2. INTRODUCTION TO TRANSPORTATION INDUSTRY

The objective of this chapter is to elaborate on the importance of Transportation in a developing country, growth of public Transportation in Karnataka, and growth and importance of BMTC in Bangalore. This chapter also reviews some literature available in the field of Quality Service Delivery in Transportation.

2.1 TRANSPORTATION AND ECONOMIC DEVELOPMENT

Transportation plays an important role in the development of a country and is an indicator of social and cultural life of its citizens. Status of people in a state with respect to Education, Employment and Health gets affected by prevailing transportation system. A futuristic, well designed, managed and executed transport system is vital to a country's development. There are three schools of thought about the role of transportation in economic development. First, there is a ‘Balance growth’ approach that maintains that all sectors of economy must grow in tandem otherwise, there will be bottlenecks curtailing progress. Second is the ‘Leading sector’ school of thought which says, transport capacity must be created in anticipation of demand as there is a long gestation period before one could reap the benefits of investments in the transportation sector. Third is the ‘Induced sector’ approach which argues that, there is always a mismatch between demand and supply of transportation requirements because of the dynamics of the growth process. But irrespective of the school of thought, transportation sector is looked at as one of the key sectors in economic development.

Irrespective of which of the above schools of thought is adopted for the development of transportation sector in any country, there are two things certain about the transportation sector; one, that for the economic development of a country one of the schools of thought
among the three mentioned above, needs to employed and two, all of the three schools of thought bring about economic development in a country. Among development economists there is that extent of consensual agreement about the importance of the transportation sector that they call the transportation sector the circulatory system of an economy. A schematic representation of the relation between transportation and economic development is provided below to explain the importance of transportation sector.

Fig. 2.1    Schematic representation of relation between Transportation and Economic development

![Schematic representation of relation between Transportation and Economic development](Fig.2.1)


The above schematic representation is a description of virtuous cycle of transportation sector leading to an increased economic development. As it is known that a virtuous cycle feeds on itself like the vicious cycle that also feeds on itself; the difference being that the virtuous
cycle feeds on itself for the positive outcome while the vicious cycle feeds on itself for a negative outcome.

In the schematic representation provided in the figure 2.1, the description from increased investment could be read as follows: Increased investment in transport leads to improved transport, which in turn leads to two sets of effects that culminate in to lower producer costs and higher producer prices. Lower producer costs accrue as improved transportation ensures more reliable supply of in-puts, better access to skilled labor and reduced in-put costs. Time lags in any production system leads to cost escalations as time over runs always chase the cost over runs; up to a given threshold point, time over runs chasing the cost overrun stays that way but beyond the threshold point, cost overruns as a consequence of transaction costs start chasing time overruns, as is the case with most of the public investments in most of the developing countries. If such cost escalations, no matter how they occur could be avoided as shown in the figure leads to reliable supply of in-puts and also reduced in-put costs.

Improved transportation of means to physical transportation of people leads to better access for labor and thus ensuring labor availability. Labor availability as in the case of all industrial development in the history over a period of time furthers skilled labor availability through forward and backward linkages. Thus, improved transportation leads to lower production costs.

Improved transportation also leads to lower marketing costs due to economies of scope. Economies of scope further leads to lower spoilage and higher delivery quality. Improved transportation also lends to implementation of effective supply chain management which in turn leads to reduced inventories. All of the three occurrences – lower marketing cost, reduced inventories and lower spoilage and high delivered quality culminate in productivity
enhancement; any enhancement in productivity would mean higher margins at the existing prices, which ultimately implies producers’ prices are higher. Both the higher producer prices and lower production costs most certainly lead to higher/improved profitability and thus increased output. At all higher outputs, initially, internal economies operate fuelling this cycle to expand further and at later stages initiate the external economies which further fuels this cycle. All of the above that is, lower producer costs, higher producer prices, increased productivity, increased profitability and expansion of output leads to greater demand for transport. Greater demand for transport would imply profitable transportation sector that invests in itself leading to further improved transport.

Transportation has its contribution to Gross Domestic Product (GDP). The contribution of transportation sector to GDP in India is tabulated in Table 2.1.

**Table 2.1 Share of different modes of transportation in GDP**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railways</td>
<td>5.8</td>
<td>6.0</td>
<td>5.9</td>
<td>6.2</td>
<td>6.3</td>
<td>6.6</td>
<td>6.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Road Transport</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Water Transport</td>
<td>3.8</td>
<td>3.9</td>
<td>3.8</td>
<td>4.1</td>
<td>4.3</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
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<tr>
<td>Air Transport</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Services *</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

* Services incidental to transport.

Source: Central Statistical Organisation

The share in GDP of Railways is exclusive of Financial Intermediation Services indirectly Measured (F.I.S.M.), for other modes it includes F.I.S.M.

Transportation industry provides employment to thousands of workers and along with allied industries contributes immensely to the development of a state. However, the factors affecting the development of a country play an important part in determining the way in which its transport system evolves. Therefore, ensuring that the transport system develops in the most desired and conducive way can have far reaching benefits to the overall development of the country, and failing to do so can have an adverse effect on development.

A good transportation system is required to make sure that, the products / goods and people reach their destination safely on time at an affordable cost. A study on transportation cost component for many agricultural commodities and low value-added manufactures indicated that, in developing countries, transport costs typically account for between 10% and 30% of final product price. According to S. L. Miller, “undoubtedly, transportation has provided impetus to large-scale production”. Adequate, reliable and economic transport is essential, although not in itself sufficient, for the social and economic development of rural areas in developing countries. Good quality transportation system is believed to attract investments.

In a report titled ‘Transport and Economic Performance: A Survey of Economic Performance’, Creightley indicates that, “for countries in the early phases of development, good quality infrastructure was preferable to tax incentives to attract foreign investments”. Further, the report says: “transport improves access to institutional credit, contributes in shifting the allocation of credit from nonproductive to productive activities, and leads to increased demands for credit”.

The United Nations - Economic and Social Commission for Asia and the Pacific (ESCAP) undertook a review of projects/ programs implemented in different parts of the world, based on the presumption that, the transport could be a central element in alleviating poverty and
improving the quality of life of people. The review also aimed to understand the Role of Transport Interventions in poverty alleviation.

The projects / programs considered for review were:

- the Rural Roads and Markets Improvement and Maintenance Project in Bangladesh
- the Least-developed Village Development Grant Scheme in Indonesia
- the Dhading Development Project and Gorkha Development Project in Nepal
- the Aga Khan Rural Support Program in Pakistan
- the Medium-term Development Plan in Philippines

The poverty alleviation is a complex process, therefore, success or failure cannot be attributed to one particular element within a program. However, transport interventions appeared to have played an important role in the process of alleviating poverty or in improving the standard of living of the communities targeted in the respective projects.

The transportation requirements of people vary considerably between different places, different industrial sectors and different social groups. There are situations during which people travel in large numbers at a given time, while in others few people travel at a given point of time. There are people who travel daily to and from their places of employment and some people travel occasionally. There are some people who can afford private vehicles and cars, and on the other hand there are people who can barely afford the most basic form of transport. In this context, Public Transportation systems assume importance in catering to varied needs of passenger traveling.
2.2 PUBLIC TRANSPORTATION AND ITS IMPORTANCE

Public transportation or Mass transit comprises all transport systems that transport members of general public at a set fare. It includes Airline, Railways and Roadways – Bus services, Taxi services etc. Public transport services are used all over the world, especially when people need to travel between states or cities and within the city. Public transport services, when used efficiently and effectively, can contribute significantly to the growth of the state, especially when the population density is increasing or high. In a developing country like India, for a basic requirement like transportation, people expect public transport system to provide safe and affordable transportation. However, there are problems associated with planning and management of transport systems both in developed and developing countries. While many of the characteristics of public transport are common throughout the world, there are others which are unique, or of greater significance, to developing countries. In addition, with a higher proportion of the population depending on public transport in developing countries, the problems tend to be much more critical. Road conditions can be difficult, with poor road surfaces on inter-city and rural routes, and severe traffic congestion in urban areas. Standards set and practiced for safety, comfort, punctuality, reliability and air and noise pollution, and users’ expectations, are often different than those in developed countries. These factors will add to the challenges faced by service providers.

With the rapid growth of urbanization in the recent decades, public transport services, particularly bus service in many cities, including Indian cities, lack their full potential, especially in urban areas, where the transport systems and infrastructure have often failed to keep pace with the rapid growth. In addition, there is chronic traffic congestion in many
cities which is attributable to private transport and often also to a scarcity of road space and proper town planning. In nearly every case, public transport is lacking in both capacity and quality. Due to inadequate and ineffective public transport services, there has been increase in the personalized mode of travel in most cities leading to increase in the congestion on roads, pollution level, level of discomfort, fuel consumption and reduced average speed of travel. Improved public transport services, particularly in urban areas, would disincentivise passengers to either upgrade to private transport. Another important reason for people to depend on personalized mode of travel, virtually in every case is, public transport services in developing countries are far from satisfactory. The root cause for this situation can be many – lack of fund allocation, other infrastructural development activities, lack of training for operating crew, a steady shift of population from the rural areas to the cities, resulting in rapid and often totally uncontrolled growth in urban areas, and many more.

A look at the Indian traffic situation reveals alarming statistics. There are about 48 modes of transport, with 40 per cent of commercial vehicles plying illegally. India has about 50 million two wheelers and the number is rising by the day. 2009-10 saw a new pinnacle in car sales with 1.95 million cars sold. The cost of the cheapest car in India is about 12 times the annual per capita income of an average citizen while in the US it is about one-third the per capita income. The country's five mega metros – Delhi, Mumbai, Kolkata, Chennai and Bangaluru have over 40 lakh cars out of a total vehicular population of 10 crore. 32 per cent of the country's vehicles move on urban roads. 41 per cent of roads are taken up for parking. On an average, most Indians drive 10 km daily and twenty five percent of them spend over 90 minutes for traveling.
A RITES 2008 study indicates that, in Delhi alone, about 20 per cent households own cars and 43.4 per cent own two-wheelers. In a new IBM 2010 Commuter Pain Survey, 59 per cent answered “YES” when asked ‘Has traffic been so bad in the last three years as to alter commute plans?’. 66 per cent dislike the stop-start mode of traffic, 53 per cent want better public transport, 48 per cent confess to bouts of rage and 45 per cent to rampant stress. A 2009 survey by the Center for Transforming India reveals that, on an average per day 1.6 liter of fuel go waste in traffic (2.5 litres for cars and 0.75 litres for two-wheelers) about 30 lakh liters of fuel is wasted. A typical commuter loses 90 minutes every day and in Delhi about Rs 10 crore worth of fuel. Congestion costs can be as high as Rs 3,000 to 4,000 crore per year in addition to the loss of man hours and productivity. In Mumbai, average traffic density is 747 motor vehicles per km with 6,500 cars during rush hour and a 5.75 per cent yearly increase in the number of new cars. Mumbai has more than two lakh autorickshaws, nine lakh odd passenger cars, nearly 55,000 taxis, more than 25,000 buses and more than three lakh commercial vehicles. In Kolkata, vehicles wait at signals for six-seven minutes during peak hours compared to the usual three minutes. About 400 new vehicles are added up every day with around eight lakh existing registered vehicles. Chennai registers 700 new vehicles daily. The total private vehicle population is up by 300 per cent in the last 15 years.

In Bangalore, most roads are at 300 per cent capacity during peak hours, the average speed in the central business area is between 17 and 20 km/h. Bangalore roads get about 600 new vehicles every day which has led to the galloping rate of two wheelers in the city. The number of two wheelers in the City in 1993 was just 5.2 lakh; now it is more than 23 lakh.
Personal vehicles may be less of a status symbol and more of a convenient mode of transport. But ironically this leads to more problems to public than solution to individuals.

**Fig. 2.2** Growth of vehicular population in Karnataka between 1990 and 2008

Source: http://rto.kar.nic.in

K.C. Sivaramakrishnan, a professor at the Centre for Policy Research, says, “Rolling out new roads is a flawed idea. The focus should be on promoting public transport” quoting the example of Shanghai, which has a limit on the number of vehicle registration numbers which are auctioned. The price of the bid is almost thrice the price of the car.

A good public transportation system is an answer / solution to the problems induced by growing vehicle population on urban roads. Good public transportation could be an answer to overcome traffic problems. “India’s answer lies in building more roads, encourage alternatives like walking, bicycles, make public transportation more attractive in terms of quality, time and cost” says Geetam Tiwari, an associate professor, Department of Civil Engineering and Transportation Research, IIT-Delhi. Improving commuter satisfaction with
public transport and thereby the ridership can reduce, if not solve, the urban traffic problems. Even in developed countries, public transport system is increasingly replacing personal transport owing to energy crisis, in the wake of petroleum crisis and also because of growing concern for environment protection. In many developing countries, including India, regional transit routes are operated by government agencies (Kalaga et.al., 2001). Metropolitan cities of developing countries are facing pressure on their transport system due to heavy immigration, increase in Industrial and Commercial activities (Srivatsava & Dhingra, 2001). A study by Srivatsava and Dhingra also revealed that limited capacity of roads, enormous increase in private and intermediate transport service and uncoordinated use of public transport service have resulted in commuters’ dissatisfaction.

In such situations, it is required to increase the efficiency of public transport services in order to satisfy the customers (Bhimaraya A Metri and Rambabu Kodali, 2004). Another reason why the public transport system in India has not been able to meet the customer expectation is the inadequate attention that the sector receives from policy planners (Pradeep Singh Khorola et.al., 2004). There are a number of factors, both internal and external, that are responsible for the present condition of the system. Any effort to improve the system would need to tackle these factors. Therefore it becomes important that, transport agencies measure and monitor the performance of the services they provide (Boile, 2001) in terms of safety, mobility, accessibility, financial effectiveness, service efficiency etc. The best way to cater to the needs of the transport agencies is to try Total Quality Management (TQM) approach (Bhimaraya A Metri and Rambabu Kodali, 2004).
2.3 HISTORY AND GROWTH OF PUBLIC ROAD TRANSPORTATION

2.3.1 History and Growth of Public Road Transportation In Karnataka

Karnataka State Road Transport Corporation (KSRTC) is one of the 64 State Transport Undertakings (STU) in the public sector besides private operators in India. These STUs have a total fleet of more than 1,15,000 buses providing reliable and affordable transportation across the country.

Introduction of Automobile during the colonial period contributed to the development of road transport. Increasing population and growing demand for transportation prompted the rulers (governments in the post-independence period) to introduce public transport systems.

The princely state of Mysore was an important segment of fragmented Karnataka before 1956. Mysore Government Road Transport Department (MGRTD) established in 1948 was providing the road transportation services to public till 1961. On 1st August 1961, the State Transport, which was being administered as a Department of the Government of Mysore, was converted into a Corporation under Sec. 3 of the Road Transport Corporations Act 1950. The assets and liabilities of the Mysore Government Road Transport Department, except those of Bangalore Transport Service (BTS) unit (as on 1st August 1961) were passed on to the new Corporation, which was named as Mysore State Road Transport Corporation (MSRTC) till 1972. The assets and liabilities of the residual Mysore Government Road Transport Department (i.e. Bangalore Transport Services - BTS unit) was passed to the Corporation in October 1961. Thus, the Corporation was established for the entire Mysore State. Consequent on changing the name of the State to Karnataka, the Corporation got its present name Karnataka State Road Transport Corporation (KSRTC). Thus the ‘Karnataka State Road Transport Corporation’ (KSRTC) was set up in the year
1961 with 1792 buses. Later during the emergency period 1975-77, its fleet was also augmented with 800 buses nationalized from private contract carriage operators.

KSRTC was holding a fleet of 10,400 buses, operating about 9,500 schedules till its division in August 1997. In August 1997, KSRTC was divided and Bangalore Metropolitan Transport Corporation (BMTC) was instituted as a separate entity having been bifurcated from its parent body KSRTC. Three corporations viz. BMTC, Bangalore from 15-08-1997, North Western Karnataka Road Transport Corporation (NWKRTC), Hubli from 01-11-1997, and North-Eastern Karnataka Road Transport Corporation (NEKRTC), Gulburga from 01-10-2000 were carved out, on a regional basis, with KSRTC doing interstate operations and covering Southern Karnataka.

Fig. 2.3 Restructured STU Operations

KSRTC services almost all villages in Karnataka. At present, 92% Villages have KSRTC service (6,743 out of 7298 Villages). KSRTC operates about 6000 daily schedules which covers 7100 Buses (Including 164 hired private vehicles), Supported by 25,000 employees. KSRTC is the first State Transport Undertaking to introduce computerized passenger seat reservation system in India.

2.3.2 History and Growth of Public Road Transportation in Bangalore

BMTC has its origin in a joint stock company called Bangalore Transport Company Limited (BTC) founded on 31st January 1940 by a notification issued by the government of Mysore, catering to the entire city and cantonment areas of Bangalore with just 98 buses. The then Government of Mysore nationalized the city’s transport services under the name of Bangalore Transport Services (BTS) with the enactment of Bangalore Road Transport Services Act on 01-10-1956 by acquiring 131 buses and paying a compensation of Rs.15.5 lakh to BTC. It ran buses up to 10 mile radius in the city. In 1961, Mysore State Road Transport Corporation- MSRTC - (‘Mysore’ was replaced by ‘Karnataka’ later because of the renaming of the State, and MSRTC became KSRTC) was formed under Sec. 3 of the Road Transport Corporations Act 1950, with BTS as one of its divisions.

In 1993, Bangalore Transport Services got recognition as a Unit with a Director. It functions as two divisions, North and South. On 15th August 1997 Bangalore Metropolitan Transport Corporation (BMTC) was incorporated as a separate entity having been bifurcated from its parent body KSRTC.

Bifurcation of BMTC from KSRTC

During 1981, the Government of Karnataka had started thinking on the lines of bifurcating KSRTC to ensure better management and operations to improve the quality of service. On bifurcation, each corporation would be equipped with powers to function as an independent entity making its own decisions according to its specific needs.
Some of the important events in this direction between 1980 and 1997 are:

1981: The Government constituted a study group with Mr. J.C. Lynn as its Chairman.

1988: An Expert Committee was formed under the leadership of the then Transport Secretary Mr. S. Dorai Raju.

1988-89: Cabinet Subcommittee was set up.

1992: An expert Technical Committee was formed with Mr. P. Kodandaramaiah, IPS, as the Chairman.

1994: A Legislature Committee was formed with Mr. P.G.R. Sindhia (the then deputy leader of opposition) as the Chairman.

Bifurcation of BTS from KSRTC was given a serious thought as the city was extending its boundaries rapidly with new residential localities. The population of the City was increasing rapidly due to increasing employment opportunities as the IT & ITES sector was booming. Consumer awareness was fast maturing, with more expectations on convenient, safe, affordable and comfortable transport. But both S. Dorairaju committee and P.G.R. Sindhia committee had suggested that, the subsidiary corporation under RTC Act, in place of BTS, can be considered as an independent unit only when it is commercially viable. P.G.R. Sindhia committee had also said that the service conditions of the subsidiary corporation should be the same as in KSRTC with regard to their emoluments, seniority, transfer etc., and all the benefits under the industrial settlement should be applicable to the employees of the subsidiary corporation. Eventually on 15th August, 1997 BMTC came into existence as independent corporate body under the RTC Act.
2.3.3 Importance of BMTC in Bangalore

Bangalore was nicknamed the ‘Garden City’ and ‘Silicon valley of India’ and was once called a pensioner’s paradise. Located on the Deccan Plateau in the south-eastern part of Karnataka, Bangalore is the 3rd most populous city in India and the fifth most populous urban agglomeration. The city is one of the fastest growing cities in the world.

Table 2.2 Population of top three cities in India

<table>
<thead>
<tr>
<th>Sl no.</th>
<th>Name of the City</th>
<th>Census 1991</th>
<th>Census 2001</th>
<th>Calculation 2010</th>
<th>Parent Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bombay</td>
<td>99,25,891</td>
<td>1,19,78,450</td>
<td>1,38,30,884</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>2</td>
<td>Delhi</td>
<td>72,06,704</td>
<td>98,79,172</td>
<td>1,25,65,901</td>
<td>Delhi</td>
</tr>
<tr>
<td>3</td>
<td>Bangalore</td>
<td>29,08,018</td>
<td>43,01,326</td>
<td>54,38,065</td>
<td>Karnataka</td>
</tr>
</tbody>
</table>


The city covers about 531 sq. km and is expected to touch 800 sq. km area under Greater Bangalore Project. As of 2009, Bangalore was inducted in the list of Global cities and ranked as a “Beta World City” alongside Geneva, Copenhagen, Boston, Cairo, Riyadh, and Berlin to name a few, in the studies performed by the Globalization and World Cities Study Group and Network in 2008. A demographically diverse city, Bangalore is a major economic and cultural hub and the fastest growing major metropolis in India. With this growth Bangalore also faces challenges in terms of infrastructural and transportation requirements. The vehicular population is increasing almost exponentially exerting tremendous pressure on roads and environment. The number of registered vehicles is about 32 lakh of which 88% are personal vehicles and 72% of the total vehicles are two wheelers.
Table 2.3 Vehicle Strength and Growth in Bangalore (Year-Wise)
(Figures in Lakh as at the end of March each year)

<table>
<thead>
<tr>
<th>Year</th>
<th>2-Wheelers</th>
<th>M/Cars</th>
<th>A/R. Cabs</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>0.97</td>
<td>0.30</td>
<td>0.10</td>
<td>0.31</td>
<td>1.68</td>
</tr>
<tr>
<td>1985</td>
<td>1.89</td>
<td>0.47</td>
<td>0.11</td>
<td>0.30</td>
<td>2.77</td>
</tr>
<tr>
<td>1990</td>
<td>4.01</td>
<td>0.71</td>
<td>0.15</td>
<td>1.41</td>
<td>6.28</td>
</tr>
<tr>
<td>1995</td>
<td>5.94</td>
<td>1.07</td>
<td>0.34</td>
<td>0.62</td>
<td>7.97</td>
</tr>
<tr>
<td>1996</td>
<td>6.69</td>
<td>1.21</td>
<td>0.39</td>
<td>0.71</td>
<td>9.00</td>
</tr>
<tr>
<td>1997</td>
<td>7.58</td>
<td>1.38</td>
<td>0.47</td>
<td>0.80</td>
<td>10.23</td>
</tr>
<tr>
<td>1998</td>
<td>8.39</td>
<td>1.52</td>
<td>0.54</td>
<td>0.84</td>
<td>11.29</td>
</tr>
<tr>
<td>1999</td>
<td>9.10</td>
<td>1.64</td>
<td>0.55</td>
<td>0.94</td>
<td>12.23</td>
</tr>
<tr>
<td>2000</td>
<td>9.94</td>
<td>1.84</td>
<td>0.58</td>
<td>1.01</td>
<td>13.37</td>
</tr>
<tr>
<td>2001</td>
<td>10.92</td>
<td>2.07</td>
<td>0.62</td>
<td>1.12</td>
<td>14.73</td>
</tr>
<tr>
<td>2002</td>
<td>11.83</td>
<td>2.26</td>
<td>0.64</td>
<td>1.23</td>
<td>15.96</td>
</tr>
<tr>
<td>2003</td>
<td>13.23</td>
<td>2.53</td>
<td>0.69</td>
<td>1.37</td>
<td>17.83</td>
</tr>
<tr>
<td>2004</td>
<td>14.44</td>
<td>2.77</td>
<td>0.76</td>
<td>1.53</td>
<td>19.50</td>
</tr>
<tr>
<td>2005</td>
<td>15.70</td>
<td>3.18</td>
<td>0.75</td>
<td>1.67</td>
<td>21.30</td>
</tr>
<tr>
<td>2006</td>
<td>18.97</td>
<td>4.00</td>
<td>0.86</td>
<td>2.38</td>
<td>26.17</td>
</tr>
<tr>
<td>2007</td>
<td>21.11</td>
<td>4.69</td>
<td>0.94</td>
<td>2.86</td>
<td>29.55</td>
</tr>
<tr>
<td>2008</td>
<td>22.38</td>
<td>5.05</td>
<td>0.92</td>
<td>2.91</td>
<td>31.29</td>
</tr>
</tbody>
</table>

Source: http://rto.kar.nic.in

This has resulted in congestion on roads, increased travelling time, pollution level and other related problems on Bangalore roads. Increasing fuel prices is expected to add to the agony of Bangaloreans. Good public transport system can improve the conditions and can contribute to the growth of the city.

2.3.4 Profile of BMTC (Bangalore Metropolitan Transport Corporation)

BMTC came into existence as a consequence of bifurcation of Karnataka State Road Transport Corporation - KSRTC in August 1997.
BMTC at a Glance as on 24-01-2012

Logo

Slogan Moving you most economically/Bringing Bangalore to your doorstep

Operator Government of Karnataka

Every Day Traffic Revenue Rs. 3.62 Crores

No of Schedules 5899

No of Vehicles 6124

Daily Service kms 12.98 Lakhs

No of trips 78795

No of buses under PPP 17

Depots 37

Bus stations 48

Staff Employed 32771

Daily Passengers Carried Around 4.5 million

Bus Staff Ratio 5.3

The objectives of the Organization are:

- To provide Efficient, Affordable, Safe, Reliable and Punctual Transportation services to the travelling public of Bangalore city

- The principles of operational Efficiency and Technical excellence guide every aspect our work
To achieve these objectives and to cater to a variety of commuters from different strata of society, BMTC runs a wide range of buses.

**Fig 2.4 Different services by BMTC**

Annexure 1 provides details on different types of services provided by BMTC.

Some highlights on types of services available are - Vayu Vajra Volvo buses to airport operating from 12 routes and free Wi-Fi access is provided to the commuters in these buses.\(^{15}\) Atal Sarige service provides low-cost connectivity for the economically backward sections of the society, from suburban areas to the nearest major bus station.\(^{16, 17}\) Marcopolo AC buses from Tata - Marcopolo collaboration introduced under the JnNURM scheme. *Isuzu AC* bus running between BTM layout and BIAL on a trial basis as substitute for Volvo. BMTC has also introduced Mercedes Benz buses on a trial basis.\(^{18}\)

Annexure 2 provides Physical performance of BMTC at a glance.

BMTC has a well-designed organization structure to ensure better management. Annexure 3 provides Organization Structure of BMTC – Central office.
Annexure 4 provides Organization structure of BMTC – Depot office.
Annexure 5 provides the Financial performance.

**Bus Terminals**

BMTC has Six major bus stations in Bangalore. Apart from these, it also has about 27 minor terminus. It has 37 depots spread all over Bangalore (Depot 1 closed for Shantinagar bus stand construction; 2 others also closed because of Traffic and Transit Management Centre - TTMC construction) out of which 34 are operational. BMTC aims to build 6 more depots on the city outskirts. Operates more than 4,850 buses in 5,810 schedules covering 12.53 lakh service kilometers carrying about 47 lakh passengers per day. As an organization which is realizing a good profit, it has given employment to more than 35,000 people.

BMTC has plans to construct 45 Traffic & Transit Management Centers (TTMCs) as a part of development of urban infrastructure stated in the Comprehensive Traffic & Transportation Plan (CTTP) for Bangalore and vision plan under Jawaharlal Nehru Urban Renewal Mission JnNURM. These TTMCs are conceived as transport infrastructure for the urban renewal project aimed at providing one stop travel to commuters. The TTMCs comprise of state of art the Bus terminal, maintenance facilities, Public amenities, Park and Ride facility and providing inter modal connectivity. In turn, they also directly impact traffic congestion and address environment concerns in the long run. As innovative projects in transportation sector 10 Traffic & Transit Management Centers (TTMCs) projects have been approved by Government of India under JnNURM at Jayanagar, Vijayanagar, Banashankari, Koramangala, Shantinagar, White Field (ITPL), Kengeri, Yeshwanthpur, Domlur & Banneraghatta at an outlay of Rs. 440 crores. These works, entrusted on a contract basis, are
at various stages of construction. JnNURM projects have equity of 35% Government of India, and 15% Government of Karnataka and balance is borne by BMTC.

**Bus Fares**

Fares of BMTC are considered to be the highest in the country in the starting stages. However they are not very costly in the later stages. They range from Rs 4/- a km in the first stages to Rs 1/- per km as the distance increases.

The highlight of the BMTC is the daily pass provided at Rs 40/- per day (Rs 35/- for those having BMTC identity cards). It can be used for travel in any bus except the air-conditioned ones. It is valid up to midnight of the day of purchase and available with all conductors. AC Bus pass is available for Rs 85/- per day.

On producing ID cards (voter's card, driving license, etc), BMTC provides concession of 25% in fares to senior citizens in all types of buses. This came into effect on 1 September 2008. Children below the age of 12 are given 50% concession.

BMTC offers Monthly passes at concessional rates.

Details about monthly passes is provided in the annexure 7.

**Achievements**

Bangalore Metropolitan Transport Corporation (BMTC) is enjoying the distinction of best performing mass transport system in India. It also has received laurels and appreciations from the Central and State governments, International societies and other agencies for its effective operations covering a large area within and outside the metropolitan city limits. BMTC had bagged the safety awards more than 4 times in a row. This is the testimony for its concern towards society to ensure safety for passengers as well as other road users. It is a fact and a
feather to the cap of BMTC that as BMTC figures after Bangkok transport service, as one of the very few profit making road transport undertakings in the international scenario.

Some of the important achievements of BMTC include

- BMTC was the first in the country to introduce intra-city Volvo buses. In the initial years, they were well received only on the routes connecting IT sector but are now patronized on all routes in the city.
- It has the record for making profits consistently for years and is one of the few public sector transport undertakings in Asia to make profits.
- It has the youngest fleet of buses in the country due to which the KMPL is also higher compared to other undertakings.
- BMTC is one of the few transport undertakings to introduce pneumatic doors in India even in its fleet of ordinary buses to provide safety for passengers. Currently, buses in Chennai and Hyderabad also have adopted this system.
- Operates the longest city bus route in India: Route No. 600 (circular bus route) which starts from Banashankari and covers 117 km round trip to reach Banashankari.

Initiatives – operations focused

- Devising ways for making operational profit in city transport operations, 2004–08
- Demand for funding infrastructure and rolling stock under JnNURM and sanction of 500 crores under JnNURM, to BMTC, 2006–08
**Initiatives – commuter focused**

- Introduction of daily and weekly passes (rainbow passes), 2004–05
- Introduction of on-line GPS for buses in Bangalore city, 2004–08
- Traffic and Transit Management Centers (TTMC)
- Home Connect Scheme
- Introduction Vajra and Vayu Vajra Services, Minibuses, Suvarna buses, Bangalore Rounds, and Parishar Vahini
- Bus day was introduced on 4th February, 2010. It is monthly event calling all the citizens of Bangalore to use public transport. The idea behind Bus Day is to observe the changes which can be brought in the city in an attempt to respect Environment, Traffic Situation, and Health of individuals Perception. The Bangalore Metropolitan Transport Corporation (BMTC) campaigned for this day-long event with support from the traffic police, Information Technology companies and their employees, and members of Praja.in (a web portal for civic activism)\(^{19}\). Since then, the 4th of every month is observed as a “Bus Day”\(^{20}\).

**Initiatives – employee focused**

- 3-lakh life insurance for each employee on death in harness, 2006
- Cash prize and Gold medal for children of employees for outstanding academic performance, 1999
- Education loan, Advance for fee payment and Scholarship to all deserving children of employees, 2005
- Financial assistance for officers and employees for higher studies, 2006
- Financial assistance in the form of advance salary or payment directly made to hospitals in case of medical emergencies, 2001
- Memorandum Of Understanding with 28 major hospitals in the city to help employee in need of medical attention, 2005
- Medical centers at major bus terminals and depots, 2005
- De addiction centers - to help employees become free from alcohol addiction, 1998
- Voluntary retirement and Provident fund, 2004
- Increase in the ex-gratia amount in case of death of an in service employee, 2005
- Accident group insurance for which the premium is paid by the organisation, 2002
- Advance pay for the marriage of employees and their children, 2004
- Housing facility for employees, 2004
- Payment of financial assistance through ESI to bank accounts
- Women cell and employee grievance cell
- Various annual training programs which include
  - Induction programs for newly recruited drivers and driver – cum – conductors
  - Drivers instruction and refreshment training program at Namkal
  - Safety and KMPL training for drivers
  - Induction and Track training for apprentice
  - Straight drive – Quality enhancement program at Infosys
  - Personality development workshop for officers
  - Various workshops on Meditation and Health related topics
In spite of all the efforts from the organization, news channels and paper reports regularly indicate that BMTC buses are blamed by public for inefficiency and for involving in fatal or serious accidents. Reports also indicate public fury whenever such incidents occur. The factors which might influence Drivers involved in accidents are: i. Qualification ii. Selection procedure iii. Service conditions iv. Incentives v. Discipline vi. Stress / fatigue.

Sometimes though the BMTC drivers are not at fault, they are held responsible and cases are registered against them. Most often benefit of doubt is given to the other users of road or the drivers of the lightweight opponent vehicle, even if both are held responsible for the accident.

**The practices adopted by BMTC to prevent accidents**

1. **Driver Selection:**
   - To apply for the drivers job, the minimum qualification is SSLC Pass
   - Applicants should hold a valid Heavy Private Vehicle License
   - Applicants must possess physical attributes like minimum of 160cm of height, 50 kg in weight.

2. **Selection through driving test**

   Driving test is conducted at FOUR levels. Figure 2.5 shows Computerized monitoring system to generate result of the test. This is an attempt by the organisation to eliminate human factor in the selection process.

   Each of the Green dots in the figure 2.5 indicates light sensitive poles on the test drive tracks. The driving skills are tested based on the number of poles the driver retains on the track after
completing the drive. A candidate who does not meet the minimum requirement in the first test is not considered for the next test and is rejected.

Selected candidates are given compulsory one month training under the supervision of senior drivers. Training is provided to every driver in a scientifically designed training centre near Magadi, Bangalore.

**Fig 2.5 Computerized Driving Test Monitoring System**

- Driving in the path with shape ‘S’
- Forward & Reverse driving in the path with shape ‘Eight’
- Reverse Driving in the Bus Bay path
- Driving in the Up Hill path
3. **Additional Training and Development programs**

- Classroom training by senior drivers, instructors, RTO, BMTC and Police officers.

- Practical Training on Vehicles


- Practical training is imparted at Depot Level by the driver trainers for safe and good driving

- Corporate level refresher training course is conducted for safe and good driving

- The selected drivers are also subjected for three days need based refresher course at Drivers Training Institute of M/s. Ashok Leyland’s at Namakal, with maximum batch size of 80 drivers per week.

- A lecture from Art of Living on stress Management is made compulsory for every batch. (120 drivers per week)

- All the drivers involved in fatal accidents during the year 2007 were subjected for a week’s Sudharshan Kriya yoga of Art of Living Institute

- Drivers identified as Alcohol addicts are invariably sent for De-addiction Treatment

- All the drivers above the age of 45 years are subjected for Master Health Checkup once in a year
• Memorandum of Agreement is signed with 35 leading private Hospitals of Bangalore, so that the BMTC employees can avail in-patient treatment on credit basis.

4. Incentives for safe driving
   • Silver Medal award for drivers with three years of accident-free service
   • Chief Minister’s Gold Medal for five years of accident-free service

5. Safety measures on Vehicle
   * Ergonomically designed seat for Driver.
   * Good ventilation while Driving
   * Wide windscreen glasses and side mirrors
   * Sensor panels in Vajra (Volvo) services.
   * Fitting of Pneumatic doors for automatic closing.
   * Adoption of power steering.
   * Regulation of speed through FIP.
   * Display of Slogans and sign boards in the Vehicles.
   * Installation of Emergency exit in all Vehicles.
   * Introduction of SARATHY patrolling Vehicles to - Regulate the Transportation and Attending to accidents.
Awards for BMTC

BMTC has been the winner of the Transport Minister’s Trophy for Lowest Accident Rates successively for 5 years for 2000-01, 2001-02, 2002-03, 2003-04 and 2004-05. BMTC has been winning many awards in recognition of its Customer Service and ability to adopt technology to meet new challenges. BMTC has been also winning trophies and awards instituted to recognize performance of public transport service provider almost every year at national level.

Future Plans

Installation of Simulators to train the drivers in order to

• Improve the driving skill as the driver is exposed to possible accident scenario
• Form statistical database for evaluation and grading of driving without any human intervention
• Improve the response time of the driver, i.e., threat recognition
• Improve fuel economy through better driving coordination skills

The other plans include working towards reducing the involvement in accidents and introducing many more commuter friendly measures.
2.4 REVIEW OF LITERATURE

In any service industry measuring service quality is difficult but critical to the survival of the organisation. The same difficulty applies to Transportation sector also.

How to measure service quality? Zeithaml, Parasuraman, and Berry tried to answer this question as early as 1983. Their research showed that service quality can be defined as the extent of discrepancy between customers' expectations or desires of service and their perceptions of the service they actually receive. Parasuraman et al. (Parasuraman, Berry, & Zeithaml, 1991; Parasuraman, Zeithaml, & Berry, 1985, 1988) developed a service quality measure, called SERVQUAL, which states that the customer’s assessment of overall service quality is determined by the degree and direction of the gap between their expectations and perceptions of actual performance levels. They also identified five essentials for service quality: tangibles, reliability, responsiveness, assurance, and empathy. They proposed that perceived service quality could be estimated by calculating the difference between expectations and perceptions of actual service performance. This instrument was designed to be applicable across a broad spectrum of services. It was further refined, and consequently the reliability and validity were further improved, through a later reassessment study by the same authors (Parasuraman et al., 1991).

The development of relatively universal measures of service quality, perhaps the most pertinent conceptualization has come from research in the service marketing field. In particular, studies by Sasser, Olsen, and Wyckoff (Gronroos, 1987) and Parasuraman, Zeithaml and Berry (1991, 1988, 1985) support the notion that service quality, as perceived by consumers, stems from a comparison of their expectations of the service they will receive.
with their perceptions of the actual performance of firms providing the service. In this way, the higher the perceptions are than expectations, the higher is the level of perceived quality; the lower the perceptions are than expectations, the lower is the level of perceived service quality (Parasuraman et al., 1988).

According to the Perceived Quality Model introduced by Gronroos (1982), the quality of a service as perceived by the customers is the result of a comparison between the expectations of the customers and their real-life experiences. If the experiences exceed the expectations, the perceived quality is positive, and vice versa. This confirmation/disconfirmation concept has been the foundation for most of the model building within the service quality field during the 1980s and 1990s. Particularly, the well known Gap Analysis and SERVQUAL models by Parasuraman et al. (1994, 1993, 1991, 1988, 1985) are used to measure the gap between customer perception and satisfaction. According to Zeithaml and Bitner (1996), the concept of satisfaction is influenced by five variables viz. 1) service quality 2) product quality 3) price 4) situation and 5) personality.

Parasuraman et. al. (1985) identified five “gaps” or discrepancies in their conceptual model of service quality and they referred to these gaps simply as Gaps 1 through 5.

According to their model, Gap 5 is the discrepancy between the customer's expectations and perceptions and reflects the customer’s overall service quality assessment. Gap 1 is the difference between what customers expect and what management perceives as customers expect.
Gap 2 is the discrepancy between managers’ perceptions of customers’ expectations and the actual specifications they establish for service delivery.

Gap 3 is the service-performance gap, that is, the difference between service specifications and the actual service delivery.

Finally, Gap 4 is the discrepancy between what an organization promises about a service, as communicated in their slogans, advertising or public relations, and what it actually delivers.

Gaps 1 through 4 occur in the process of designing and providing a service and contribute to, or cause, Gap 5. Milakovich (1995) suggests that the magnitude of Gap 5 equals the sum of the first four.

The Gap Analysis and the SERVQUAL Survey have been suggested as the “most useful techniques to analyse the differences between expectations and perceptions” (Milakovich 1995) and “for obtaining a wider understanding of quality in the service process” (Edvardsson and Gustavsson 1991).

Central to the perceived quality approach is the concept of a “Service Encounter”- “a period of time during which the customer interacts directly with the service system and its employees” (Chase and Bowen, 1991). ‘Service Encounter’ is a primary distinction between the production of goods and the production of a service. Such encounters are the primary source of information for the customer to use in evaluating service quality.

Usage of SERVQUAL Applications

- SERVQUAL is widely used within service industries to understand the perceptions of target customers regarding their service needs. And to provide a measurement of the service quality of the organization.
SERVQUAL may also be applied internally to understand employees’ perceptions of service quality, with the objective of achieving service improvement.

A study by Bhagyalakshmi Venkatesh and Rajendra Nargundkar (2006) on “Service Quality Perceptions of Domestic Airline Consumers in India: An Empirical Study” indicates that the SERVQUAL scale has been criticized for its validity and reliability. The same study indicates that Buttle (1996) pointed out that including all 44 items (22 items of service expectations and a duplicate of 22 items of service performance) in one study often makes the survey task too difficult for respondents. Cronin and Taylor (1992, 1994) have empirically proved that the measures of service performance or SERVPERF, is more effective than SERVQUAL, which includes expectations as well as performance. Cunningham and Young (2004) used SERVPERF in measuring the airline service quality. Their literature review suggests that initial publications on airline service quality appeared in 1988 (Gourdin, 1988) but Fick & Ritchie and Gourdin & Kloppenborg were the first to apply the service quality gap model to the airline industry in 1991.

Another article ‘Methodological Triangulation in Measuring Public Transportation Service Quality’ by Lawrence Cunningham, Clifford Young and Moonkyu Lee, (2000) indicates that SERVQUAL has several limitations (Asubonteng, McCleary, and Swan 1996; Buttle 1996). First, SERVQUAL measures are essentially generic rather than industry-specific. The five dimensions and twenty-two items cannot cover all the industry-specific service areas. Second, SERVQUAL measures focus on the quality of the service process, neglecting that of the ‘service outcome’. Third, the measures do not include service costs, which are one of the most important determinants of service value. Finally, the SERVQUAL model is built upon
an assumption of multi-attribute evaluations. Thus, it does not capture categorical product or service judgements made on the basis of product cues or service incidents (Fiske and Pavelchak, 1986; Sujan, 1985).

An article titled ‘Behavioral intentions of public transit passengers –The roles of service quality, perceived value, satisfaction and involvement’ also indicates that the five dimensions of SERVQUAL and 22 associated items have been challenged as being inappropriate for some service businesses (Cronin and Taylor, 1992). In practice, appropriate modifications are thus generally needed in order to reflect the specific characteristics of the service context being studied. The article indicates that, Hu and Jen (2006) proposed a scale of bus service quality with 20 items under four dimensions – interactions with passengers, tangible service equipment, convenience of service, and operating management support – and undertook a survey of bus services in Taipei, Taiwan. Interaction with passengers refers to the respect and care passengers feel when interacting with service providers, and how they respond to passengers’ problems. Tangible service equipment relates to the level of comfort of the facilities and equipment operated by the service providers. Convenience of service concerns accessibility, the information provided, and the convenience of the service network. Finally, operating management support pertains to elements such as bus schedules, service periods, and the number of staff (Hu and Jen, 2006).

Joewono and Kubota (2007) measured the service quality of Indonesian paratransit systems using nine factors with 54 attributes. The nine factors studied were – availability, accessibility, reliability, information, customer service, comfort, safety, fare, and environmental impact. They explored user-perceived service quality and overall satisfaction
with the paratransit service in order to make forecasts with regard to competition from motor vehicles in Bandung, Indonesia. The results showed that service quality has positive effects on both overall satisfaction and customer loyalty, and overall satisfaction has a positive impact on customer loyalty. In their study on measuring the service quality of Greek public transit systems, Tyrinopoulos and Antonious (2008) used a total of 23 attributes classified into four categories, including general characteristics of the public transport system, terminals & stops, vehicles, and transport points, based on the Handbook for Measuring Customer Satisfaction and Service Quality (Transportation Research Board, 1999). ‘Consumer’s overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given’ is referred to as Perceived value (Zeithaml, 1988). Perceived value comes from a trade-off between perceived benefits and perceived costs (Lovelock, 2000). Perceived value has been identified as an antecedent to satisfaction (Chen, 2008; Cronin et al., 2000; Petrick, 2004; Petrick and Backman, 2002). In addition, many studies have concluded that service quality positively affects perceived value (Cronin et al., 2000; Zeithaml, 1988).

Fick and Ritchie (1991) used the SERVQUAL scale to measure perceived service quality within several service industries including the airline industry. They found the mean scores of consumer expectation and perception of service performance measures and failed to determine the relative impact of various SERVQUAL items on overall service quality and satisfaction (c.f. Cunningham et al., 2004).

A large body of transportation quality research addressed the measurement or determination of customer service quality elements. Many of these researches used survey or case study
data as the basis for their findings. Chow and Poist\textsuperscript{23} surveyed shippers to determine the transportation service quality factors. The factors most often cited related to rates, claims, transit time, equipment, and operations. Hopkins et al.\textsuperscript{24} surveyed both shippers and carriers to determine service quality gaps between the two groups. Using nineteen service quality items taken from SERVQUAL,\textsuperscript{25} the authors found that carriers generally knew the level of service quality expected by shippers, but failed in providing it. The authors suggested future research was needed to identify the causes for these internal failures. Using a case study of the Union Pacific Railroad, Grimes\textsuperscript{26} described an information system developed to track service quality performance. The system enabled the user to assess service quality for various customers, commodities, car kinds, and locations. In another case study of two regional airlines, Truitt and Haynes\textsuperscript{27} surveyed passengers in part to determine airplane characteristics relating to quality. The most frequently listed quality attributes were airplane size, seat size, headroom, overhead storage, and lavatory facilities.

Fig. 2.6 SERVQUAL Model of Service Quality – Applied to Transportation Industry

“Customer Satisfaction in Public Bus Transport - A study of travelers’ perception in Indonesia”, a report by Oktiani Astuti Budiono, cites some of the important works in the area of customer satisfaction in public bus transport. This study indicates that irrespective of the stage of economic development of a country, decision makers are interested to know the satisfaction level of commuters about the public transport. The studies regarding satisfaction and dissatisfaction in public transport have been conducted to improve, develop and create attractive public transport.

Stradling et al. conducted a survey by sending self-completion questionnaire in eight areas of the city of Edinburgh, Scotland. From 68 items that were measured as “things that I dislike” or “things that discourage me from using the bus in Edinburgh”, eight underlying factors were reported. One factor was labeled as “feeling unsafe” which contain the behavior of other passengers, feeling unsafe while travelling at night and feeling unsafe while waiting for buses. Other factors were labeled as “preference of walking and cycling”, “problem with service provision like no direct route”, “unwanted arousal” i.e., intrusions and interruptions such as inconvenience of journey because of overcrowded passengers, other passenger’s smoking habit, and other types of annoying behavior of people on the bus, “preference of car use”, “cost”, “disability and discomfort”, and “low self image” because of travelling with public transport.

Gatersleben and Uzzell (2007) investigated affective experiences of daily commute. Surveys were sent to Surrey University’s employees. The results revealed that commuting by car as well as by public transport can be stressful because of delays caused by the traffic. Public
transport was perceived as unpleasant and commuters expressed a more negative attitude toward their daily commuting than users of other transport modes. The negative attitudes were shown to be related to stress as well as boredom caused by delays and waiting time. Gatersleben and Uzzell (2007) also suggest that public transport is stressful due to unpredictability and longer travel times. This study also acknowledged some sources of pleasure for public transport users. Attributes relating to pleasurable feelings were the possibility to read during the trip, to listen to music, to interact with other people, and to look at the passing scenery.

UK department for transport (2003) has also conducted studies regarding customer needs in public transport. ‘High frequency of service, services that are reliable and fares that offer value for money’ are revealed as important needs of UK public transport users. It was also indicated that the buses should have a broad range of destinations to fulfill travel demand of customer. In this report, the users also reported about the importance of understandable time table information in bus stops and in local newspaper in order to make them aware of the time schedule of the service. Simple ticketing arrangement was also found as another important in order to make people use public transport.

Fujii et al. (2001) conducted an investigation in Osaka (Japan) during a temporary closure of freeway that connected between Osaka and Sakai City. The survey was distributed at three toll-gates from 6:00 am to 8:30 am. First of the important findings was that the closure of the freeway increased public transport use. Second, it was also found that the expected commute time by public transport was overestimated by automobile commuters. Third, after
experiences of public transport the overestimates of commute times were corrected. And finally, people who corrected their commute time continued to use public transport when the freeway was reopened.

Van Vugt et al. (1996) conducted an investigation of the motivational factors underlying the decision to commute by car or public transportation. 192 employees of a publishing company participated and filled out a questionnaire containing questions relating to social value orientation, the commuting situation and a series of post-experimental questions. The findings provided strong evidence for the conclusion that individuals prefer options yielding shorter travel time as well as an alternative with high frequency of public transport.

Fellesson and Friman (2008) conducted a transnational comparison of customers’ public transport perceived service satisfaction in eight cities (Stockholm, Barcelona, Copenhagen, Geneva, Helsinki, Vienna, Berlin, Manchester and Oslo) in Europe. The result showed four general factors: system such as traffic supply, reliability and information; bus and bus stop design that makes customer comfortable and enjoy the travel experience; staff skill, knowledge and attitude toward customer; and safety not only in the bus and bus stop but also safety from traffic accident. Furthermore, it was concluded that differences in public transport technology and infrastructure may cause differences in individual item loadings.

Eboli and Mazulla (2007) investigated service quality attributes important for customer satisfaction with a bus transit service in Cosenza, Italia. Respondents were asked to rate the importance and satisfaction with 16 service quality attributes (bus stop availability, route
characteristic, frequency, reliability, bus stop furniture, bus overcrowding, cleanliness, cost, information, promotion, safety on board, personal security, personnel, complaints, environmental protection and bus stop maintenance). The result shows that the latent variables important for global customer satisfaction are service planning which is reflected in reliability, frequency, information, promotion, personnel and complaint.

Beirão & Sarsfield Cabral (2007) summarizes advantages in using public transport according to Portugal public transport users. The result highlights the importance of a cost-friendly and less stressful public transport service. It is perceived as less stressful since there is no need to drive, it is possible to relax and one may be able to rest or read. Travel time on exclusive bus lanes is considered faster than the car, there is less exhaust emissions and there are opportunities to talk to fellow passenger while travelling. Review of literature (Oktiani, 2009) confirms that there is research with an aim to identify unattractive and disappointing factors in public transport. For instance, Beirão (2007) conducted in depth interviews in Porto to find out factors leading to dissatisfaction. Customers reported waste of time, too crowded, lack of comfort, time uncertainty, lack of control, unreliability, long waiting times, need to transfer, they cannot change route to avoid traffic congestion, lack of flexibility, and long walking time. Edvardsson (1998) found that driver incompetence, punctuality and information were important factors causing dissatisfaction.

Friman et al. (Friman et al. 2001) conducted a mail survey to investigate factors affecting customer satisfaction in public transport service in Sweden. The results showed that overall cumulative satisfaction related to attribute-specific cumulative satisfaction and remembered
frequencies of negative critical incidents (e.g., the driver behaves unexpectedly bad or the bus is leaving before scheduled departure time). In yet another study, Friman (1998) examined the effect of quality improvements in public transport on customer satisfaction and frequency of perceived negative critical incidents. These studies were conducted in 13 regions in Sweden that were conducting quality improvements in public transport. Data were collected before and after implementation. Comparing passenger reaction was a way to understand the type of improvement that increases customer satisfaction. The conclusion of this study was that customer satisfaction influenced by quality improvements only to a limited extent. Furthermore, the effect was directionally opposite in that respondents reported less satisfaction and higher frequencies of negative critical incidents after the quality improvements had been implemented. Thus, quality improvements did not always boost customer satisfaction. Thus, it was not the improvements per se that determined the success of public transport, but a given level of quality coupled with the perception of the service. Safety issues were found by Smith and Clark (2000) as a constraint for people to choose public transport as travel mode of choice. Pick pocketing, overcharging facilitates by overcrowding and lack of supervisor are important factors. UK Department for Transport (2009) reported that young people (mostly male) involved in assaulting behavior, theft, vandalism and criminal damage are a problem for public transport users.

Adreassen (1995) conducted a survey among public transport users in Norway. As a result of the study he argued that in order to keep market share, public transport should provide service for different type of customers. Differentiation of service will lead to increasing
customer satisfaction because of higher degree of matching between supply and demand. Most important factors to work with are travel time, fare level and design of public transport. The above review and knowledge from previous research shows that public transport is still a choice as a travel mode for many people. In order to sustain and improve the loyalty of existing passenger and to attract new passengers, public transport has to improve the service to accommodate wide range of customer needs and expectation (Beirão & Sarsfield Cabral, 2007; Andreassen, 1995).

According to a report on ‘Performance Evaluation of BMTC Buses and Measures to Improve the Ridership’ by Prof. M. N. Sreehari, Chairman, Traffic Engineers and Safety Trainers (TEST) and Advisor to Government of Karnataka, BMTC has a glorious record of performance. This would be possible only when passengers are satisfied to the maximum extent. BMTC is providing transport facilities to metropolitan area by operating 4,000 schedules covering up to 25 km radius from the city centre. It is roughly estimated that more than 30 lakh commuters each day use the BMTC buses for their trips. There is no doubt that, with continuous improvement, expansions, induction of latest technological advances coupled with management skills, BMTC will reach to the peak and continues to be at the top for its proactive one word agenda “passenger satisfaction”. Because of BMTC’s progressive attitude and proactive stance, number of prestigious institutions like Central Institute of Road Transport (CIRT) and SIDA have recognized and admired the services offered by BMTC. The above mentioned studies indicate that, there are efforts world over to identify factors which influence commuters’ satisfaction and in turn influences ridership.
In service industry, the customers come in direct contact with the service provider and therefore, the satisfaction level, motivation level and the personality of the service provider has a good influence on customer satisfaction. In transportation sector drivers and conductors, ticket collectors and the traffic controllers are in direct contact with the commuters.

A number of researchers have worked in the area of *Employee Job Satisfaction* with a focus on i) What is job satisfaction?

   ii) What factors affect job satisfaction?

   iii) What is the effect of job satisfaction on organizational outcome, job performance and job commitment?

The concept of job satisfaction has been defined in many ways. However, the most used definition of job satisfaction in organizational research is that of Locke (1976), who described job satisfaction as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences”. Job satisfaction is a very complicated concept to analyse. Locke (1976) presented a summary of *job dimensions* that have been established to contribute significantly to employees' job satisfaction. A substantial degree of agreement exists among researchers regarding the characteristics of job satisfaction (Cross, 1973; Yuzuk, 1961; Hackman and Oldman, 1975; Scarpello and Campbell, 1983; Khaleque & Rahman, 1987). For instance pay, relations with co-workers, supervisors and job security have been viewed as important components of satisfaction.
The Job Satisfaction Survey (JSS) is a 36 item, nine facet scale developed by Paul E. Spector to assess employee attitudes about the job and aspects of the job.

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<td>Communication within the organization</td>
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<tr>
<td>Total</td>
<td>Total of all facets</td>
</tr>
</tbody>
</table>

Source: Paul E. Spector. Job Satisfaction Survey, JSS.

The literature shows that, job satisfaction has positive association with organizational outcome, job performance and job commitment. Most of the earlier reviews before 1985 denied a strong and consistent relationship between job satisfaction and performance. In 1985, studies indicated statistical correlation between job satisfaction and performance was about 0.17 (Iaffaldano & Muchinsky, 1985). But initially this was considered as “management fad” and “illusory.” This study had an important impact on researchers, and in some cases on organizations, with some managers and HR practitioners concluding that the relationship between job satisfaction and performance was trivial. But the study emphasized on the existence of relationship between job satisfaction and performance.
However, further research (Organ 1988) suggested that the failure to find a strong relationship between job satisfaction and performance is due to the narrow means often used to define job performance. Organ argued that when performance is defined to include important behaviors, not generally reflected in performance appraisals, such as organizational citizenship behaviors, its relationship with job satisfaction improves. Later researches tend to support this proposition that job satisfaction correlates with organizational citizenship behaviors (Organ & Ryan, 1995).

In a more recent review of 301 studies, Judge, Thoresen, Bono, and Patton (2001) found that when the correlations are appropriately corrected for sampling and measurement errors, the average correlation between job satisfaction and job performance is 0.30 and the relationship between job satisfaction and performance was found to be even higher for complex (e.g., professional) jobs than for less complex jobs. Thus, it seems that job satisfaction is, in fact, predictive of performance, and the relationship is even stronger for professional jobs.

In an attempt to study the interplay between job and life satisfaction, researchers have speculated that there are three possible forms of the relationship between job satisfaction and life satisfaction: (1) Spillover, where job experiences spill over into non-work life and vice versa; (2) Segmentation, where job and life experiences are separated and have little to do with one another; and (3) Compensation, where an individual seeks to compensate for a dissatisfying job by seeking fulfillment and happiness in his or her non-work life and vice versa. Therefore, addressing low job satisfaction is not only important for organizational
effectiveness, but by not doing so, organizations can cause spillover of employees’ low job satisfaction into their life satisfaction and well-being.

Numerous studies have shown that dissatisfied employees are more likely to quit their jobs or be absent than satisfied employees (e.g., Hackett & Guion, 1985; Hulin, Roznowski, & Hachiya, 1985; Kohler & Mathieu, 1993). Job satisfaction shows low negative correlations with turnover and absenteeism. Researches indicate that Job dissatisfaction also influences other withdrawal behaviors, including lateness, unionization, grievances, drug abuse, and decision to retire which might negatively affect performance.

In a study on *Impact of Employee Motivation on Passenger Satisfaction levels – a case study in the state of Karnataka (India)* by Tammana V. Ramanayya, Vishnuprasad Nagadevara, Shyamal Roy (2007) it is noted that in any transport organization, the employees operating the buses (the frontline staff) come in regular contact with the passengers. The quality of service as well as the customer satisfaction depends, to a large extent, on the interaction of these staff with the passengers. In other words, it is very important for a transport organization to have a highly motivated frontline staff who are dedicated to providing better quality of service. The working environment, compensation package and future prospects offered by the organization to the staff would make a significant difference in their motivation levels and consequently the quality of service rendered to the passengers.

A report on *Performance Evaluation of BMTC Buses and Measures to Improve the Ridership* by Prof. M. N. Sreehari indicates that BMTC is also making its efforts in this
direction. But the reports do not indicate any measure on commuters’ satisfaction with respect to Cost, Omnipresence, comfort, safety, reliability, behavior of crew etc., even though the relative importance of these factors are indicated based on the ranks indicated by commuters. The impact of job satisfaction on quality service delivery is another important aspect to be analysed. In this context the research on Quality Service Delivery from commuters’ perspective is justified.

The above literature review could be categorised in to three parts, the first dealing with SERVQUAL, the second dealing with JSS (Job Satisfaction Survey) on a nine facet scale and the third dealing with the studies on BMTC.

From the many literature surveyed, on the SERVQUAL as a tool for measuring service quality perception by the consumers, it could be inferred that it is an established tool for measuring customer satisfaction with reference to service quality in the transportation sector as well. Hence adoption of the tool in the present study could be adequately justified. Further the SERVQUAL tool is not employed in its original form to measure commuter satisfaction of BMTC in the present study, the tool has been suitably modified with marginal corrections to make it applicable to measure commuter satisfaction of BMTC commuters is an indication of what this study has drawn from the literature survey pertaining to SERVQUAL.

The second part of the literature survey pertaining to the Job Satisfaction Survey (JSS) - a 36 item, nine facet scale developed by Paul E. Spector to assess employee attitudes about the job and aspects of the job; provides an established tool to measure the Job satisfaction of the
BMTC employees. This tool as well has been suitably modified in adding two more items to the existing 36 items in the nine facet scale, to make it applicable to the present study.

Finally the third part of the literature survey pertaining to studies on BMTC per se brings forth an interesting gap. This gap relates to the evidence that no studies so far have concentrated in understanding the commuter satisfaction along with the job satisfaction of the employees of BMTC. Hence it is possible to say that this study contextualizes the research problem in a newer area where there exists a gap in the context of the literature review. It is hoped that commuter satisfaction of BMTC commuters when read along with the job satisfaction of the BMTC employees provides interesting answers to the questions pertaining to the relation between BMTC commuters satisfaction and BMTC employees satisfaction.
References


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