Chapter 1

Prelude
Chapter - 1

PRELUDE

1.1. Introduction

An efficient transport system is a prerequisite for a sustained economic development. It is not only the key infrastructural input for the growth processes but also plays a significant role in promoting National Integration, which is particularly important in a large country like India. In a liberalised set-up, an efficient transport network becomes all the more important to increase productivity, enhancing the competitive efficiency of the economy in the world market. The transport system also plays an important role in promoting the development of the backward regions and integrating them with the mainstream economy by opening them to trade and investment.

Worldwide, transport growth has been consistently higher than the economic growth due to specialization, sourcing of material on a wider scale, the use of just-in-time financial strategies, increase and dispersal of retail and wholesale activities etc. Prices of transport services have also been falling as a result of the increased productivity due to competition among suppliers of transport services as well as the pressure from users. The transport system in India has not been able to keep pace with these developments and considerable effort is required to correct the shortcomings.
Transportation touches many fringes of the economy. Its service is very important to modern economy that it may not be much to say that just as the human legs have made the human body mobile. So transportation provides legs to the various economic activities and makes the whole economic mechanism mobile.  

India is a very vast country with an area of 32.76 lakh square kms and more then 70 percent of the population lives in 5.68 lakh villages scattered far and wide. Road Transport is essential for the economic development of the country. Vast areas of hinterland especially the villages in the backward districts, hilly areas, tribal areas, etc., would be difficult of access, if there is no adequate passenger Road Transport. Recognizing the importance of Passenger Road Transport as an important public utility service and a basic infrastructure for economic and social development, the Government of India immediately after Indian independence passed legislation in 1950 for the formation of the Road Transport Corporation (RTC). This Act reclaims /affirms the formation of the State level Public Sector Road Transport Corporations (SRTCs) and providing an adequate, efficient economic and well coordinated Road Transport Services to the Traveling Public. 

State Road Transport Corporations plays a significant role in the social and economic development of the country. They render vital transport services

adequately and economically exerting the necessary unifying social and cultural influence over the diverse sector of the economy. At present, there are 73 SRTCs in India, accounting for almost 40 per cent of the total passenger bus transport operation, moving over 75 million people throughout the length and breadth of the country, compared to 17 million passengers carried by Indian Railways. The investment in SRTCs has also grown proportionate to this expansion over this period. The paramount role of the movement of men and material over far-flung areas has to be taken care of by the SRTCs. The State Road Transport Corporations are, therefore, called as instrument of "Public Good". The North-West Karnataka Road Transport Corporation (NWKRTC) is one of such SRTCs which has been doing a great service for the cause of public good all along the commitment to the economic viability in its operation.3

The North-West Karnataka Road Transport Corporation (NWKRTC) is one of the public sector undertakings, providing bus services to cater to the need of the traveling public in the North-west region of the Karnataka state. It played a pioneering role of bringing in-accessible area and rural areas into the main stream. This is now the second biggest Corporation among the nationalized undertakings in Karnataka. It was started with an objective of providing passenger transport service to meet the requirements of reasonable travel facility, linking hinterland with urban areas with affordable transport services to poor and other sections of the societies, etc.

The North-West Karnataka Road Transport Corporation (NWKRTC) is one of the Corporation of Karnataka; it has divided from Karnataka State Road Transport Corporation (KSRTC) providing the traveling facility of the people of North-west region of the Karnataka. NWKRTC was established on 1st November 1997, to cater the traveling demand of 7 districts through 8 divisions. They are Hubli, Belgaum, Gadag, Bijapur, Bagalkot, Haveri, Uttar Kannada and Chikkodi. North-West Karnataka Road Transport Corporation (NWKRTC) has become financially independent from 1st April 1998. It covered 49 talukas and has provided transport service to 4735 villages out of total 5050 villages and it is working efficiently.

1.2. Statement of the Problem

India is a very vast country with an area of 32.76 lakh square kms and more then 70 per cent of population lives in 5.68 lakh villages. The domestic mechanized transport system in India consists of Railways, Road service, Costal Shipping, Inland Waterways and Airways. Road Transportation is of great importance in the surface transport system in India. Road Transport is the speedier form of land transport which covers a greater portion of India. It is more popular in view of the characteristics of the easy availability and reliability of operation, availability of individual needs, door-to-door service and reliability. India has nearly 2 million kilometers of roads, 9,60,000 kilometers of surface roads and more then 1 million kilometers of roads constructed of gravel, crushed stones of mud.
After independence, recognizing the important of road transportation in accelerating socio-economic development, a national policy was adopted for the progressive nationalization of Road Transports from the Private sector into the Public sector. Most states have set up Road Transport Corporations under the ‘Road Transport Corporation Act of 1950’. As and when Private operations were notified and taken over, they were entrusted to this State Road Transport Corporations, resulting in large and unyieldy monotholic organizations.

In 1956 the ‘Motor Vehicle Act’ was suitably amended to facilitate the Corporations set up under the ‘Road Transport Corporation Act of 1950’ to get their schemes for Nationalization and approved by their respective State Governments. During the second five year plan, the planning commission directed the State Governments to either form new state corporations or to convert the departmental transport undertakings into transport corporations. Thus, by the end of 1956, favorable economic advantage arises in different parts of the country for the Nationalization of Passenger Road Transport. Because of this, several states owned Passenger Road Transport Undertakings started functioning in India.

State Transport Undertakings (STUs) in India have a special responsibility to provide road-based passenger mobility, as they are the biggest undertakings in the hands of their respective State Governments. It is believed that there are economics of scale in the size of undertakings. This leads to the assumption that STUs are operating on increasing returns to scale and their average cost declines
with increase in the level of production. Providing such an undertaking with an exclusive franchise, is then, rationalized as a means of protecting it from unfair competition and thus of increasing its viability.

In Karnataka, North-West Karnataka Road Transport Corporation (NWKRTC) is one such State Transport Undertaking which provides road-based passenger mobility throughout North-West region of the Karnataka state. Thus, the present Macro-Level study entitled, “Performance of Karnataka State Road Transport Corporation-A case study of North-West Karnataka Road Transport Corporation” intends to analyse the strengths and weaknesses in physical operational and financial performance. The study is also aimed at pointing out the quality of service of the Corporation.

1.3. Need for the Study

North-West Karnataka Road Transport Corporation (NWKRTC) is one of the Public sector undertakings, providing bus services to cater to the needs of traveling public. It has grown to a large size and enlarged its service to carry out smoothly and efficiently in the transport system. Now, it is running under continuous loss. Inflexible fares, rise in the prices, running under on uneconomic routes, high level of taxation, imposition of concessional fares and high interest burden are responsible for the increase in both the capital and cooperating costs.

The general impression in the mind of the public about the services rendered by the NWKRTC is that, the crew lacks courtesy, large number of
breakdowns occur, hence there is no reliability, punctuality is at discount, waiting time is more and operating erratic; hence there is no co-ordination; the Corporation is incurring loss, hence; it should be inherently inefficient; therefore, quality of services is poor and the Corporation has become a dead weight to the society at large.

Moreover, the Corporation has also grown to a gigantic size due to the absence of alternative transport system. The increase in the size of NWKRTC had posed more problems relating to the personnel administration. This has an effect on the operational performance of the Corporation.

The Corporation is also facing the problem of the lack of resources, lack of support from State as well as Central Government in formulating the appropriate policies. Lack of proper understanding and appreciation of the problems by the management deserves adequate attention of the policy-makers, administration and academicians.

Therefore, a need was felt by the researcher to analyse the physical operation and financial performance evaluating the North-West Karnataka Road Transport Corporation (NWKRTC) for a selected length of time as a case study.

1.4. Scope of the Study

The scope of the present study titled ‘Performance of Karnataka State Road Transport Corporation- A case study of North-West Karnataka Road Transport
Corporation' (NWKRTC) is confined to such aspects as the physical, operating, and financial performance, to examine whether the Corporation has ever been able to show better financial results. The NWKRTC was commissioned 1st November 1997 but it started its operations independently on 1st April 1998.

Depending upon the availability of data these ten years from 1998-99 to 2007-08 have been chosen for assessing the physical, operating, and financial performance of the North-West Karnataka Road Transport Corporation.

1.5. Review of Literature

Review of literature presents a review of the available literature on the present research topic. Transportation is a key factor for the success and failure of the entire development effort. The road system is the most prominent mode of transportation. Transportation is a basic infrastructure for economic growth. The literature on Transport Economics reviewed here reveals, the vast amount of interest that the subject has evoked among the scholars. The classification is attempted at a discussion of the studies on different aspects like Road Transport, rural and urban transport, role, policy, planning, forecasting, investment, performance, cost structure, and safety. However, this review of literature on Transport Economics is not exhaustive in any way, though fairly elaborate.

Road Transport, Rural and Urban Transport

A number of studies have been made about this aspect, which deals with importance of transport, road transport, as well as rural and urban transport.
Srivastava (1964) in his study, "Transport Development in India" discussed various modes of transport and transport co-ordination. Besides giving a historical survey of the means of transport, he also examined their present position and has offered suggestion for their improvement of their operational efficiency. Facts have been adequately supported by relevant statistics and explanations.

Tripathi (1972) "Rural Transport and Economic Development" has made study about transport needs of rural areas and their characteristics, railways, roads, modes of conveyance in road transport of Rajasthan. Finally he suggested some measures for the future of all and road transport in Rajasthan.

Francis Geoffery (1974) focused his view on "Transportation and Warehousing". He further revealed that, through the full use of the total transportation system, economy will get at levels and larger profit. Finally, he suggested that the co-ordination of transport and warehousing is necessary for the maximum efficiency.

Deshpande (1980) in his study "Roads in the Rural Economy of Karnataka : Efficiency Analyzed" has examined the deficiency of road in rural parts of Karnataka. He concluded that the provision of roads is a must for all the development programmes, as without this, the basic means of transport accessibility of villages cannot be improved. Apart from removing the existing isolation of the villages it can draw the linkages between mainstream economic development and prosperity of rural sector. It can be increased tremendously by them weather communication at all times of the year.
Madegowda (1998) has made study the on "Road Transportation in India" since the war and post-war period, he further probes out the problems faced by the traveling public in rural India. Lastly he concluded that it should necessary to strengthen the hands of the State Road Transport Corporation (SRTCs) by implementing promptly its policy of progressive nationalization to achieve SRTCs functions with the required degree of efficiency.

Dewett, Varma, Sharma (2000) "Indian Economy" in this approach discussed aspects link transport and economic development, various means of transport and progress under the five year plans. Finally they suggested that, for developing an efficient transport system in the country, there should be co-ordination among all the various forms of transport i.e. comprehensive transport co-ordination.

Ramanathan (2001) "Urban Transport in India" has studied the patterns of growth of urban transport in India where he discovered that out the number of personalized vehicles has grown rapidly in comparison with mass transportation modes. Finally he gave the solution which depends upon political will on the part of the implementing activities with the over all progress.

Studies on Performance

Jagadish Prasad (1956) in his Research Article, 'Nationalization of Road Transport in Uttar Pradesh' published in 'Indian Journal of Public Administration', analyzed the circumstances which led to the nationalization and evaluated the working of transport service in Uttar Pradesh.
Nicahael Butter (1958) in one of the research papers published in Mobile Journal, titled “Controlled Parking to Keep Traffic Moving”, analysed the problems of traffic congestion in London and suggested remedial measures to keep traffic moving.


V.A. Krishnamurthy (1969) in his Research paper “Andhra Pradesh Road Transport-A Case Study” published in a transport journal, conducted made a diagnostic study of the Andhra Pradesh State Road Transport Corporation. He gave an outline of the genesis of the corporation and statistics relating to variable costs, fixed costs, gross income, net income, cancelled trips for different districts in Andhra Pradesh.

Balasubramaniam (1980) in this approach, examined the working of the State Road Transport Corporation for the period of 1978-79. He found most of the corporations in the country showed losses and observed the disproportional expenditure incurred on the personnel and reduced economic viability. Finally he suggested that the expenditure of the corporation may have to be met by the grants from the states and the operational needs should be met from the internal sources of the corporations, themselves.
Mahesh Chandra Chaturvedi (1981) "Performance of Public Sector Transport Undertakings" made an attempt on revenue analysis of 23 State Road Transport Undertaking (SRTUs) from the period of 1978-79. He analyzed out the reason for low rate of earning and gave some measures. Finally he concluded with efforts to increase the non-operating revenue because increased earnings are necessary for covering the increasing costs and enough surpluses to improve financial performance.

Panduranga Rao (1981) made an in-depth study of "Passenger Transport and Goods Transport in Vishakapatnam District in Andhra Pradesh". For the purpose of determining the trends and projection of the selected transport indicators, he employed three statistical methods. They are (1) Trend analysis (2) Forecasting through multiple regression and (3) Projection under different growth rates of districts income. He concludes that the mofussil passengers will increase by 1.73 per cent and city bus passengers by 6 per cent per annum during 1976-77 to 1980-81.

M.G. Pathak (1984) compared the performance indicators like low fleet and vehicle utilization, bus staff ratio, km/liter of HSD and tire life in km of different STUs and assessed the scope for incentive schemes. He justifies incentive schemes because they minimize losses and generate surplus. The scope of them for reducing units material cost especially by improving KMPL appears to be more promising. He suggested that the incentives schemes should not be uniform.
Chaturvedi (1982) in his study “Fleet Utilization in State Road Transport Undertakings” shows the importance of fleet and vehicle utilization in State Road Transport Undertaking (SRTUs). Further, he has given stress to the fleet utilization and vehicle utilization, necessary for improving the operational efficiency and profitability of the State Road Transport Undertakings. Finally he has given some solution such as, maintaining well equipped workshops, good maintenance policy, management and use of computers for bus scheduling etc.

Vaikunthe (1983) had studied on “Road Transport and System of Road in Karnataka”. He concluded that a road development plan be drawn, which would help in reducing the inter-districts imbalance and thus, save way for development of all the districts.

Mahesh Chand (1983) made a study of “Performance Appraisal of Public Road Transport Undertaking with Special Reference to Karnataka State Road Transport”. He employed an econometric treatment of the subject by taking number of performance indicators and analyzed them. He made an inter-firm analysis of different public Road Transport Undertakings and inter-firm of Karnataka State Road Transport Corporation.

Frank. H. Mossman and Newton Morton (1972) explained “The Relationship of Transportation to Production”, wealth, government, marketing etc. They opined that transportation increases wealth, promotes territorial specialization and raises standard of living.
Alwin Prakash (1977) attempted to analyse "The Performance of Kerala State Road Transport Undertaking" during 1959-71. He analysed the Operation, Revenue, Cost, Social benefits, Organizational and Management structure of the Kerala Road Transport Undertaking. He concluded that the operation of the transport in Kerala was not efficient because of the high vehicle staff ratio due to underutilization of staff and fall in kilometer per liter due to bad road, overloading and incidence of averaged buses.

Bagade (1982) in a different study, observed, that the losses of the transport undertaking incurred despite improvement cost structure and high incidence of taxation. He suggested that the Government can consider the reimbursement of social costs incurred by the operating unremunerated routes. He strongly pleads for total nationalization of road transport which alone can provide basic amenities to passengers helping state transport to recoup the losses they incurred due to incur as operating obligatory traffic.


O.M. Mathew (1964) in his book "Rail and Road Transport in India- Study in Optimum Size and Organization" which is based on his Ph.D. thesis
deals with the concept of optimum size in relation to the Road transport organization. The work examines the optimum size and organization of Road Transport and Railway Transport in India.

M. K. Thomas (2000) in his celebrated book, "Public Sector Bus Transport in the New Millennium" describes the different modes of transport in India. He comprehensively covers the growing trends in Public Bus Transport in India, the emerging scene and the present scenario of STUs in India and private participation in road passenger transport. Moreover, he highlights on the physical and financial performance of selected STUs in India and selected City Transport Undertakings.

Amit Ray (2000), in his paper on "Major Issues on Private Participation in Passenger Transport and Infrastructure" argues that the privatization of Passenger Transport and infrastructure should be seen as an integral aspect of the overall structural reforms programme undertaken by the Government. He further opines that private sector privatization in the road passenger sector may be brought about in two ways, i. Deregulation and ii. Disinvestments.

DeBorger and S. Woutes (1998), in their paper on "Transport Externalities and Optimal Pricing and Supply Decision in Urban Transportation-A Simulation Analysis for Belgium" through light on the joint optimization of transport prices and supply decision of urban transport service considered all relevant effects. Optimal pricing and supply rules are derived both in the presence and absence of constraints.
M. Harvey (2000), in his study, "Road Pricing and Cost Recovery: An Economic View Point" published in Road and Transport Research discussed congestion pricing and road damage issue. He views, optimal pricing would lead to under recovery of the total Costs for rural roads and possibly for the urban roads. He asserts, the only credible justification for attempting to recover exact total costs from users is the ‘User Pays’ concept of equity.

B.C. Vaidya (2003), in his edited volume "Geography of Transport Development in India" tries to open new directions on transport at Regional, National and at the level of Metropolitan cities. The Volume deals with the varied factors of rail and road transport in India by giving geographical significance to the region. In the same Volume Bagade (2003), in his Article, "Transport Development in Pune Metropolitan City", emphasized on the changing industrial scenario around Pune city and rapid growth of population resulting in the fast growth of various transport means.

Satoshi Fujii and Ryuichi Kitamura (2003), in their study, "What Does a One-month Free Bus Ticket do to Habitual Drivers? An Experimental Analysis of Habit and Attitude Change", published in Transportation, came out with the result that attitudes toward bus were more positive and the frequency of bus use increased, whereas the habits of using automobiles decreased from before. The result suggested that a temporary structural change, such as offering auto driver a temporary free bus ticket, may be an important travel demand management tool for converting automotive travel demand to public transport travel demand.
P. K. Sarkar and S. K. Deb (2003), in their Article, “An Approach to the Development of Sustainable Urban Transport” published in the Journal of Indian Roads Congress, attempts to appreciate the concept of sustainability, the urban transport problem, its consequence on environment in terms of air and noise pollution and global warming. An attempt has also been made to review various modes of transport that are environment friendly, that could sustain the future growth of cities.

M.E. Bouwman and H.C. Moll (2000), in an article, “Energy Use Reduction Potential of Passenger Transport in Europe” published in Transport Review, expressed the view that to contribute to a sustainable society, considerable reduction in energy use should be achieved. They showed the various possibilities of energy use reduction for Western Europe.

Tore Langmyhr (1999), in his research study, “Understanding Innovation: the Case of Road Pricing” published in ‘Road and Transport Research’, discussed different aspects of road pricing and views that planning were facilitators for road pricing innovations.

M. Harvey (2000), in his study, “Road Pricing and Cost Recover-An Economic View Point” published in ‘Road and Transport Research’, discussed congestion pricing and road damage issue. He views, optimal; pricing would lead to under recovery of total costs for rural roads and possible for urban roads. He asserts that the only credible justification for attempting to recover exact total costs from users is the ‘Users Pays’ concept of equity.
Rane Elvik (2001), in a study, "Area-wide Urban Traffic Calming Schemes: A Meta-Analysis of Safety Effects", published in 'Accident Analysis and Prevention', presents a meta-analysis of 33 studies that has evaluated the effects on road safety of area-wide urban traffic, calming schemes typically implemented in residential areas in towns in order to reduce environmental safety problems caused by the road traffic.

Phil Goodwin (1999), in his paper "Transformation of Transport Policy in Great Britain" published in 'Transportation Research' argues that the policy shift is genuine and firmly grounded in research, though with a number of real problems in implementation, research and methodology that will have to be addressed.

The foregone review of research and literature on Transportation justifies that the dimension of the subject is vast and deep. The efforts made so far provide rich documentation on different facets of transportation. The need for further research on each of the aspects developed already can be untimely. The present study can be considered one among the many studies which may partially bridge the gap between the research and efforts carried so far.

1.6 Objectives of the Study

1. To analyse the economic significance of Road Transport and to study the brief history of North-West Karnataka Road Transport Corporation.

2. To assess the physical and operational performance of NWKRTC.
3. To make an assessment of the financial performance of NWKRTC.

4. To investigate the developmental efficiency of the Corporation.

5. To analyze inter-corporation performance between NWKTRC and NEKRTC.

6. To offer suggestions for improvement of the performance of the NWKRTC in particular and other SRTCs in general.

1.7. Hypotheses

1. Break-up of KSRTC into smaller units has improved physical as well as financial performance of the units.

2. With the increased physical and operational performance, the quality of services provided by the units has improved.

3. The corporation showing non-financial viability in recent years.

1.8. Methodology

a. Area of the study

The present study is a case study of North-West Karnataka Road Transport Corporation in the state of Karnataka. The state had four corporations, beyond that the study interested to cover only North-West Karnataka Road Transport Corporation. The corporation covers 7 districts and through 8 divisions. They are
Hubli, Belgaum, Gadag, Bijapur, Bagalkot, Haveri, Uttar Kannada and Chikkodi, and 49 talukas which had provided transport facilities to 5,217 villages. Out of total 5,550 villages, 5,028 villages are connected with the bus facility. The number of depots further increased to 53 and the total fleet strength increased to 4,771 and the staff strength to 22,539. The physical operational and financial performance is in the focus of attention in the study.

b. Sources of Data

The study is primarily based on secondary data. The data required for the study has collected from the following sources:

1. Administration Reports of the NWKRTC is done covering the period from 1998-99 to 2007-08.

2. Annual Accounts and Audit reports is done for the period 1998-99 to 2007-08.


4. Profile and performance of STUs published by Central Institute of Road Transport (CIRT), Pune.

5. Data published by the Planning Commission, Government of Karnataka and India for the study period.
6. Administration Reports and Annual Accounts and Audit reports of the NEKRTC, Gulbarga for the period from 1998-99 to 2007-08.

7. Statistical Bulletin of SRTUs in India, Government of India.


9. The secondary data has been also collected from published books, journals, periodicals, newspapers, and Government records.

   Besides the secondary data, the researcher has collected primary information also through personal discussion with the NWKRTC staff.

c. Analysis of Data

   The data gathered were processed with the help of appropriate tables and interpreted with the use of statistical tools like ‘t’ test, arithmetic mean, weight score method, ranking (place) method, averages and percentages. In order to make the study more reliable and trustworthy statistical tables, averages, graphic illustrations are used with the help of SPSS software wherever necessary.

   The Exponential Growth Model is used for the analysis of the secondary data. Particularly, the types of the exponential growth model, which are used to estimate the growth rate of the selected variables, are cost per kilometer, earning per kilometer, fleet utilization, load factor and fuel efficiency etc.,
\[ Y = Ce^{bx} \]

Where

- \( Y \) = Dependent Variable
- \( C \) = Intersect
- \( B \) = Coefficient of Growth Rate
- \( X \) = Independent Variable (TIME)

\[ \text{CPKM} = Oc + i + t \]

\[ \text{EPKM} = Or + Nr \]

Where,

- \( Oc \) = operating cost
- \( I \) = interest
- \( t \) = taxes
- \( Or \) = operating revenue
- \( Nr \) = non-operating revenue

The Microsoft Excel Software has been used to estimate the Co-efficient of the equation.

1.9. Chapter Scheme

The entire work is divided into seven chapters as presented below following with a brief explanation for each chapters.
1. Prelude

2. Road Transport and Development

3. North-West Karnataka Road Transport Corporation- An overview

4. Physical and Operational Performance of NWKRTC

5. Financial Performance of NWKRTC

6. Inter-corporation comparison between NWKRTC and NEKRTC

7. Findings, Suggestions and Conclusion.

In the first chapter, an attempt has been made to identify the major gaps and the areas that needed priority, emphasis with the help of an overview of the literature on passenger road transport till date. Objectives of the study, source materials, scope of the study, methods of analysis, plan for thesis and also the limitations of the study are included in this chapter.

Second chapter discusses the meaning, importance and the general role of road transportation, an overview of significance of transportation, road transport and development, road transport in India and in Karnataka. The chapter being descriptive in nature covers all the major developments pertaining to the road transportation in general.
An attempt is made in this chapter to present an overview giving a profile of the corporation, in addition to information on establishment and growth of the corporation, level of management, organizational goals, organizational policies, administration set-up, inter-state services, city service, passenger amenities and staff employees operational coverage in the corporation etc.

In the fourth chapter, the analysis of physical and operational performance of the corporation based on selected indicators like operations, traffic activity, reliability, safety, regularity and punctuality in service, public complaints, traffic management, effective kilometer run, effective utilization, seat-kms percentage, load factor, occupation ratio, passenger amenities, vehicle utilization and effective utilization of materials has been studied.

An attempt is made in the fifth chapter to assess the financial performance of the NWKRTC showing that its ability of work in consonance with “Business Principals”, included total cost, total revenue, cost per kilometer, earning per kilometer and sources of capital investment.

The sixth chapter is devoted to inter-corporation comparison of physical, operational and financial performance. The analysis in the present chapter is confined between the NWKRTC and NEKRTC.

The final chapter deals mainly with the findings of the study and suggestions offered in order to improve the physical, operational and financial results of the corporation.
1.10 Concept used in the Study

1. **Capital Invested:** It is the sum of capital contribution from Governments and long-term loans including fixed deposits from public and free reserves including accumulated profits (less accumulated losses to the extent these have not been adjusted).

2. **Capital Employed:** Capital employed is the sum of fixed assets net of depreciation and the net working capital.

3. **Crew:** It means driver and conductor.

4. **Bus Utilisation:** It is defined as kilometers covered per bus on road per day. It is calculated with the following formula.

$$\text{Average Bus Utilization} = \frac{\text{Total Effective Kms done per day}}{\text{Total Buses on Road on that day}}$$

5. **Bus Productivity:** It is as defined kilometers covered per bus per day. It is calculated as,

$$\text{Average Bus Productivity} = \frac{\text{Average Effective Kms done per day}}{\text{Average number of buses held per day}}$$

6. **Crew Productivity:** It is computed as,

$$\text{Crew Productivity} = \frac{\text{Effective Kms operated per day during the period}}{\text{Total number of crew days period for}}$$
7. **Fleet Utilisation**: Fleet utilization is the percentage of number of buses on road to buses held by the Corporation calculated as,

\[
\text{Crew Productivity} = \frac{\text{Number of Buses on Road}}{\text{Number of Buses held}} \times 100
\]

8. **Load Factor**: Load factor is the percentage of passenger kilometer to the capacity kilometer. It is also defined as the percentage of actual passenger earnings to expected passenger earnings at full load including standees allowed.

9. **Occupation Ratio**: Occupation ratio is the ratio of passenger kilometers to seat-kilometers offered,

\[
\text{Occupation Ratio} = \frac{\text{Passenger kilometers}}{\text{Seat-kilometers offered}} \times 100
\]

10. **Passenger Lead**: Passenger lead is defined as the average length of journey performed by passengers,

\[
\text{Passenger Lead} = \frac{\text{Total Passenger kms. occupied}}{\text{Total No. of passengers carried}}
\]

11. **Operating Ratio**: It is defined as the percentage of operating cost to the total traffic revenue.

\[
\text{Operating Ratio} = \frac{\text{Total Cost} - \text{(Interest + Taxes)}}{\text{Traffic Revenue}} \times 100
\]
12. **Staff ratio:** Staff ratio per schedule is the ratio between the total staff employed on the last day of the specified period and the number of schedules operated on the same day.

\[
\text{Staff ratio per Schedule} = \frac{\text{Total staff employed}}{\text{Total number of schedules}}
\]

13. **Break down:** Break down rate is calculated with per 10,000 effective kilometers by using the formula Break down rate per 10,000 kms

\[
\text{Effective Kilometers} = \frac{\text{Total number of Break Downs}}{\text{Total Effective Kilometers}} \times 10,000
\]

14. **Accident rate:** is computed with respect to 1,00,000 effective kilometers by using the formula Accident Rate per lakh kms:

\[
\text{Effective Kilometers} = \frac{\text{Total Number of Accident}}{\text{Total Effective Kilometers}} \times 100,000
\]

15. **Public Complaints:**

\[
\text{Public Complaints per 1,00,000 passengers} = \frac{\text{Number of public complaints}}{\text{Total number of passengers carried}} \times 1,00,000
\]

16. **Punctuality:** This is percentage of scheduled trip arrived on time to the total No. of scheduled trips actually arrived.

a) **Punctuality in Arrivals:** It is calculated as

\[
\text{Punctuality in Arrivals} = \frac{\text{Total No.of Schedules-All late arrival trips actual arrived}}{\text{Total No.of Schedules Trips actual carried}} \times 100
\]
b) **Punctuality in Departure: It is calculated as**

\[
\text{Punctuality in Departure} = \frac{\text{Total No. of Schedules - All late departure trips actual arrived}}{\text{Total No. of Schedules Trips actual Departure}} \times 100
\]

17. **Schedule:** A schedule is the programme of operation of a bus on one or more routes operating one or more trips within 24 hours.

18. **Routs:** A routs is a line of travel between terminal points of a regular service in operation.

19. **Average no. of buses held.** Average number of buses held during any period is calculated by adding together the number of buses every day in that period and divided by the total number of bus days so arrived at the number of days in the period.

20. **Fleet:** Fleet percentage is the number of buses held at a particular point of time. The buses held by the Corporation may belong to any one of the following categories:
   
a) Buses on road  
b) Buses in workshop  
c) Buses held as spares  
d) Buses awaiting scrapping  
e) Buses in transit.
21. **Effective kilometers**: is the kilometer actually covered by all buses of the Corporation for the purpose of earning Revenue during any specified period.

22. **Dead Kilometers**: These are the kilometers covered by the buses of the Corporation under the following circumstance.

- Movement between bus-stand and depot and vice-versa.
- Movement from bus-stand and depot to the fueling point and back.
- Movement of buses as relief in case of accident and breakdown.
- Movement of buses sent to continue the operation of breakdown or accident bus upto the breakdown of accident point.
- Movement of buses sent to point of repairing and reconditioning, or operating point.
- Movement of buses for testing purpose.
- Movement of buses for departmental use.

23. **Gross Kilometers**: It is the sum total of effective kilometers and the dead kilometers covered by the buses of the operation.

24. **Vehicle on Road**: A vehicle which is operated for effective kilometer is a vehicle on road.

25. **Owners Fund**: owners fund refers to the capital investment made by both Central and State Governments. It contributes both to the equity capital and capital contribution.