<0.001**	<i>Supported</i>
Passenger satisfaction	←	Service quality	0.83	<0.001**	<i>Supported</i>
Behavioural intentions	←	Passenger satisfaction	0.24	<0.001**	<i>Supported</i>

** indicates significant at a 1% level

The above table depicts the direct relationship between service quality and behavioural intentions (beta value is 0.39, significant at 1% level), service quality and passenger satisfaction (beta value is 0.83, significant at 1% level), and passenger satisfaction and behavioural intention (beta value is 0.24, significant at 1% level). It can be observed that all the direct effect between the model is statistically significant. The path values associated with standardised regression coefficients represent the quantity of change in the dependent construct in response to a one standard deviation unit change in the independent variable. As there is a significant direct effect between the indirect paths, the mediating effects of this private transportation service model must be investigated.

Figure 8.3

Testing of moderated mediation model for KSRTC bus service in Kerala with ownership of the bus as moderator and passenger satisfaction as a mediator in the relationship between service quality and behavioural intentions

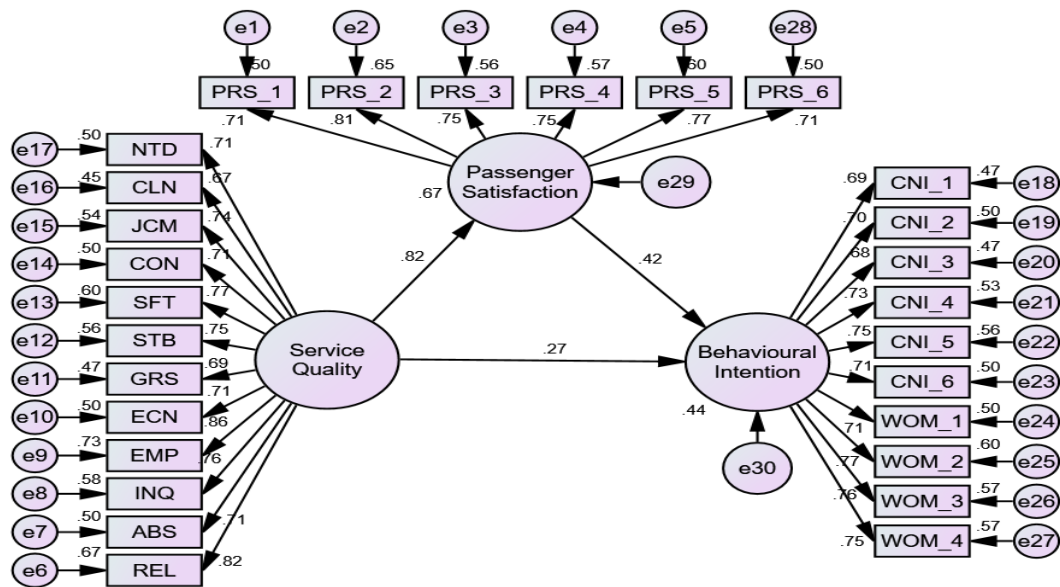


Table 8.2

Relationship between service quality and behavioural intentions with passenger satisfaction as the mediating variable in the KSRTC bus service model - Summary of estimates

Variables	Path	Variables	Beta Estimate	P value	Result
Behavioural intentions	←	Service quality	0.27	<0.001**	Supported
Passenger satisfaction	←	Service quality	0.82	<0.001**	Supported
Behavioural intentions	←	Passenger satisfaction	0.42	<0.001**	Supported

** indicates significant at a 1% level

The above table depicts the direct relationship between service quality and behavioural intentions (beta value is 0.27, significant at 1% level), service quality and

passenger satisfaction (beta value is 0.82, significant at 1% level), and passenger satisfaction and behavioural intention (beta value is 0.42, significant at 1% level). All direct effects between models can be observed to be statistically significant. The path values associated with standardised regression coefficients represent the quantity of change in the dependent construct in response to a one standard deviation unit change in the independent variable. As there is a significant direct effect between the indirect paths, the mediating effects of this model must be examined.

Table 8.3

Fit indices for testing the moderated mediating effect model

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	2.652	0.000	0.981	0.958	0.991	0.051
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08
Literature support	Hair et al., (1998)	Barrett (2007)	Hair et al. (2006)	Hair et al. (2006)	Hu and Bentler (1999)	Hair et al. (2006)

The ratio of degrees of freedom to Chi-Square is 2.652, which is well within the suggested maximal value. The RMSEA score is 0.051, which is significantly below the accepted minimum score of 0.08. In addition, the GFI, AGFI, and CFI values are greater than 0.9, where 1.0 indicates an exact fit. Thus, it can be concluded that the model of moderated mediation is a good fit.

Table 8.4

Mediation testing in the Model using a bootstrapping procedure (summary of estimates)

Ownership Of Buses	Independent construct	Mediation construct	Dependent construct	Direct effect	Indirect effect (Mediation effect)	Result
<i>Private bus</i>	Service quality	Passenger satisfaction	Behavioural intentions	0.39**	0.20**	<i>Partial mediation</i>
<i>KSRTC bus</i>	Service quality	Passenger satisfaction	Behavioural intentions	0.27	0.34**	<i>Partial mediation</i>

*** denotes a 1% significant level; indirect effect values are computed through the bootstrapping procedure with 5,000 bootstrap samples*

The above table reveals both direct and indirect effects in the model. The direct effect of service quality and behavioural intention and the mediation effect of service quality and behavioural intentions via passenger satisfaction can be identified in both models. It is also found that there is a significant mediation effect between service quality and behavioural intentions via passenger satisfaction in the private and KSTRC models. The partial mediating effect can be seen between service quality and behavioural intentions via passenger satisfaction in both models as both models also have a significant direct effect. The mediation effects of these paths are examined using bootstrapping (5000 bootstrap samples) methods with the help of the IBM-SPSS-AMOS-21 software package.

8.6 Chi-square difference test for examining the significance of the moderating effects at the model level

The chi-square difference test was used to determine whether the moderating effects at the model level were significant. The information is provided below.

Table 8.5

Chi-square difference test to examine whether the groups are different at the model level or not

Models	Chi-square	df	P-value	Invariant?
Unconstrained model	782.9	356		
Fully constrained model	770.7	359	0.007**	No
Number of groups		3		
Difference	12.2	3		

** significant at 1% level.

The unconstrained and fully constrained models vary significantly from one another, according to the Chi-square difference test (P value is 0.01). It suggests that at the model level, groups vary. It backs up the model's moderating impacts.

8.7 Heterogeneity tests for measuring the significance of moderated mediation effect in path values

Heterogeneity tests in the model were also examined in addition to the chi-square difference test in this research. Examining the significance of the moderated mediating effects (significant variations in the indirect impact in path values) between two groups is significant. (Private and KSRTC bus service). Heterogeneity examinations were run for this purpose. The outcomes of tests for heterogeneity are shown in the accompanying table.

Table 8.6

Heterogeneity test for assessing the significant difference among path values (Indirect effect paths) of the moderated mediation model for private and KSRTC bus services.

Mediation constructs	Effects on Path	Group I	Group II	Z value	2-tailed p	1-tailed p	Decision
		Private	KSRTC				
Passengers' satisfaction	Indirect effect (Unstandardized)	0.28	0.49	3.959	<0.001**	<0.001**	<i>Moderated mediation</i>
	Standard Error	0.037	0.038				

*** denotes significant at a 1% level*

Since the P values for one-tailed and two-tailed significance are less than the threshold limit (0.01 and 0.05, respectively), it can be concluded that there is a moderated mediation effect between private and public bus services in Kerala in terms of the path relationship between service quality and behavioural intentions via passengers' satisfaction.

8.8 Evaluation of the moderated mediation effects in the model

The mediation test reveals that the effects of both paths are only partially mediated, as the direct effect between them remains significant. Not only is there a significant relationship between the mediator (passenger satisfaction) and the dependent variable (behavioural intentions), but there is also some direct relationship between the independent (service quality) and the dependent variable (behavioural intentions). Moderation testing has been conducted on the mediated relationship, and the results indicate that there is a moderated mediation effect between private and KSRTC bus services in Kerala, as the moderated mediating analysis testing is statistically significant. According to the beta coefficient, it can be inferred that both private and KSRTC bus services have a significant mediating effect on passenger satisfaction in the relationship between service quality and behavioural intentions, but KSRTC bus services have a comparative advantage in this regard over private bus services, as supported by the model's significance testing for the moderation effect.

It indicates that passenger satisfaction with both private and KSRTC bus services plays an important role in the achievement of passengers' behavioural intentions.

KSRTC is more advantageous than private transportation services in this regard. The ultimate objective of every service delivery is to create loyal customers and use them as living advertisements in the form of word-of-mouth. This objective can be achieved primarily through the gratification of past passengers. In addition to service quality objectives, achieving the behavioural intention goals of a bus transportation service is preferable. In other words, the service quality objectives of transportation services must be geared toward maxim of passenger satisfaction. Then, service providers can easily achieve their passengers' behavioural intentions.

Table 8.17

Result summary of the moderated mediation hypotheses testing in the moderated mediation model

H. No.	Moderated mediation Hypotheses	<i>Moderated mediation hypotheses decisions</i>
		Private and KSRTC bus service
MM.H4	Passenger satisfaction has a mediating role between service quality and behavioural intentions, and ownership of the bus moderates this relationship	<i>Moderated mediation effect – supported</i>

8.9 Conclusion

This chapter addressed the fourth objective of the study, which was to examine the relationship between service quality and behavioural intentions by examining the role of passenger satisfaction and ownership of the bus using a moderated mediation approach. The effect of service quality on behavioural intentions as mediated by passenger satisfaction is moderated by the private and KSRTC bus services. The model predicts a partial mediation effect because the direct significant effect still exists. The model's fit indicators demonstrate that it is a good fit. Using the IBM-SPSS-AMOS-21 software, the mediation effects of these paths are examined using bootstrapping (5000 bootstrap samples) techniques. Chi-square tests and homogeneity tests validated the significance of moderation effects.

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CHAPTER 9

THE MODERATING ROLE OF SAFETY IN BUS SERVICE ON THE EFFECT OF NETWORK AND TIME DESIGN ON BEHAVIOURAL INTENTION

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CHAPTER 9

THE MODERATING ROLE OF SAFETY IN BUS SERVICE ON THE EFFECT OF NETWORK AND TIME DESIGN ON BEHAVIOURAL INTENTION

9.1 Introduction

This chapter examines the moderating effect of safety in the private and KSRTC bus services on the effect of network and time design on continuing and word-of-mouth intentions of passengers. To investigate the moderating effects, the IBM SPSS AMOS 21 software was utilized. Network and Time design refers to the availability, connectivity, and accessibility of buses. The researcher hypothesizes that it significantly influences many other dimensions of service quality and passengers' purchase intention. Apart from this, no matter what the service quality dimensions are satisfied, no one is likely to consider such bus services without safety. These assumptions form the basis of the fifth objective of the study, i.e., whether the perceived safety in bus service strengthens the binding between network time design and the behavioural intentions of passengers.

9.2 Objective

Objective 5: To extract the moderating effect of safety in the bus services on the effect of network and time design on the behavioural intentions of the passengers

9.3 Moderation analysis: an overview

A variable that "modifies the effects" of another variable, such as an independent variable on a dependent variable, is a moderating variable. In the social sciences, the term "moderator" was initially used to characterise a variable that "interferes" with the correlation between an independent variable and a related dependent variable. For instance, the moderator variable in the X-Y connection may be represented by the letter M. Consequently, M's role as a moderator is to "modify" the magnitude of X's impact on Y (Zainuddin, 2012).

9.4 Safety in the bus service moderates the effect of network and time design on continual and word-of-mouth intentions in private and KSRTC bus services in Kerala

9.5 Hypotheses formulation

Hypotheses No.	Hypotheses statements for moderation analysis
MOH.1	Network and time design has a positive effect on the continual intention
MOH.2	Network and time design has a positive effect on word-of-mouth intention
MOH.3	Safety in bus service has a positive effect on the continual intention
MOH.4	Safety in bus service has a positive effect on word-of-mouth intention
MOH.5	Safety in the bus service has a moderating effect on the strength of the relationship between network and time design and continual intention
MOH.6	Safety in the bus service has a moderating effect on the strength of the relationship between network and time design and word-of-mouth intention

A. MODERATION ANALYSIS ON PRIVATE BUS SERVICES

Figure 9.1

Unstandardized Regression Coefficients-based Interaction Moderation Model

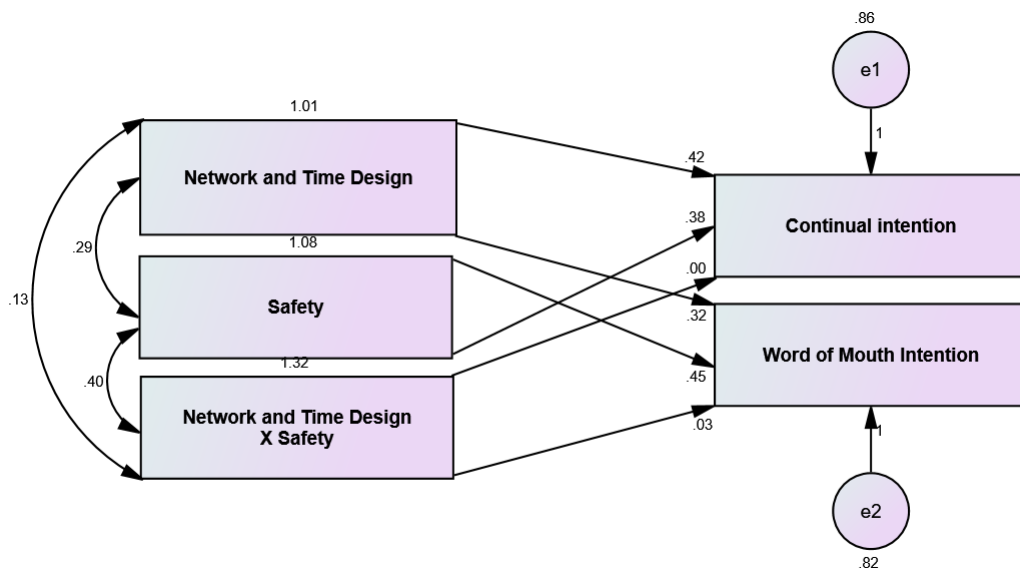


Table 9.1

Model fit indices for examining how independent variable X affects its dependent variable Y through a moderating variable W

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	3.458	0.000	0.978	0.941	0.991	0.045
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08

CFA model fit indicators are shown above. A good model has a Chi-Square to degrees of freedom ratio under 5. 3.485 is well within the acceptable maximum range. RMSEA is 0.045, far below the suggested 0.08. A good fit is indicated by GFI, AGFI, and CFI scores above 0.9 and above 1.0.

Table 9.2

Summary of estimates of the moderation model

Construct	Path	Construct	Estimate	S.E	C. R	P-value
Continual intention	←	Network and Time design	0.42	0.035	6.98	<0.001**
Word-of-mouth intention	←	Network and Time design	0.32	0.039	4.87	<0.001**
Continual intention	←	Safety in the private bus service	0.38	0.032	7.56	<0.001**
Word-of-mouth intention	←	Safety in the private bus service	0.45	0.040	7.56	<0.001**
Continual intention	←	Network and Time design x Safety in the private bus service	0.00	0.021	0.845	0.678 ^{NS}
Word-of-mouth intention	←	Network and Time design x Safety in the private bus service	0.03	0.020	1.287	0.143 ^{NS}

** denotes 1% significance level; NS denotes non-significant

The interaction moderation model demonstrates that network and time design have a significant and positive effect on the intention to continue and the intention to

word of mouth. safety of private bus services in Kerala has a positive and significant effect on the probability of continued use and word-of-mouth promotion by the passengers. The interaction of network and time design and safety in private bus services has no significant effect on the intention to continue using the service or to recommend it to others. The model's moderation effect is explained more fully below.

Table 9.3

Summary of moderation effect – I and II for private bus services

Construct names			Unstandardized Regression Coefficients		
Independent construct	Moderator	Dependent construct	Independent construct	Moderator	Interaction
Network and Time design	Safety in the private bus services	Continual intention	0.42**	0.38**	0.00 ^{NS}
Network and Time design	Safety in the private bus services	Word-of-mouth intention	0.32**	0.45**	0.03 ^{NS}

** denotes 1% significance level; NS denotes Not Significant

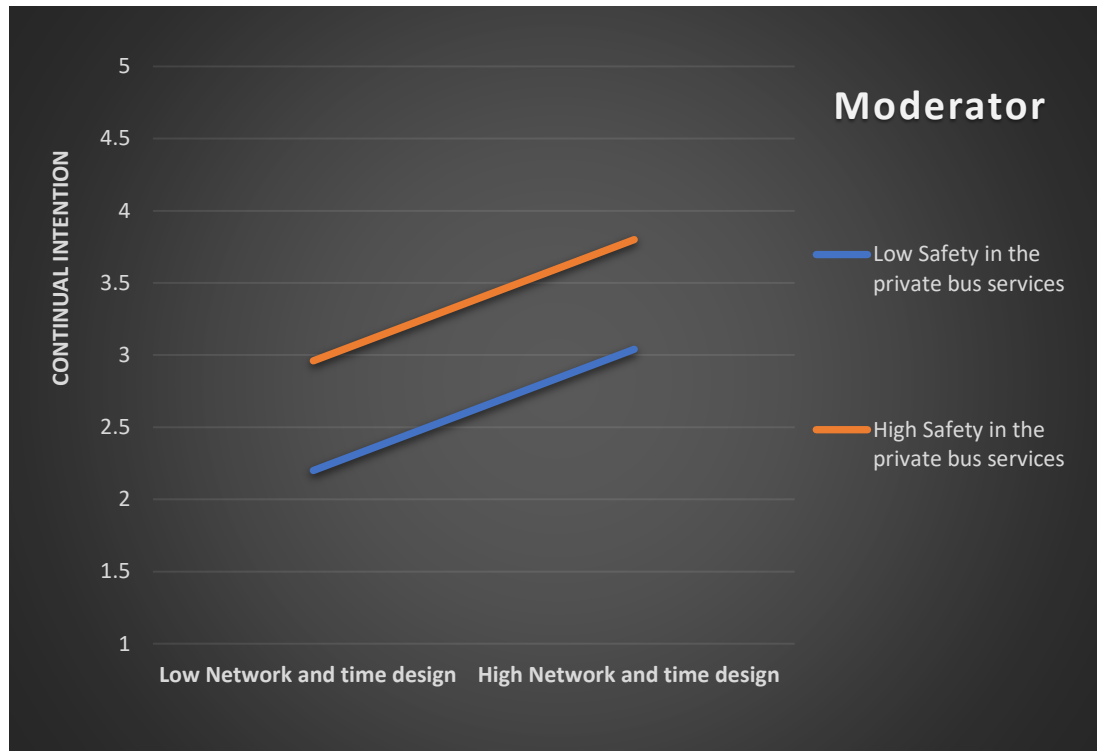
The above table shows that the strength of the relationship between network and time design of the private bus services and continual and word of mouth intention of the passengers is not significantly moderated by safety in the private bus services in Kerala. As a moderator, safety in the private bus services does not strengthen or weaken the relationship between the network and time design of the private bus services in Kerala and continual and word-of-mouth intentions of the passengers of the bus services.

Safety, the network of operations and the schedule are the critical successful components of every type of bus service. If the operators consider these two services carefully in their service delivery, the chances of succeeding in their operation will be very higher. In this viewpoint, if these two components are joined together, the results will be higher. To measure these things, a continuous moderation analysis has been carried out. But the statistical testing for the significance reveals that there is no significant moderating effect on these two factors.

I. Simple slope test of two-way interaction effect for unstandardized variables for moderation effect– I for private bus services

Figure 9.2

Interaction of network and time design and safety to predict continual intention

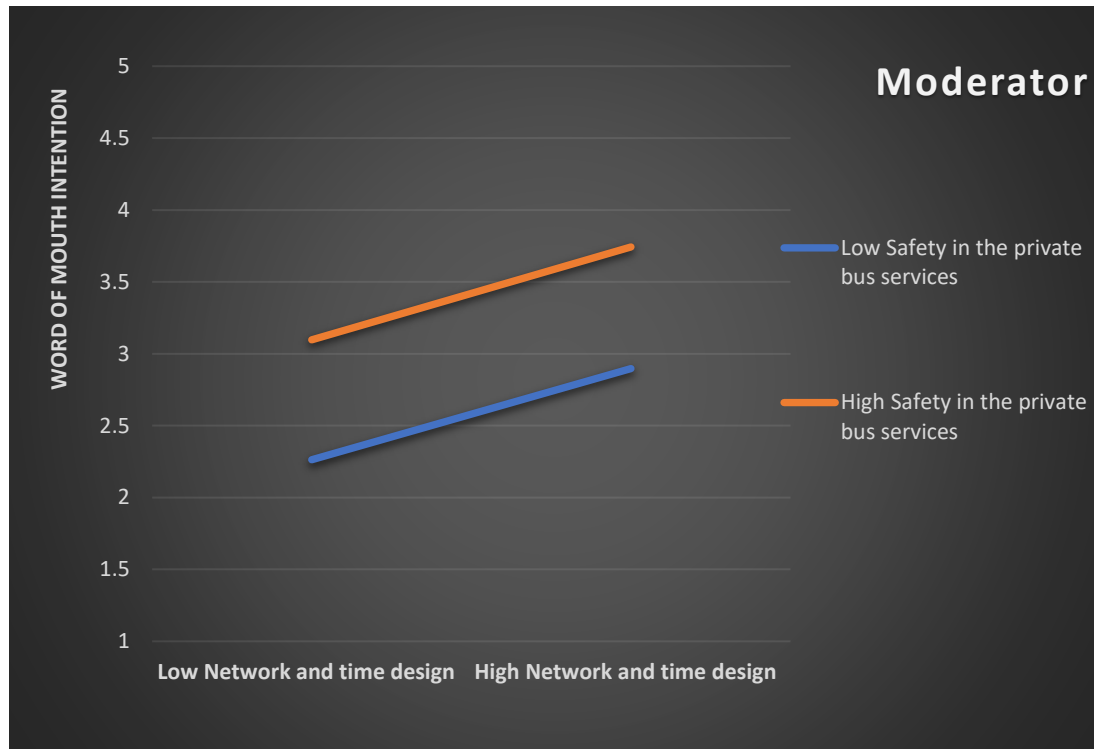


Result of Two-way interaction: The simple slope curve for the interaction effect indicates that the safety does have any moderating effect in the relationship between network and time design and continual intention.

II. Simple slop test plots of two-way interaction effect for unstandardized variables for moderation effect– II for private bus services

Figure 9.3

Interaction of network and time design and safety to predict word-of-mouth intention of the private bus services in Kerala



Result of Two-way interaction: The interaction effect slope curve shows that safety does not moderate the link between network and time design and word-of-mouth intention.

B. MODERATION ANALYSIS ON KSRTC BUS SERVICES

Figure 9.4

Unstandardized Regression Coefficients-based Interaction Moderation Model

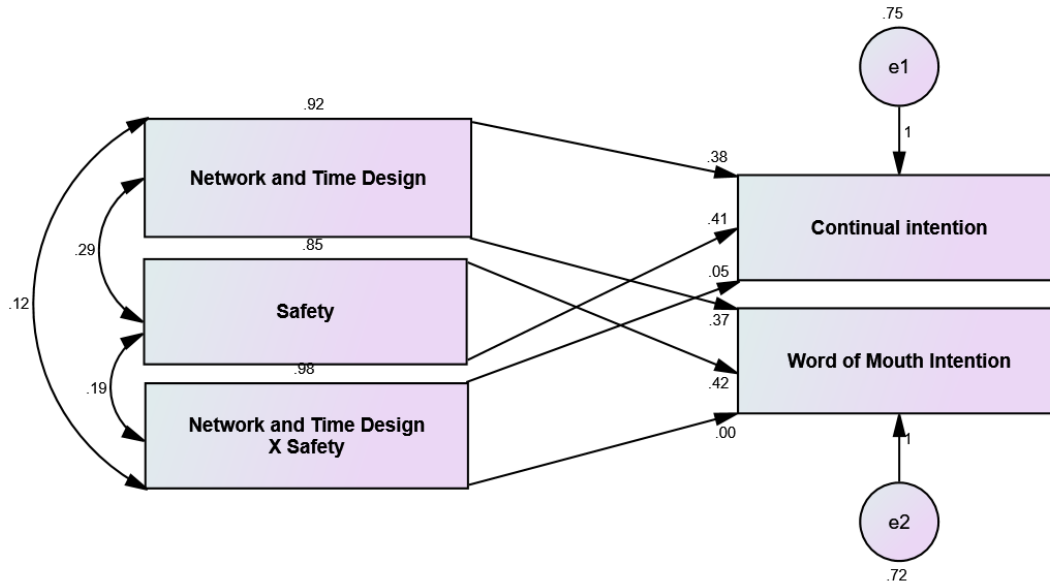


Table 9.4

Model fit indices for examining how independent variable X affects its dependent variable Y through a moderating variable W

Attributes	CMIN/DF	P-Value	GFI	AGFI	CFI	RMSEA
Study model	3.786	0.000	0.968	0.940	0.992	0.049
Recommended value	Acceptable fit [1-5]	Greater than 0.05	Greater than 0.9	Greater than 0.9	Greater than 0.9	Less than 0.08

An appropriate model should have a Chi-Square to degrees of freedom ratio of less than 5. In this instance, the number is 3.786, which is well within the permitted upper limit. The suggested threshold level of 0.08 is greatly exceeded by the RMSEA score of 0.049. There is an acceptable fit when the GFI, AGFI, and CFI values are all greater than 0.9 and better than 1.0.

Table 9.5*Summary of estimates of the moderation model for KSRTC BUS SERVICES*

Construct	Path	Construct	Estimate	S. E	C. R	P-value
Continual intention	←	Network and Time design	0.38	0.031	5.76	<0.001**
Word-of-mouth intention	←	Network and Time design	0.37	0.036	5.09	<0.001**
Continual intention	←	Safety in the private bus service	0.41	0.035	6.45	<0.001**
Word-of-mouth intention	←	Safety in the private bus service	0.42	0.029	6.98	<0.001**
Continual intention	←	Network and Time design x Safety in the private bus service	0.05	0.020	1.678	0.109 ^{NS}
Word-of-mouth intention	←	Network and Time design x Safety in the private bus service	0.00	0.023	0.768	0.365 ^{NS}

** denotes 1% significance level; NS denotes non-significant

The interaction moderation model shows that network and time design has a significant and positive effect on the continual intention and word-of-mouth intention of passengers of KSRTC. The safety of the KSRTC bus services in Kerala has a positive and significant effect on continual intention and word-of-mouth intention. Interaction of network and time design and safety in the KSRTC bus services does not have a significant effect on the continual intention and word of mouth intention in the KSRTC bus service. The details of the moderation effect from the model are given below

Table 9.6

Summary of moderation effect – I and II for KSRTC bus services

Construct names			Unstandardized Regression Coefficients		
Independent construct	Moderator	Dependent construct	Independent construct	Moderator	Interaction
Network and Time design	Safety in the KSRTC bus services	Continual intention	0.38**	0.41**	0.05 ^{NS}
Network and Time design	Safety in the KSRTC bus services	Word-of-mouth intention	0.37**	0.42**	0.00 ^{NS}

*** denotes 1% significance level; NS denotes Not Significant*

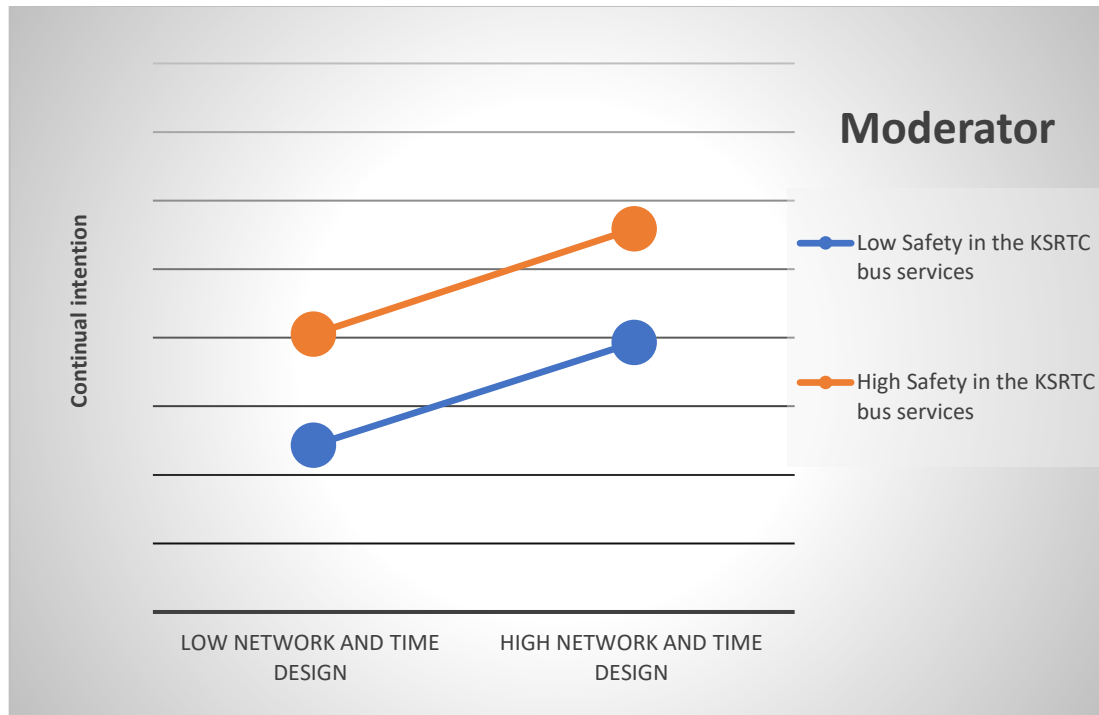
The above table demonstrates that the safety of the KSRTC bus services in Kerala does not substantially moderate the strength of the link between the network and time design of the KSRTC bus services and the continuous, and word-of-mouth intention of the passengers. As a moderator, it can be inferred that the KSRTC bus service's safety neither strengthens nor weakens the relationship between the network and time design of the KSRTC bus service and the continual and word-of-mouth objectives of the bus service's passengers.

The data presented in the table above demonstrates that the robustness of the safety and network of operation of buses as well as the schedule of the bus service are the critical components that contribute to the successful operation of any kind of bus service. The possibilities of the operators' business being successful will significantly improve if they consider these two aspects of the service they provide to customers. According to this point of view, the outcomes will be improved if these two aspects are combined into a single whole. But, the results of the statistical test to determine whether something is significant to show that there is no moderating impact on these two factors.

I. Simple slop test plots of two-way interaction effect for unstandardized variables for moderation effect– I for KSRTC bus services

Figure 9.4

Interaction of network and time design and safety to predict continual intention

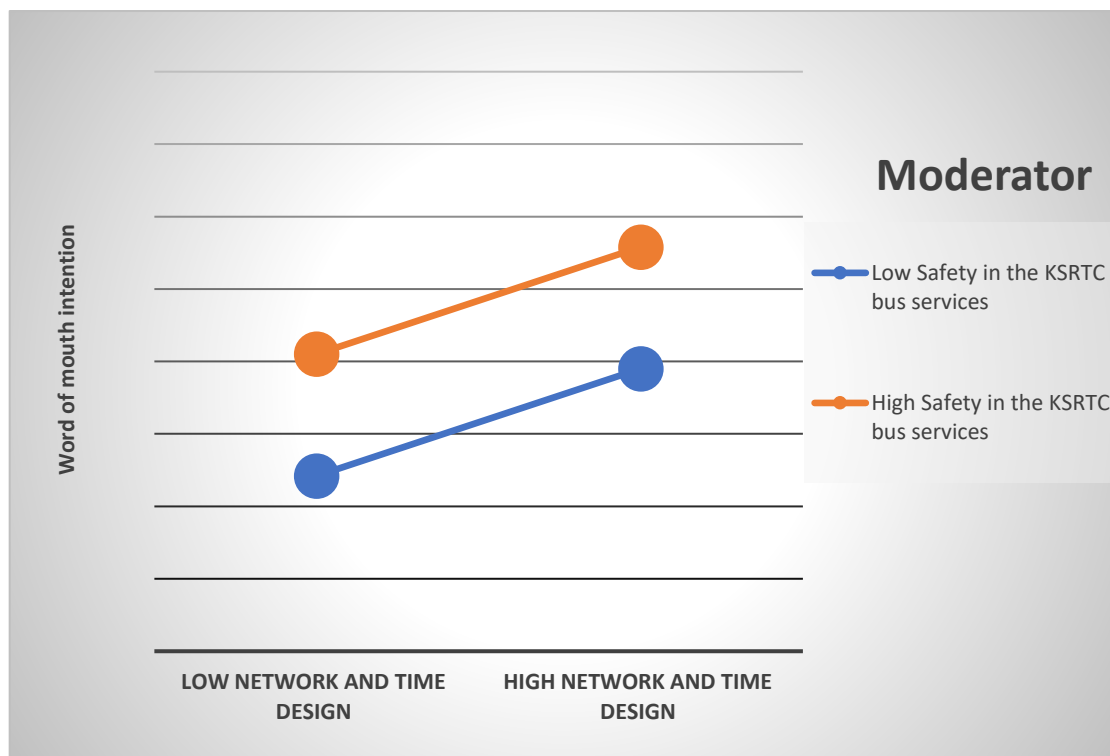


Result of Two-way interaction: The simple slop curve for interaction effect indicates that the safety does have any moderating effect in the relationship between network and time design and continual intention of KSRTC bus services

II. Simple slope test plots of two-way interaction effect for unstandardized variables for moderation effect– II for KSRTC bus services

Figure 9.5

Interaction of network and time design and safety to predict word-of-mouth intention of the KSRTC bus services in Kerala



Result of Two-way interaction: The connection between network and time design and the desire to recommend KSRTC bus services is not moderated by safety, according to the simple slope curve for the interaction effect.

Table 9.7*Summary of hypotheses testing*

Hypotheses No.	Hypotheses statements for moderation analysis	Result
MOH.1	Network and time design has a positive effect on the continual intention	<i>Supported</i>
MOH.2	Network and time design has a positive effect on word-of-mouth intention	<i>Supported</i>
MOH.3	Safety in bus service has a positive effect on the continual intention	<i>Supported</i>
MOH.4	Safety in bus service has a positive effect on word-of-mouth intention	<i>Supported</i>
MOH.5	Safety in the bus service has a moderating effect on the strength of the relationship between network and time design and continual intention	<i>Not Supported</i>
MOH.6	Safety in the bus service has a moderating effect on the strength of the relationship between network and time design and word-of-mouth intention	<i>Not Supported</i>

9.6. Discussion of moderation effect in the model

The results of the moderation testing show that the level of safety provided by the private and KSRTC bus services does not play a moderating role in the relationship between network and time design as well as continual intention and word-of-mouth intention. This indicates that safety cannot either strengthen or diminish the relationship between network and time design and, continuous intention and word-of-mouth intention.

9.7 Conclusion

The moderating effect of the safety of the bus service offered by the private and KSRTC was investigated in this chapter. The results of that investigation revealed that there is no moderating role played by safety in the relationship between network and time design, and continual intention and word-of-mouth intention. The fit

statistics of the model demonstrate that the model is an accurate representation of the data. The findings of the moderation effect were also verified with the assistance of the interaction graph.

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CHAPTER 10

SUMMARY, FINDINGS AND CONCLUSION

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CHAPTER 10

SUMMARY, FINDINGS AND CONCLUSION

10.1. Introduction

This chapter begins with a summary of the research, followed by findings from the study, conclusion, and implications of the study. The findings are arranged on the basis of research objectives.

10.2. Summary

The study “Service Quality in Public Bus Transport System in Kerala: A Comparative Study of State-Owned and Privately Owned Bus Transport Services” compared the service quality offered by the KSRTC and private bus services in Kerala and its effect on passengers’ post-service behaviour. The present study is based on a more comprehensive service quality Scale model instead of using the traditional SERVQUAL, SERVPERF or other Scales vastly used in many past studies. The survey included 65 items on a scale of 12, considering all possible factors suitable for Kerala's public bus transport sector. Seven post-service behavioural constructs such as trust, perceived value, satisfaction, complaints, involvement, continuance intentions and word-of-mouth intentions, which collectively incorporate 40 items, were also considered for the study. The study identified the differences in service quality on different dimensions between state-owned buses and private bus services in Kerala and the important categorical factors that significantly affect these differences.

This study investigates changes in passenger service quality and post-service behaviour according to ownership changes (moderation effect) of bus services. Among the theoretical advances suggested by this study are the maiden application of structural equation modelling (SEM) to the study of public transport service quality in Kerala, the finding that passenger satisfaction acts as a mediator in the relationship

between service quality and passenger behavioural intentions (moderated-moderation analysis), and that this relationship is strengthened by bus ownership as a moderating factor. The results of this study may be helpful for transport bodies in Kerala and other state transport bodies and authorities. The extended scales used in this study may be adopted by other transportation authorities, operators, and researchers to accurately assess service quality, post-service behaviour, and behavioural intentions.

10.3. Findings of the study

Significant findings of this study are summarised in this section. It is divided into five main areas according to the study's data analysis and interpretation objectives.

10.3.1 The first objective of this study is *to investigate and compare the service quality offered by the State-owned (KSRTC) and privately owned bus services in Kerala*. The findings of the comparative analysis are appended here.

10.3.1.1 Private bus services in Kerala offer above-average service quality to passengers on dimensions such as network and timing design, cleanliness, travel comfort, convenience, safety, staff behaviour, economy, empathy, quality of information and reliability.

10.3.1.2 It is observed that the ambience of the bus station is not much good in private as well as KSRTC bus stations in Kerala

10.3.1.3 Considering that present-day commuters are well-informed and familiar with various grievance redressal mechanisms like RTI, Consumer Protection forums etc., the grievance redressal system in the private bus service sector and KSRTC, was stood at only average.

10.3.1.4 KSRTC bus service in Kerala offers above average level of service quality to the passengers in the factors, Network and time design, Cleanliness, Journey comfort, Convenience, Safety, Staff behaviour, Economy, Empathy, and Reliability.

- 10.3.1.5 Information quality offered by the KSRTC to their passengers is only average.
- 10.3.1.6 There is a difference between the private and KSRTC bus services regarding service quality factors such as network and time design, journey comfort, staff behaviour and reliability.
- 10.3.1.7 The private and KSRTC buses are almost the same regarding service quality factors such as convenience, safety, grievance redressal system, economy, empathy, and information quality.
- 10.3.1.8 The analysis reveals that private buses outperform KSRTC buses in terms of reliability, cleanliness, good bus station ambience, and network and time design while comparing to factors affecting service quality.
- 10.3.1.9 KSRTC offers more comfortable journeys and better staff behaviour than private buses.
- 10.3.1.10 The study shows differences among the different types of private buses regarding journey comfort and convenience.
- 10.3.1.11 According to the analysis, semi-sleeper non-AC buses provide better travel comfort than regular private buses. Semi-sleeper buses are more comfortable than private limited-stop buses. In terms of comfort, limited-stop buses offer more comfort than regular private buses. Fast-passenger private buses are more comfortable than private limited-stop buses.
- 10.3.1.12 It is found that there is a notable difference among the type of KSRTC buses in terms of network and time design, journey comfort, safety, empathy, and information quality.
- 10.3.1.13 It can be understood that semi-sleeper non-AC buses provide better journey comfort than ordinary KSRTC buses. Semi-sleeper buses provide more journey comfort than KSRTC limited-stop buses. In the case of convenience, limited-stop buses offer more convenience than ordinary KSRTC buses. Fast-passenger KSRTC buses are more convenient than

KSRTC limited-stop buses.

- 10.3.1.14 The study reveals that limited-stop buses provide better network and time design than ordinary KSRTC buses. Limited stop buses provide better network and timing than semi- sleeper non a/c buses. Ordinary buses are more convenient than KSRTC limited-stop buses. At the same time, fast-passenger KSRTC buses are more convenient than ordinary buses. While comparing limited stop and fast passengers, KSRTC fast passengers provide more safety. Regarding staff behaviour, KSRTC limited stop buses have better staff behaviour than ordinary KSRTC buses. Limited-stop KSRTC buses are more empathetic than ordinary KSRTC buses.
- 10.3.1.15 There are differences among various travel types (Within the District, between districts and Inter-state) provided by private buses regarding the service quality components, including network and time design and economy.
- 10.3.1.16 The service quality factors of private buses, such as journey comfort, convenience, safety, staff behaviour, grievances redressal system, empathy, information quality, the ambience of the bus station and reliability, are not varying according to the journey types.
- 10.3.1.17 Private buses operating within a district have superior network and time designs than those that operate on interstate routes, according to the mean score. Unlike inter-state services, private services between districts offer superior network and time designs. Private buses that run within district routes are more cost-effective than those that run on interstate routes. Private transportation between districts is more affordable when compared to interstate buses.
- 10.3.1.18 There found no noticeable difference among types of journeys (Within the District, between districts and Inter-state) in KSRTC buses concerning service quality factors.
- 10.3.1.19 In the case of the convenience dimension of service quality, there is a

significant difference among areas (rural, semi-urban, urban) of private bus operators. Private buses in rural locations offer less convenience than those from semi-urban and urban areas.

10.3.1.20 There is an effect of areas of KSRTC bus operation on the reliability and grievance redressal (complaint handling) factors of service quality. KSRTC buses in urban locations reportedly offer less grievance redressal system than those from semi-urban. KSRTC buses operating in rural areas provide more reliable service than those from urban areas. The KSRTC buses of semi-urban regions are much more reliable than those from urban areas.

10.3.2. The study's second objective is *to examine the level of post-service behaviour of passengers of Kerala's state-owned and privately-owned bus transportation services*. Post-service behaviour of passengers considered here is passengers' trust, perceived value, satisfaction, complaints, involvement, continual intention, and Word-of-mouth intention. The drawn findings related to this objective are given here.

10.3.2.1 It is seen that the level of post-service behaviour, such as passengers' trust, perceived value, passenger satisfaction, complaints, involvement, continual intention and WOM intention, are not the same in private bus services in Kerala.

10.3.2.2 On average, there is evidence of only a moderate level of trust, perceived value, satisfaction, complaints, involvement, continual intention and WOM intention among passengers towards the private bus services in Kerala.

10.3.2.3 It can be seen that there is no change in the level of post-service behaviour of passengers in Kerala, such as passengers' trust, perceived value, passenger satisfaction, passengers' complaint, continual intention and WOM intention according to the change in the ownership of buses.

10.3.2.4 A close association between ownership of bus service and the level of

passengers' involvement towards private bus service were found, and passenger involvement is greater among KSRTC buses than private services.

10.3.2.5 There observed a significant association between the gender of passengers and the level of trust. Low levels of trust in private bus services are more prevalent among female passengers, whereas a high level of trust in private bus services is more frequent among male passengers. Male passengers are more trusted in private bus services than female passengers.

10.3.2.6 There observed an association between age and the level of passengers' trust towards private bus service. Passengers in the age group of 41 to 60 trust private bus services more than passengers in the age category of 21 to 40 and above 60.

10.3.2.7 It was found that neither the type of buses nor the type of journeys significantly affected the level of trust of private bus passengers.

10.3.2.8 There is a significant change in the level of the perceived value of passengers in the private bus sector depending on gender. A low level of perceived value on private bus service is more prevalent among female passengers, whereas a high level of perceived value is more frequent among male passengers. It is concluded that male passengers perceive more value towards private bus services than female passengers.

10.3.2.9 It should be noted that the type of bus services and the age of the passengers do not influence the level of Perceived value of passengers in private bus services.

10.3.2.10 There observed a close association between the type of journey and the level of passengers' perceived value towards private bus service. Low levels of perceived value on private bus services are more common among private buses that run between districts. In contrast, high levels of perceived value on private bus services are more common among interstate buses. Passengers have more perceived value towards interstate buses in

private bus services in Kerala.

- 10.3.2.11 There is a significant association between gender and the level of passengers' satisfaction towards private bus service in Kerala. Male passengers have more satisfaction with private bus services than female passengers in Kerala.
- 10.3.2.12 There is no change in the satisfaction level of passengers in private bus services according to the age of passengers, type of bus service, and type of journey.
- 10.3.2.13 No influence of gender of passengers, age, and types of bus services in the level of passengers' complaints in private bus services has been observed.
- 10.3.2.14 A significant relationship was found between the type of journey and the level of passengers' complaints towards private bus service. Low passenger complaints on private bus service are more common among private buses that run between districts. In contrast, high passenger complaints on private bus service are more common among inter-state buses. Passengers have more complaints towards interstate buses than private bus services in Kerala.
- 10.3.2.15 It can be made out that there is a significant association between gender and the level of passengers' involvement in the private bus service. Low levels of involvement in private bus service are more common among female passengers, while a high level of involvement in private bus service is more frequent among male passengers. Male passengers appear to be more involved in private bus services in Kerala than female passengers.
- 10.3.2.16 There is a significant association between age and the level of passengers' involvement towards private bus service. Passengers in the age group of 21 to 40 have more involvement in private bus services than passengers in the age category of 41 to 60 and above 60.
- 10.3.2.17 No significant association was noticed between the type of bus service,

types of journeys and the level of passengers' involvement towards private bus service in Kerala.

10.3.2.18 Gender of passengers has no impact on the level of passengers' continual intention towards private bus service in Kerala.

10.3.2.19 There is a significant association between age and the level of passengers' continual intention towards private bus services. Passengers between the ages of 21 and 40 are more likely to use private bus services in Kerala than passengers between the ages of 41 and 60 and above 60.

10.3.2.20 There is no observable influence noticed between the type of bus service, types of journeys and the level of passengers' continual intention towards private bus service in Kerala.

10.3.2.21 There found an association between gender and the level of passengers' WOM intention towards private bus service. Low levels of WOM intention on private bus service are more common among female passengers, while a high level of WOM intention on private bus service is more frequent among male passengers. Hence, male passengers appear to be had more WOM intention in private bus services in Kerala than female passengers.

10.3.2.22 The age of passengers, types of bus service and types of the journey do not influence the level of passengers' WOM intention towards private bus service in Kerala.

10.3.2.23 There are remarkable differences in the level of post-service behaviour, such as trust, value, satisfaction, complaints, involvement, continual intention and WOM intention among KSRTC passengers in Kerala.

10.3.2.24 On average, only a moderate level of trust, value, satisfaction, complaints, involvement, continual intention and WOM intention among passengers about KSRTC bus services in Kerala.

10.3.2.25 The gender and age of KSRTC passengers and the types of the journey have no association with their level of trust in that bus service.

- 10.3.2.26 There is an association between the types of buses and the level of passengers' trust towards the KSRTC bus service in Kerala. Passengers have more trust in limited stop buses than ordinary, fast passenger and semi sleeper/non-AC buses in KSRTC bus services in Kerala.
- 10.3.2.27 No influence of gender, age of passengers, or their journey type on the level of perceived value in KSRTC services in Kerala has been visible.
- 10.3.2.28 There is a significant association between the types of buses and the level of passengers' perceived value towards the KSRTC bus service in Kerala. Commuters have more perceived value on limited stop buses than ordinary, fast passenger and semi sleeper/non-AC buses in KSRTC bus services in Kerala.
- 10.3.2.29 The level of passenger satisfaction in KSRTC services is not found to be influenced by the passengers' gender and their journey types.
- 10.3.2.30 There noticed an association between age and the level of passengers' satisfaction towards the KSRTC bus service. Commuters between the ages of 41 and 60 are more satisfied with KSRTC bus services in Kerala than those between the ages of 21 and 40 and above 60.
- 10.3.2.31 A relationship between the types of buses and the level of passengers' satisfaction towards KSRTC bus services in Kerala can be visible. Low levels of passenger satisfaction are more prevalent among fast passenger buses. Meanwhile, a high level of passenger satisfaction is more frequent among limited-stop buses. Consequently, commuters have more satisfaction on limited stop buses than ordinary, fast passenger and semi-sleeper/non-AC buses in KSRTC bus services.
- 10.3.2.32 There is no active association between gender, age of passengers, types of journeys and the level of passengers' complaints towards KSRTC bus services in Kerala.
- 10.3.2.33 There is a significant association between the types of buses and the level

of passengers' complaints towards KSRTC bus services in Kerala. Low levels of passenger complaints are more prevalent among fast passenger buses. Meanwhile, high passenger complaints are more frequent among semi-sleeper/non-AC buses.

10.3.2.34 It can be found that the age and gender of passengers, types of buses and journeys have no significant association with the level of passengers' involvement in KSRTC.

10.3.2.35 It can also be observed that the age and gender of passengers, types of buses and journeys have no significant association with the level of passengers' behavioural intentions (continual and WOM intention) towards KSRTC.

10.3.3 The third objective of the study is *to explore the effect of bus ownership on the relationship between bus service quality and the post-service behaviour of passengers in Kerala*. The result of path analysis with CB-CFA and SEM emanates the following findings.

10.3.3.1. The quality of private bus transportation services positively affects passengers' trust. If the quality of private bus service increases, the passengers' trust in that service will also improve.

10.3.3.2. The quality of private bus transportation services positively affects perceived value. The passengers' perceived value of the private bus services operating in Kerala will be improved as a result of improvements in the service quality offered by the private bus services

10.3.3.3. Passengers' trust in private bus services positively affects passengers' satisfaction. It shows that passenger satisfaction with private bus services in Kerala will increase as the passengers feel better trust in private bus service.

10.3.3.4. Perceived value towards private bus service positively affects passengers' satisfaction. It can be observed that passenger satisfaction with private bus

services in Kerala will increase as the passengers feel better value about private bus services.

- 10.3.3.5. Passenger satisfaction with private bus service positively affects continual intention. It is indicated that the passengers' intention to continue with private service will enhance if they are satisfied with the private bus services.
- 10.3.3.6. Passenger satisfaction with private bus service positively affects word-of-mouth intention. It is demonstrated that passengers' intention to recommend private service to their friends and relatives will increase if they are satisfied with the service they receive from private bus services.
- 10.3.3.7. Continual intention with private bus service positively affects word-of-mouth intention. It is observed that the intention of passengers to recommend private services to their friends and relatives will increase if they continue to use private buses in Kerala.
- 10.3.3.8. Service quality of KSRTC bus transportation services positively affects passengers' trust. If the service quality of the KSRTC bus service increases, the passengers' trust in that service will also improve.
- 10.3.3.9. Service quality of KSRTC bus transportation services positively affects perceived value. The passengers' perceived value of the KSRTC bus services operating in Kerala will be improved as a result of improvements in the service quality offered by the KSRTC bus services
- 10.3.3.10. Passengers' trust in KSRTC bus services does not affect passengers' satisfaction positively.
- 10.3.3.11. Perceived value towards KSRTC bus service positively affects passengers' satisfaction. It can be observed that passenger satisfaction with KSRTC bus services in Kerala will increase as the passengers feel better value about KSRTC bus services.
- 10.3.3.12. Passenger satisfaction with the KSRTC bus services positively affects

continual intention. It is indicated that the passengers' intention to continue with KSRTC service will enhance if they are satisfied with the KSRTC bus services.

- 10.3.3.13. Passenger satisfaction with the KSRTC bus service positively affects word-of-mouth intention. It is demonstrated that passengers' intention to recommend KSRTC service to their friends and relatives will increase if they are satisfied with the service they receive from KSRTC bus services.
- 10.3.3.14. The continual intention with KSRTC bus service positively affects word-of-mouth intention. It is observed that the intention of passengers to recommend KSRTC services to their friends and relatives will increase if the passengers themselves continue to use the services of KSRTC buses in Kerala.
- 10.3.3.15. There is no moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of service quality of bus transportation services on passengers' trust.
- 10.3.3.16. There is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of service quality of bus transportation services on perceived value. Private bus transportation service is higher than KSRTC regarding the effect of service quality on perceived value.
- 10.3.3.17. There is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of trust on passengers' satisfaction. KSRTC transportation service is higher than Private buses regarding the effect of passengers' trust on passengers' satisfaction.
- 10.3.3.18. There is a moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of perceived value on passengers' satisfaction. The private transportation service is higher than the KSRTC bus regarding the effect of perceived value on passengers' satisfaction.

10.3.3.19. There is no moderation effect between private and KSRTC bus transportation services in Kerala regarding the effect of passenger satisfaction on continual intention.

10.3.3.20. There is a moderation effect between passenger satisfaction and word-of-mouth intention. KSRTC transportation service is higher than private buses regarding the effect between passenger satisfaction and word-of-mouth intention.

10.3.3.21. There is a moderation effect between continual intention and word-of-mouth intention. The private transportation service is higher than the KSRTC bus regarding the effect between continual and word-of-mouth intentions.

10.3.4 The fourth objective of the study is *to examine the mediating role of passenger satisfaction in the relationship between bus service quality and behavioural intentions*. The results of moderated mediation analysis are described here.

10.3.4.1. There is a direct positive relationship between service quality in bus services and the behavioural intention of bus passengers.

10.3.4.2. There is a direct positive relationship between service quality in bus services and the satisfaction of bus passengers.

10.3.4.3. There is a direct positive relationship between passengers' satisfaction with bus services and bus passengers' behavioural intentions (Continual and WOM intentions).

10.3.4.4. It is also found that there is a significant mediation effect of passenger satisfaction between service quality and behavioural intentions in the private and KSTRC models.

10.3.4.5. There is a moderated mediation effect between private and public bus services in Kerala regarding the relationship between service quality and behavioural intentions via passengers' satisfaction.

10.3.4.6. Moderated mediation effect is found more in KSRTC bus services than in

Kerala's private bus services.

10.3.5. The fifth objective of the study is *to extract the moderating effect of safety in bus services on the influence of the bus network and time design on passengers' behavioural intentions*. The critical findings emanated from moderation analysis are:

10.3.5.1. The network and time design of bus services significantly and positively affect the behavioural intention of bus passengers in Kerala (the intention to continue and use word of mouth).

10.3.5.2. The safety of private bus services in Kerala has a positive and significant effect on the probability of continued use and word-of-mouth promotion by the passengers.

10.3.5.3. The interaction of network and time design and safety in private bus services has no significant effect on the intention to continue using the service or to recommend it to others.

10.3.5.4. The safety of the private bus services does not strengthen or weaken the relationship between the 'network and time design' of the private bus services in Kerala and the continual and word-of-mouth intentions of the passengers of the bus services. So, the safety of private bus services does not moderate the relationship between network and time design and behavioural intention of private bus passengers in Kerala.

10.3.5.5. The interaction analysis shows that network and time design significantly and positively affect passengers' continual intention and word-of-mouth intention of KSRTC bus services.

10.3.5.6. The safety of the KSRTC bus services in Kerala does not substantially moderate the strength of the link between the network and time design of the KSRTC bus services and the continual and word-of-mouth intention of the passengers.

10.3.6 Findings as a Comparison between Private and KSRTC Buses

Table 10.1

Comparison of Service quality dimensions (factors)

Sl. No	Descriptions	Variables	KSRTC	Private
1		Network and Time design	Lower (3.26)	Higher * (3.52)
2		Cleanliness	Lower (3.35)	Higher * (3.49)
3		Journey comfort	Higher* (3.45)	Lower (3.18)
4		Convenience	Higher (3.44)	Lower (3.35)
5		Safety	Higher (3.24)	Lower (3.13)
6	Passengers' Perception of Service Quality Dimensions	Staff behaviour	Higher* (3.47)	Lower (3.17)
7		Grievance Redressal	Higher (3.09)	Lower (3.06)
8		Economy	Lower (3.21)	Higher (3.32)
9		Empathy	Almost the same (3.27)	
10		Information quality	Lower (3.07)	Higher (3.18)
11		The ambience of the bus station	Almost the same, but poor (2.69)	
12		Reliability	Lower (3.22)	Higher* (3.39)

*Significantly higher **
Means score ()

Table 10.2*Comparison of Moderation and Mediation Effect*

Sl. No	Moderation / mediation effect	Relationship	KSRTC	Private
1		Service quality on perceived value	No effect	
2		Service quality on trust	Less	More
3		Perceived value on passenger satisfaction	More	Less
4	Moderation effect of bus ownership	Trust in the passenger Satisfaction	Less	More
5		Satisfaction with the continual intention	No effect	
6		Satisfaction with the WOM Intention	More	Less
7		The continual intention on WOM's intention	Less	More
8	Mediation Effect on Passenger Satisfaction	Service quality on behaviour intention (direct)	Less	More
9		SQ on BI (indirect)	More	Less

10.4 Conclusion

Against the backdrop of the massive drop out of passengers from the public bus transport system in Kerala, a comparative study has been attempted to find out the service performance of state-owned and privately owned bus transport in Kerala, to examine the post-service behaviour of passengers, find out the factors responsible for service quality and behavioural intention of passengers, and investigate whether there is any possibility for improving public bus transport services to call back lost passengers and attract new passengers, which will be multifaceted benefits offering to the state. The study reveals that the service quality of both sectors is above average but left ample dimensions that could be improved if service operators and policymakers put their minds to it and thereby retain passengers. The researcher has observed and revealed relevant findings and put forth significant recommendations

towards the attention of transport stakeholders. Improved service quality makes the bus transport system competitive. It encourages people to abandon private modes and rely on the public transport sector. It will lead Kerala to a better sustainable transport development path. The course of this study may guide transport operators on where there is room for improvement in service quality and how passenger satisfaction and bus ownership type can influence passenger behavioural intentions.

10.5 Implications of the Study

Some managerial implications arise from this study. This study suggests to the transport bus operators in Kerala that they must significantly improve the vital service quality dimensions like bus station ambience, complaint redressal systems, information quality and other dimensions. The multidimensional service quality explains passengers' post-service behaviour and behavioural intentions in public transport bus services. Public transport managers, policymakers, and other authorities should therefore be aware of the need to consider all these dimensions to improve service quality. This research finding may encourage service providers and transport managers to develop a deeper insight into the various dimensions of this construct to enhance their service to passengers. The study will be helpful for analysing service quality perceptions in the public transport sector as both a diagnostic and predictive tool. It enables them to quickly identify problematic factors by conducting similar scaled passenger surveys. The model proposed by the study can be applied other service industries too, like telecom, banking, insurance, tourism etc.

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CHAPTER 11

**RECOMMENDATIONS AND
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CHAPTER 11

RECOMMENDATIONS AND SCOPE FOR FURTHER STUDIES

11.1 Recommendations from the Study

Based on the critical findings from the study, relevant recommendations were made here to attract the attention of bus transport service operators, policymakers, and the Government. In this section, recommendations pertain to state-owned public bus transport services (KSRTC) operators, privately owned bus service operators and government and related authorities, who makes the Kerala's bus transport policy framework has been put forth separately.

11.1.1 Recommendations to the KSRTC

- 11.1.1.1 Network & time design should be improved by providing more scheduled operations, especially during peak hours (morning 8-10 am and evening 4-7 pm) and operating ordinary buses (buses stop at all local bus stops and pick up and drop short distance passengers).
- 11.1.1.2 Safety factors in the bus services should be improved by implementing a proper surveillance system, security staff in the bus stations, the clear exhibition of phone numbers of police, fire force, ambulance etc., in the stations and buses. Loose bus body parts, nails and fixtures should be checked and fixed regularly. This prevents all the bumps and scratches on passengers. Crews should be additionally trained in providing safe service and life-saving procedures in emergencies. Well-equipped and maintained first-aid boxes must be there in the bus.
- 11.1.1.3 As buses' cleanliness is relatively lower, proper measures should be taken while cleaning buses at depots. It should be done with the mind that uncleanness will alienate passengers.
- 11.1.1.4 Grievance redressal factor, which is only average, should be improved by

fixing complaint boxes in buses and bus stations. A toll-free number of redressal/appealing authorities should also be well-displayed on buses, stations, and depots.

- 11.1.1.5 Information quality dimension, also found to be average, should be improved expedited by initiating a mass message/alert system regarding bus timing, running status, cancellation etc. As far as possible, Wi-Fi, proper gadgets charging points with supporting facilities should be there in buses and stations. Next stop alert, time alert, and safety alert should be given to the board. Similarly, online ticketing and reservation system should be more user-friendly.
- 11.1.1.6 GPS-based bus tracking system for giving bus running status information should be available at every bus waiting point and in mobile apps. It facilitates passengers to utilise their time optimally.
- 11.1.1.7 Staff should be more empathetic towards concessional passengers. Today's students are tomorrow's loyal and regular passengers. So, to retain their continual intention and to motivate them to choose buses as their transport mode in their work-related and personal journeys in future, there should be a better transit experience now for them also.
- 11.1.1.8 Reliability dimension should be improved by giving immediate and equal transit arrangements in the cases of breakdown, puncture, personal incapacity of crews etc. Cancellation of routes and schedules should be communicated in advance.
- 11.1.1.9 As it is seen that the majority of passengers are considering bus travel from 5 to 50 km, operation of ordinary buses frequently on the same routes of Town-to- Town, limited stops, Fast Passenger services etc., will provide more travel options to the passengers and allow passengers to travel at their affordable fare.
- 11.1.1.10 As the ambience of bus stations is low-rated, it should be enhanced by providing well-maintained comfort stations, clock rooms, comfortable

sitting facilities, well-operating visual/entertainment media, good parking facilities for passengers' private vehicles, hygienic food, and beverages etc.

- 11.1.1.11 Special fare concessions and bonus transit facilities should be granted to regular and loyal commuters. Charging more fare during the seasons, festivals etc. may bring temporary benefits but negatively affect passengers' continuity and WOM intentions.
- 11.1.1.12 Daily, Weekly, and monthly e-traveller cards/passes (as in the case of Karnataka RTC) should be issued at a concessional rate. E-cards/passes may induce commuters to travel by bus regularly and enhance continual intention.
- 11.1.1.13 As far as possible cashless journey should be promoted. Digitisation of bus transport is the need of the hour. That would make public transport more premium among youth.
- 11.1.1.14 To maximise involvement and sense of continuity among passengers, whenever reference is made to KSRTC, use the word "Your KSRTC". For example, "Welcome to your KSRTC."
- 11.1.1.15 Among the service quality factors, 'Staff Behavior' was rated highest (mean score 3.47). Now there are educated and qualified crews in KSRTC. They should be treated fairly by providing timely salary, a good management approach and 'hygiene' working facilities. Create a sense that employees determine the fate of an organisation.
- 11.1.1.16 For the disabled, elderly and women, stopping the bus at the required places after 7 pm and before 6 am and allowing enough time for boarding and alighting will be very helpful in improving safety, comfort, and reliability factors of service quality. The same applies to private bus service too.

11.1.2 Recommendations to the private bus operators

- 11.1.2.1 As complaint handling (grievance redressal) in the private bus service sector is rated as average, necessary steps will be taken to improve the system. Fixation of easily noticeable complaint boxes in buses, private bus stations, and bus operators' associations or federations offices.
- 11.1.2.2 Ambiance of the bus station is yet to be improved by providing well-maintained comfort stations, passenger amenities, clock rooms, sitting facilities, well-maintained entertainment while waiting in the bus stand, minimum parking facilities for passengers' private vehicles, hygienic food, and beverages etc.
- 11.1.2.3 As comfort level is a relatively low rate, it can be improved by ensuring comfortable footrests, boot space, hand rest, and sitting and standing areas in the buses. Buses should be maintained as a jerk and smoke-free by proper upkeep.
- 11.1.2.4 Buses should consider operating hours that are convenient and accessible to mainly rural populations as the commuting options are relatively lower there.
- 11.1.2.5 To ensure safety and comfort for passengers, the bus crew should give reasonable waiting time for the entry and exit of passengers on the bus.
- 11.1.2.6 As bus transport services are means of livelihood for a lakh of employees directly and indirectly, the bus staff should treat the passengers fairly and empathetically to ensure their continual and WoM intentions.
- 11.1.2.7 Bus staff should always use standard and understandable language with passengers.
- 11.1.2.8 Bus staff should improve the approach towards students' commuters to ensure continual intention.
- 11.1.2.9 To improve the safety dimension of service quality, rash driving should be

avoided. CCTV cameras should be at every private bus stand, bus stop, and bus.

- 11.1.2.10 Bus fare e-payment platforms (Google Pay, Phone Pe, Paytm, QR scanning etc.) should be promoted in buses to solve fare and balance payment issues confronted by conductors and passengers. Daily/weekly/monthly Mobility/traveller e-cards should be issued to needed passengers.
- 11.1.2.11 To improve the safety dimension, indicators must be displayed when buses stop at stops/ other places, as the local buses must pick up passengers at their doorsteps to ensure convenience dimensions of service quality.
- 11.1.2.12 Buses should try to stop passengers by taking the left side as far as possible from the road and should not stop buses so that other vehicles cannot pass in front or behind.
- 11.1.2.13 Involvement of women in private bus services could be higher. So, steps should be taken to make private buses more women-friendly. Better behaviour of the staff, stopping of buses during late hours and when necessary, empathetic approach and comfortable travel facilities for women with babies, pregnant women and older people should be provided.
- 11.1.2.14 All bus entrances shall be provided with stanchions and ramps in a configuration that facilitates access to the buses by the physically challenged.

11.1.3 Recommendations to the Government Authorities and Policymakers.

- 11.1.3.1. To improve network and time design factors of bus service quality, authorities should encourage state-owned and private buses to run complementary services. A maximum number of passengers can be reached only if the bus services are run efficiently and coordinated. It

should be recognised that the immature competition to get passengers now only serves to alienate passengers. There should be proper Route Rationalisation policy and more efficient permit granting mechanism.

- 11.1.3.2. National Highways Authority / Public Works Departments should construct bus bays at least at stops wherever possible while constructing roads. Even in such a narrow area, at least tar should be done to add sides to the buses at the stops. It will enable buses to hold a safety dimension.
- 11.1.3.3. The Motor Vehicle Department should organise awareness classes for bus drivers and other large vehicle drivers at least twice a year in all regions in Kerala and ensure that drivers attend at least one class. All the essential signals should make the drivers the flag bearers of good driving culture.
- 11.1.3.4. Use of private vehicles should come with restrictions. Taxes should be increased for luxury vehicles and more than one vehicle of the same class at the same address/owner.
- 11.1.3.5. Govt officials, public sector employees etc., should be instructed to use public transport at least twice weekly. An excellent example is the "Bus Day" successfully implemented by the Government of Karnataka. Alternatively, a 'bus week' in a month can be encouraged. To implement this idea, improved service quality should be there.
- 11.1.3.6. Incentives should be given to those private employees who choose public bus transportation for travelling to ensure passenger involvement and continual intention.
- 11.1.3.7. In buses, digital cards and online payment should be encouraged to enhance information and digital dimensions of service quality instead of traditional paper tickets. Passengers who do not know how to use such systems should issue "public transport cards" that can be easily recharged and used anywhere. Such cards should be suitable for use on any bus in

Kerala. Passengers should read the QR and get the ticket by printing it or as a message. If the authority installs a type of scanner on both the doors of buses, all the problems will be solved.

- 11.1.3.8. Authorities like corporations, municipalities other local bodies should pay more attention to neatly and safely maintaining the bus stops and stations under their control.
- 11.1.3.9. To enhance the staff behaviour dimensions of service quality, adequate and timely salary, job security and a good working environment should be provided. Job satisfaction will improve the morale and behaviour of bus staff towards passengers.
- 11.1.3.10. Priority seats should have adequate provision for securing crutches, canes, walkers etc., to facilitate comfortable travel for disabled and elderly persons. Government should issue regulations to bus operators to adhere to this provision.
- 11.1.3.11. Apart from the Motor Vehicles Department (MVD), another special-purpose government agency should regulate and ensure that buses are of adequate quality.
- 11.1.3.12. As the Honourable Chief Minister of Tamilnadu, Sri Stalin, rightly pointed out, the government should recognise the fact that it is the responsibility of a welfare state to ensure better public transport for the people and not just look at the public transport system in terms of economic benefit.
- 11.1.3.13. In today's economic-social-environmental context in Kerala, the road transport system demands a highly competitive bus transport service. Therefore, the government should create a situation for state-owned buses and private buses to function smoothly and complement each other.
- 11.1.3.14. Government should take measures to convince people about the benefit of

using public transportation to them and the society.

11.1.3.15. Government should provide entrepreneurial support through single window clearances, subsidies and grants to the young entrepreneurs who coming into the private bus transport industry.

Even without public bus transport in Kerala, people have many ways to fulfil their transport needs. But more than generating income, providing better, safer, economical, and sustainable transport options to the people is a welfare state's primary responsibility and the bus operators' social responsibility. Therefore, preserving the public bus transport system by improving the service quality with a proper understanding of transit needs and expectations of the people is essential for a better nature and a better future for Kerala and the entire world.

11.2 Scope for Future Studies

Although this study provides many fruitful contributions and implications, there still needs to be addressed research gaps in the field related to public transport in Kerala. Some of the issues arose in the researcher's mind are mentioned here.

- A comparative study on service quality of state transport undertakings in Kerala and best-performing STUs of neighbouring states.
- A comparative analysis of SWIFT Bus services and KSRTC in Kerala.
- Passenger satisfaction and service quality in newly formed SWIFT bus services in Kerala.
- Moderating effect of government policy in the relationship between service quality and behavioural intention.
- A longitudinal study between service quality and passengers' posts service behaviour in Kerala.
- Service rating of new initiatives (BOND, budget tourism, circular city service

etc.) of Kerala's public bus transport sector.

Besides services and passenger behaviours, many other research opportunities exist in Kerala's public transport sector. Inventory Management efficiency, Asset and Resource Management, Employee satisfaction and Involvement, and Corporate Governance are some areas that can be studied regarding this sector.

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APPENDIX

QUESTIONNAIRE

Dear Respondents,

The prime motive behind this research endeavour is to study the quality of bus services in Kerala. The response rendered by you would be of immense value to derive the logical conclusion of this research work. I hereby declare that the information provided by you shall be kept completely confidential and shall be used only for the purpose of this study. Your identity and information will be kept confidential.

Sincerely,

Praveen M V,
Asst. Professor of Commerce
Govt. College Madappally.

Part A: General information

1. Name :
2. District :
3. Gender : Male
 Female
 others
4. Age : Below 20
 21 to 40
 41 to 60
 above 60
5. Region : Urban
 Semi-Urban
 Rural
6. Education : 10th and below
 Higher secondary/ITI
 Degree/Diploma
 Post Graduation & above
7. Occupation : Govt. Servant
 Pvt. Employee
 Farmer/Agricultural labour
 Business
 Labour /Coolie
 Homemaker
 students
 others (pls specify):-----

-
8. Monthly Income : below 25000
 25001-50000
 50001– 75000
 75001-100000
 above 100000
9. Mode of regular bus travel : Private bus
 KSRTC bus
10. Purpose of bus travel : work-related
 personal
 Education
11. Distance of bus travel : Up to 5km
 6 to 20 km
 21 to 50 km
 above 50 km
12. Type of bus for regular travel : Ordinary
 Limited stop
 Town to Town(TT)
 Fast Passenger/Super-fast
 Low floor Non-Ac
 Low floor AC
 Semi sleeper Non -AC/super deluxe
 Semi Sleeper AC
 Sleeper Non-AC
 Sleeper AC
13. Type of journey : within District
 Intra- state
 Interstate
14. Frequency of Journey : Daily
 Once a week
 Once every two weeks
 Monthly

Part B: Measurement of Bus Service Quality

15. To what extent do you agree/disagree with the following statements regarding services provided by the bus operators? ((Please tick)

Statements	Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Network and Time Design					
1. Adequate number of buses operate frequently on our route					
2. The bus stops are well connected to other modes of conveyance like railway, auto/taxi stand, metro etc.					
3. Bus services are available in rural/remote/hilly areas					
4. Bus routes and stoppage points are displayed on bus stands and on bus					
5. Buses are available within normal waiting times.					
Cleanliness					
1. Appearance of buses is visually appealing and clean					
2. The staff are well dressed and neatly attired					
3. Interior of buses are neat and clean without any bad smell and insects or bugs					
4. First aid boxes, reading light, AC, shutters, audio/videos and other materials are neat and well maintained					
5. Exterior of the bus is clean and dust free					
Journey Comfort					
1. I feel good seating Comfort in the bus (leg space and cushions, headrest, handle etc.)					
2. I feel good standing comfort in buses (space, stable handle etc.)					
3. I feel good entry and exit comfort (door space and comfortable doorsteps)					

Statements	Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4. Speed of the bus is comfortable					
5. Buses are jerk/smoke/ noise-free					
6. I can carry my luggage on the bus comfortably (proper luggage carrier available)					
Convenience					
1. Bus operating hours are convenient for all commuters					
2. Reservation/ticket counters are located at a convenient and accessible location					
3. I can book/reserve tickets without difficulty					
4. Information given by the staff is understandable					
5. I can easily locate bus parking points in the bus stand					
6. There are a wide variety of bus services (AC/Non-AC/Airbus/sleeper/Semi sleeper etc) to choose from according to our convenience.					
Safety					
1. I feel safe in the bus					
2. Drivers adhere to careful driving style and traffic rules					
3. Staff prevent the boarding of drunken, dirty, and socially dangerous passengers					
4. I feel my luggage and valuables are secure on the journey					
5. Bus equipped with first aid facility and proper surveillance system					
6. Emergency exists is well visible and easy to operate					
Staff Behaviour					
1. Staff are always willing to help passengers					
2. Staff are always polite					
3. Staff always uses standard language and good body language					

Statements	Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4. I feel good relationships and cooperation among bus staff					
5. I get the ticket and balance amount exactly and without delay					
Grievance Redressal System					
1. I know there is a grievance redressal system relating to bus service					
2. The grievance redressal system is approachable one					
3. Procedure of grievance redressal is simple and easy					
4. My complaint gets redressed quickly					
Economy					
1. I feel bus charges are relatively lower					
2. Reservation charges and Luggage charges are reasonable					
3. Ticket can be cancelled without heavy charge or loss					
4. Bus operators offer concessions to regular commuters/disabled/senior citizen					
5. No higher fare is charged during special occasions, festival season, late night etc.					
6. Bus gives concession to students					
Empathy					
1. The bus staff/operators give individual attention and care to elders, the disabled, women with babies etc.					
2. Bus operators always look after the best interest of commuters					
3. Bus Staff wait for the passenger to board the bus when the bus stops away from the bus waiting point.					
4. Bus operators try to give me a good experience					

Statements	Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5. Staff understand commuters' specific needs (request stop, emergency, natural calls)					
Information quality					
1. Time schedule and display board are clear and error-free					
2. Bus/Staff gives alert of 'next stop' during the journey					
3. Types of service such as "Limited stop", "Fast Passenger", "Super-Fast", "Town to Town" etc. are clearly visible on Bus					
4. Innovative facilities like Wi-Fi, GPS, mobile and laptop charging pots etc....available in the bus					
5. Efficient Online reservation and mobility e-card facilities are available					
6. There are fast and effective online information provisions relating to time schedule, PNR status etc..					
Ambiance of Bus Station					
1. Bus stations have adequate shelter and chairs					
2. Infrastructure and facilities in the bus stand are well maintained					
3. Bus stations-toilet and clock rooms are well maintained					
4. Bus stations have adequate safety and security measures (CCTV/Security persons)					
5. Bus stations have provisions for food and beverages and parking private vehicles					
Reliability					
1. The bus always arrives at the destination on time					
2. The staff show sincere interest in solving commuters' problems relating to bus travel					

Statements	Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3. Staff satisfy commuters' requests right the first time					
4. Bus operators provide timely and efficient service					
5. Bus operators provide alternative arrangements immediately in cases of repair or breakdown					
6. Provides Sufficient services at peak/ late night time					
7. Bus picking up and dropping passengers at exact stoppage points					

Passengers' Trust

Trust	SA	A	N	D	SD
1. I trust the bus charges are reasonable and affordable					
2. I trust bus services are available at any time I needed					
3. I trust bus services are accessible at any time I needed					
4. I trust the bus staff behave in the best interest of passengers					
5. I trust bus drivers can drive safely and comfortably					

Perceived Value

Value	SA	A	N	D	SD
1. I feel happy during the journey because of its worth					
2. I feel buses are equipped with modern and passenger-friendly facilities					
3. I feel bus fare is cheap compared to other modes of transportation					
4. I feel the bus provides adequate services for the amount they charged.					
5. I feel transit in this bus is relatively less risky					
6. Bus offer value-added services (extra services like refreshments, enjoyment etc.) matching with my expectation.					

Passenger satisfaction

Satisfaction	SA	A	N	D	SD
1. I am satisfied with the frequency of bus services					
2. I am satisfied with the comfort and convenience during the bus transit					
3. I am satisfied with the punctuality and regularity of bus services					
4. I am satisfied with the safety and security on board and the stations					
5. I am satisfied with the bus staff's behaviour					
6. I am satisfied with the cost (Fare) of travel					

Passenger complaint

Complaint	SA	A	N	D	SD
1. I have no complaint about the operating condition of the bus					
2. I have no complaint about the crew's behaviour (Driver/conductor/reservation staff)					
3. I have no complaint about the punctuality and regularity of the bus service					
4. I have no complaints about the driving style and safety of passengers.					
5. I have no complaint about not stopping the bus at the exact boarding point and for not waiting for passengers who running on the bus.					
6. I have no complaint that the information provided by the operator/staff is insufficient.					

Passenger involvement

Involvement	SA	A	N	D	SD
1. I will use this bus service even at a higher fare					
2. I am proud of using this bus services					
3. I consider myself to be a loyal passenger of this bus service					
4. I will do anything for the promotion of this bus services					
5. I felt quite knowledgeable about these services and their operators					
6. I strongly believe that this bus service is essential to me and the society					
7. I am giving required feedback on services to the operators for its improvement					

Continual intention

Continual intention	SA	A	N	D	SD
1. I intend to continue this bus service in future					
2. I will always try to use this bus service in my daily life					
3. I consider this bus service as a first choice for my transit needs					
4. I am planning to extend this bus service for my work-related journey also					
5. I am planning to extend this bus service for my private/personal journey also					
6. I will never move to other transportation modes					

WOM intention

WoM intention	SA	A	N	D	SD
1. I will tell positive my transit experience to my friends and relatives					
2. I will recommend this bus service to others					
3. I will propagate the benefit of this bus services to others					
4. I will convince and persuade others towards this bus services					

Thank you for your co-operation