Chapter - 1

INTRODUCTION

1.1. Background

1.2. Research Issues

1.3. Objectives

1.4. Hypotheses

1.5. Methodology

1.6. Review of Literature

1.7. Contemporary Relevance of the Study

1.8. Limitations

1.9. Chapter Scheme
Chapter - 1

INTRODUCTION

1.1. Background

Realisation of rapid economic development is the ultimate objective of economic policy all over the globe. Indeed, development depends on multiple prerequisites, the major one being infrastructure. To be very apt infrastructures of different types play a decisive role in promoting rapid economic development.

It is a fact that transport is one such infrastructure, without which development cannot be thought of, and is a barometer of economic activities. With the winds of change blowing across the world and globalisation becoming an accepted phenomenon, the consequent changes in the economic and social environment will affect, and are, in turn, affected by Transport system of any country.

India’s Transport system is both a major component of the national economy and an important factor in shaping the peoples’ lifestyle, promoting community development and facilitating industrial location patterns. Failure to provide the necessary transport infrastructure in a region which is planning for growth, will create bottlenecks and may eventually retard growth.
Among the different modes of transport – Roadways, Railways, Airways and Waterways, certainly, it is the Road Transport, which is crucial. Under the circumstances, the Road Transport occupies a significant position in the transport field. Given India’s vast geographical area and demography, road transport plays a leading role in passenger and goods transport services.

Road Transport services are being rendered by different types of passenger transport means, may be Heavy Passenger Vehicles (Buses), and Light Passenger Vehicles of different types.

It is true that the Heavy Passenger Vehicles have the twin advantages of larger seating capacity and common accessibility. These two merits of this mode of transport (Buses) have significant implications on the operators who provide the services and, on the passengers who use the same. Obviously, economic development of any region is a function of transport services available in the region.

The present Study is properly on the operational aspects of the Bus Transport System in Dakshina Kannada District (D.K. District hereafter), which is in the forefront in the State of Karnataka on many counts, and is relatively endowed with a well-developed Passenger Road Transport System and Services where Bus Transport Operation has been occupying a significant position. Added to this, presently, the New Economic Policy of Liberalisation, Privatisation and Globalisation has resulted in noticeable changes in the economic environment in the district as well. The policy of
encouraging increased private sector participation in economic development of the country in general and of the State in particular, necessitated the Government of Karnataka to open up more avenues for the Private Bus Transport Operators despite such operators' major share in Bus Transport Operation, already, in the district. Here, such an experiment is being tried by allowing the Private Bus Operators to ply their buses on the routes, which were erstwhile earmarked exclusively for the State Operation, along with the already existing sanctioned private route permits. Naturally, the implications need to be carefully examined and analysed. Hence the Study.

1.2. Research Issues

The present Study is an attempt at addressing the following pertinent issues:

i. the special features of organisation, policies, processes, programmes and practices which are being followed in the Public and Private Bus Transport Operational System currently existing in D.K. District;

ii. eliciting the views of the Bus Transport Operators on the various issues pertaining to their operation in D.K. District;

iii. the perceived level of satisfaction of passengers and their attitudes towards passenger transport ownership;

iv. the level of job satisfaction to the employees in the system and the factors influencing there upon, and

v. the factors influencing the operational efficiency and economic viability of Bus Transport Operation in the District.
1.3. Objectives

The major objective of this Study is to examine, measure and assess the performance of the Public and Private Bus Transport Operational System in D.K. District. The Study also aims at analyzing certain pertinent issues related to the organisation and finances of the Bus Transport Operational System in the district.

However, the specific objectives of the Study are:

i. to analyze the organisational and operational characteristics of the Public and Private Bus Transport Operators,

ii. to examine the key performance evaluation dimensions of the respondent units,

iii. to analyze the levels of users’ satisfaction and also of the employees in the system and their implications on the operational performance and economic development in the district,

iv. to measure and assess the degree of job satisfaction as perceived by the personnel in the system, and

v. to identify the problems confronting the operators, users and the employees in the system and to suggest measures to overcome them so as to improve the system in order to contribute the district development.

1.4. Hypotheses

The Researcher has set the following hypotheses for verification:

i. road accidents are caused by poor road conditions than by other factors,
ii. users' perceptions on satisfaction parameters tend to vary between the public and the private bus transport services,

iii. users' perceptions on safety parameters tend to vary between the public and the private bus transport services,

iv. quality of service of the crew perceived and reported by the users tend to vary between the two forms of transport ownership, and

v. specific satisfactions derived by the different categories of the employees tend to differ significantly.

1.5. Methodology

a. Area of the Study

The geographical area of the Study is restricted to Dakshina Kannada district in Karnataka State. All the Transport Operators, the Employees in the system, the Users and the Transport Authorities in the district are the focus of attention in the Study.

b. Sources of Data

The required primary data have been gathered, through administering open-ended coded interview schedules, separately from the Transport Operators, the Users, the Employees in the System and the Authorities. Also, the necessary secondary data and information have been collected from the Volumes, Research Articles, Government and Non-Government Sources, Private Bus Transport Operators and the Authorities. The secondary data and information also have been collected from the libraries of the
Central Institute of Road Transport, Pune, the Institute for Social and Economic Change, Bangalore, Gokhale Institute of Politics and Economics, Pune, Karnatak University, Dharwad, Mangalore University, Mangalore and Kuvempu University, Shankaraghatta. Also, the KSRTC, Mangalore Division has been consulted for necessary data and information required for the Study. The Researcher has also visited the relevant Websites in procuring the material.

c. Sampling Design

A total of 50 private bus operators were interviewed in the district to elicit their views on the various issues pertaining to the Bus Transport Operation in D.K. district. Since the KSRTC is the owner of the State Buses, the Mangalore Division of the Corporation was consulted to gather the required information on the State Bus Operation in the district.

In all, 200 employees in the system were interviewed whose perceptions about the system were analysed in the Thesis. The users of transport services are large in number and hence, 400 users at random belonging to different user categories were interviewed across the district for the purpose of the Study. The views of the Transport Authorities were elicited through interviewing 15 officials including the RTO, the ARTO, the MVIs and the HQA in the Regional Transport Offices. The Mangalore Taluk, being thickly populated is assigned more weightage in the sample, of course, giving due weightage to other taluks in the district, during the survey.
d. Analysis of the Data

The data gathered were processed with the help of appropriate Tables, and interpreted with the use of Statistical Tools like *t* test, Co-efficient of Variance, Arithmetic Mean, Weight Score Method, Merit Point Method etc., in addition to Ratios, Averages and Percentages.

The road accident issue is analysed with the help of Weight Score Method, where weight scores were calculated and ranks were assigned accordingly to identify the major causes of the road accidents as perceived by the Operators, the users and the Authorities separately.

In order to evaluate the quality of service rendered by the public and the private Bus Transport Operators in the district the commuters were asked to reveal their views on specific yardsticks in terms of 4 point scaling technique viz., poor, satisfactory, good and very good. Accordingly the values 1, 2, 3 and 4 have been assigned to the scales respectively. The Arithmetic Mean Values of these scores were estimated separately for the public and private Bus Transport Operational System in the district. To know the significance of the difference between the two, *t* statistic was used.

To assess the relation between the Employees-Employers, Employees-Passengers and Employees-Employees, here, 4 point scaling technique is being used viz., poor, satisfactory, good and very good. A simple Statistical Tool called the Merit Point Method is being adopted to assess the relationship.
In order to analyze the perceived levels of specific satisfactions of different categories of employees as many as 10 parameters were set by the Researcher. The opinion of each category of workers was being compared with the help of \textit{Arithmetic Mean} and consistency in satisfaction level is calculated using the \textit{Co-efficient of Variance}.

1.6. Review of Literature

Transport 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. For a better comprehension, the studies are reviewed chronologically. A further classification is attempted at a discussion of the studies on different aspects like 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.

Studies on Role of Transport

Several studies focused on the role of a particular means of transport in the national economy. Inadvertently such studies made references to the performance of the transportation systems too.

V.V. Ramanadham (1948) in his Volume, "Road Transport in India" examined the different dimensions of road transportation in India focusing on the analysis of road transport operations. V.V. Ramanadham (1955), in his another work "Nationalised Road
Services in Hyderabad”, highlighted the role and problems of nationalised road transport undertakings.

Edwin Lowe Neville (1959) in his unpublished Thesis, “The Development of Transportation in Japan: A Case Study of Okayama Ham” gave a fascinating account of the transportation system in Japan during the Tokugwa period (1600-1686) and pointed out how the main features of the system laid the basis for Japan’s modern developments in the field of transportation. Cohin Jones (1972) in his Research Paper, “The Private Transport Revolution in Britain”, in Transport Journal, analysed the transport revolution by private operators in Britain.

H.R. Balsara (1972) in his Article, “Story of Bombay’s Public Conveyance – 1877 to 1947”, in Transport Journal, traced the evolution of the public conveyance system in Bombay along with the rapid urbanisation and industrialisation of the present day metropolitan city. M.O. Mathew (1972) in his Paper “Complementary Roles of Roads and Railways”, in Mobile Journal, was critical about the step-motherly treatment given to Road Transport as compared to Railways in India.

K.P. Bhatnagar et al. (1976) in their Volume, “Transport in Modern India” brought out various facets of the role of transport in modern India.

**Studies on Policy**

In his Research Paper, A. Carlin (1967) “Indian Transportation: A Sectoral Approach to Developmental Constraints” published in ‘Development Studies’, illustrated the usefulness of a sectoral approach to developmental constraints on the transport sector of the Indian Economy. He also claimed that, the best way to co-ordinate transport policy is by the operation of competitive market force.

In his Research paper entitled, “Inter-Industrial Programming Model for Productions and Transportation of Commodities for Different Regions of India”, A. Ghosh (1967), published in Artha Vijnana, explained a model for optimum pattern of regional production and exchange of commodities between various regions in India. He also claimed that the model would minimize the national cost in the transport sector.

R.V. Rao (1968) in his Article “Traffic Potential of Andhra Pradesh” appeared in ‘Mobile Journal’, conducted a survey of the traffic potential of Andhra Pradesh and recommended for the setting up of State sponsored corporation to make finances available to private motor transport operators at reasonable rates of interest.
Chapter 1

Introduction


J.J. Ratter (1973) in his Article published in ‘Transport Journal’ entitled, “The World Bank and Transport” focused on the policy issues governing the role and functioning of the World Bank in building up infrastructure for transportation in developing countries. He also observed that one-third of the World Bank’s lending has been on the transport sector.

V.B. Singh (1973) in his Research Paper entitled “Principles of Investment in Transport and Indian Planning” in D.M. Nanjundappa’s edited volume “Transport Planning and Finance” asserted that the transport policy of a social society is characterised by some basic features. First, development of transport is to be co-ordinated with the needs of rapid economic development. Second, the public sector has to come forward for catering to the needs of quick, time saving transport to the urban and rural people. Third, there is progressive nationalisation of the private sectors; and the pre-industrial means of transport are replaced by power-driven vehicles. Fourth, in response to the low income of the masses, priority is to be given not the so called “People’s cars” but to inexpensive and quick public transport and fuel economy scooters, auto cycles for private use. These features, the author observed, provide the framework for investment in transport sectors of socialist countries like India.


Robert D. Bartini (1974) in his Article 'Tomorrows Transport', published in Mobile Journal, analysed the impact of inflation and credit squeeze on transport sector. L.S. Payne (1975) in his Paper entitled "A European Transportation System" published in 'Transport Journal', observed that the European transportation system was evolved on the concept of free competition while analyzing the major implications of the treaty in Rome on Transportation.


Robert Gustar Baxter (1975) in his monumental work, "An Examination of the Interaction of Government and Transport Carriers in the Planning and Development of a Multi-model Transportation Terminal", analysed the various dimensions of the
interaction between government and private sector in planning and developing a multi-dimensional transportation Model in the United States of America.

In his Article "Privatisation : The Indian Experience", S.S. Bhandare (1996), published in TMCC Journal of Management, brought out the genesis of privatisation in India and stressed that the essence of privatisation is to usher in transformation in both ownership and management of public sector enterprises. The Article seeks to argue the ease for more vigorous privatisation in India and creation of institutional mechanism in the shape of separate Ministry of Privatisation or an autonomous Privatisation Commission.

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.

P. Tiwari and T. Kawakami (2003) in their Research Paper published in 'Indian Journal of Transport Management' entitled "Designing Effective Transportation Policies in Mumbai" estimate the demand elasticities for model choice in Mumbai using a nested multinomial logistic model. The results indicate that with the increase in the cost of private transit system, their market share reduces.
Studies on Planning

D.N. Agarwal (1954) in his Ph.D. Thesis entitled “Co-ordination, Development, and Planning of Transport in Uttar Pradesh” showed deep concern about how coordination, development and planning leads to smooth and balanced development of the sector as such. The National Institute of Applied Economic Research (1959) in its Study titled “Road Transport Project-Delhi Region” has focused on the various aspects of organisation and planning of the transport sector.


“Roads in Urban Areas” (1966), a Study conducted by the Ministry of Transport, London, highlighted the need for planned improvement of urban road system to ensure free flow of traffic at reasonable speed. The measures suggested by it include: i) restricting waiting on primary and district distributors; ii) taking urgent action to provide off-street parking accommodation; iii) constructing secondary means of access to enable goods and service vehicles to load and unload at the nearby stops.

The need for transport planning was presented in the proper perspective by the Ceylonese Planning Committee in its “Report of the Planning Committee on Economic Overheads” (1967), which observed that transport development should take place along with agricultural and industrial development.
The editor of the Mobile Journal, Vishwanathan (1968), in his editorial captioned “Surveying City Traffic”, wrote that alignment of sub-urban expansion will have to be planned well in advance from the transport point of view, otherwise, he cautioned that colonies will develop deep in hinterland and require to be served by unprofitable bus routes. In his another editorial, Vishwanathan (1972), titled “Problem of Metropolitan Road Traffic” writes that the problems of metropolitan road traffic enforcement could be reduced through ; i) the control on traffic movement and highway use ; ii) the control on access ; iii) the control on vehicle use and check the vehicle condition ; iv) staggering of work hours.

The Regional Transport Survey unit, Government of Andhra Pradesh in its “Report on Regional Transport Survey of Andhra Pradesh” (1968) assessed the existing facilities in different modes of transport. The Report also made suggestions for devising ways and means for affecting a rational allocation of traffic among different modes of transport.

In a Research Article, N.S. Srinivasan (1970), published in “transport Journal”, titled “Long Term Measures to Solve Urban Mass Transportation Problems” expressed the view that research carried out in India on traffic planning techniques are yet to be developed and research and development work carried out abroad cannot be applied directly to India due to different traffic and other conditions prevailing in India and the developed world.

V.B. Singh (1973) in his Article “Principles of Investment in Transport and Indian Planning” in D.M. Nanjundappa’s edited
Volume “Transport Planning and Finance” studied the problems of transport planning from investment point of view, keeping in mind the resource scarcity.

N.S. Srinivasan et al. (1973) in their Article entitled, “Public Passenger Transport in Delhi – Proposals for Improvement”, published in Transport Journal', analysed the shortcomings in the existing route system in the public passenger transport in Delhi. For route recognition, a plan was worked out by the authors with the following criteria : i) route should be capable of meeting travel desires with minimum of inter changes ; ii) route should be normally cited beyond rather than at the conveying points of city centers ; iii) route system should be such as to enable the trips to be presumed in not more than 60 minutes of journey time ; iv) route should be preferably kept off from highly congested and inaccessible places though one or two routes may be allowed to enter into those areas ; and v) all neighbouring places of a locality should generally be linked with it by direct routes.

Planning”, discusses how urban Transportation Planning can be used to conserve energy in Pennsylvania.

Lauchlin Currie (1975), in his Article published in "Urban Studies Journal", entitled “The Interrelations of Urban and National Economic Planning” described the typical characteristics of city with regard to its transportation infrastructure.

Thomas James (1975), in his Ph.D. Thesis, tilted “An Organisational Form for Planning and Decision Making in Local Transportation System – New York City – A Case Study”, traced that throughout history societies have devised ideal parameters for the cultural and physical organisation of urban places and advocated the need for the organisation of local transportation systems. B.G. Hutchinson (1975-76), in his Volume “Principles of Urban Transportation Planning”, made an indepth Study of urban transport strategic planning with a system framework for Ontario.

James Odeck (1996), in his Research Article, “Ranking of Regional Road Investment in Norway – Does Socio Economic Analysis Matter?” published in “Transportation”, explores the priorities for road investments in Norway with particular emphasis on the use of benefit-cost calculus, while, Nglila Mwase (1996) in “Developing an Environment - Friendly Transport System in Tanzania : Some Policy Considerations” published in “Transport Reviews” presents a comprehensive review of the environmental costs of different modes of transport both in rural and urban Tanzania. He opines that the transport system should be
pro-nature lest will lead to environmental degradation leading to high rates of respiratory and other diseases.

R.C. Tiwari and S. Tripathi (2003), in their Research Paper, "Analysis and Planning for Transport Network of Transport System in Gorakhpur District, Uttar Pradesh" in the edited volume of B.C. Vaidya 'Geography of Transport Development in India', evaluated the existing network of rural transport in Gorakhpur district. Accessibility traffic flow, connectivity matrix and gamma, beta indices were employed to find out the nodal points. They also suggested a suitable guideline for scientific transport planning.

Studies on Forecasting

Mahavir Prasad and P.D. Agarwal (1964), in their work "Traffic Study and Forecast for Highways in Uttar Pradesh" published in Journal of the Indian Road Congress, projected the issues relating to traffic forecast in Uttar Pradesh taking into account population growth, agriculture, industrial promotion, per capita income and total mileage of roads.


forward the past trends assuming that future experience is a direct function of past experience, analytical methods classify and analyze the several related components or influence the factors that have caused the historical trend pattern.

Strucker P. James (1969), in his Thesis entitled "An Econometric Model of the Demand for Transportation", viewed the demand for transportation as a special application of general theory of substitute goods when the demand for each individual product depends upon the supplies of the other competing products as well as the overall demand for the general class of goods. He opines that transport rate is a function of product as well as transport attributes.

N.S. Srinivasan and Y. Suryanarayana (1969), in their "Study on Urban Travel Characteristics for Comprehensive Transportation Planning of Bangalore", published in Journal of the Indian Road Congress, made an indepth study on transport planning. The authors adopted house-interview technique and 41 zones with homogeneous land-use characteristics. The data collected along with the data on passenger traffic of inter-city nature and goods traffic were utilised for traffic projection and distribution.

C.C. Mahajan (1972), in his Research Paper "Traffic Forecasting for Transport Planning" published in Transport Journal, studied the relevance of the relationship between traffic forecasting and transport planning. He used correlation index method; ratio method and growth formula for predicting the demand for transport.
M.V. Nadakarni and A.B. Deogirikar (1973), in their Study “Demand for Roads – A Cross – Section Study” published in the edited volume of D.M. Nanjundappa’s “Transport Planning and Finance”, have estimated the demand for roads as determined by economic factors like density of population and output. The Authors have also attempted a cross-section study of all the districts in Maharashtra through multiple regression analysis. M.Q. Dalvi (1973), in his Article, “Land-use Planning and Forecast of Future Urban Travel” published in the same volume, reviewed the current methodology for forecasting the future urban travel as five main analytical stages, viz., i) land use model ; ii) generation model ; iii) distribution model ; iv) assignment model ; and v) evaluation model. He contended that land use model, among all, plays a critical role in the forecasting of the future urban travel demand and hence in the design of the future urban transport plan. He found that the present methods of land-use forecast are entirely unsatisfactory and suggested a mathematical programme method for the determination of optimal land-use pattern in urban space.


William L. Garrison and Jerry D. Ward (2000), in their magnum opus “Tomorrow’s Transportation : Changing Cities, Economics and Lives”, analysed that advancements in transportation can make our collective future better in ways that
transcend the transportation itself. They argue that, they anticipate and encourage improvement not because it’s more fun or more convenient to go faster or travel more cheaply or ship more goods, but because we know such improvements extend to many other aspects of our lives. They suggest more energy efficient and less polluting transportation system to make the developments eco-friendly.

**Studies on Investment**

Charles Pool John (1969), in his Thesis “A Posterior Evaluation of the Economic and Social Effects of Investment in Transportation Infrastructure”, dealt with the economic and social effects of investment in transportation. He asserted investments in infrastructure are based more on faith because cost-benefit analysis of social infrastructural projects like transportation in under developed areas is rather difficult.

The Editor of the Mobile Journal, Palkhivala (1972), in his editorial “Value of Road Building and Maintenance”, pointed out that the investment in Public sector outlay declined from 8.6 per cent in the First Plan to 5.5 percent in the Fourth Plan. He also observed that 30 per cent of the villages in the country were neglected excepting Punjab where all the villages are connected by roads. He suggests, as in Japan and in West Germany, the income from roads should be spent on their maintenance and improvement.


K.J.W. Alexander (1975), in his Research Paper, "Some Economic Problems of Transport Industry", estimated that in the United Kingdom the share of transport in gross domestic product was 15 per cent and 11 per cent of the consumer expenditures were accounted by transportation costs. A. Gillender (1975), in his study, "Urban Transport, Studies in Economic Policy" published in Urban Studies Journal, reviewed the important contributions to the study of the problems raised by investment in transport and the use of cost benefit analysis.

Studies on Performance

Jagadish Prasad (1956) in his Research Article, "Nationalisation of Road transport in Uttar Pradesh" published in Indian Journal of Public Administration, analysed the circumstances that led to the nationalisation and evaluated the working of transport services in Uttar Pradesh.


A transport company, Raman and Raman Private Limited, Kumbakonam made a Study (1968) to assess and ascertain the commuters satisfaction of the transport services provided by the Company through a questionnaire method.


A.R. Shambhag (1972), in his Research Paper "Problems of B.E.S.T. Bus Service" published in Transport Journal, observed that city transport was uneconomical because a large number of fleet was required to take care of the peak hour demand.
L.C. Venkaji Rao (1973), in his Study, “Management of State Transport Undertaking” published in the edited Volume of D.M. Nanjundappa’s “Transport Planning and Finance”, studied the problems of the State Transport undertakings with special reference to the then Mysore State. He identified some administrative issues, which come in the way of improving the performance of a State Transport Undertaking. They are: i) balancing the transport requirements of the community as against other facilities served, based on costs, income and availability of finance; ii) dealing with peak loads; iii) the most efficient utilisation of vehicles and staff on the basis of the moving of given loads of passengers; and iv) envisaging of traffic planning in future.

Manjula Singh (1973) in a Research Study entitled, “Road Transport in India” published in D.M. Nanjundappa’s edited volume, made an indepth Study of road transport system and concluded that in India the operating ratio was always above 100 for rail and less than 80 for road transport and recommended a well co-ordinated road transportation system on the basis of such factors as assessment of demand for roads on vehicle requirement, distance from main roads, co-ordination of local bodies, land surfaces regional development and employment considerations.

J. Reeks (1974), in his Research Article, “Reliability in Transport” published in “The Chartered Institute of Transport Journal”, listed out six principal factors, which influence the degree of reliability of a transport system. They are: i) equipment, ii) maintenance, iii) personnel and industrial relations, iv) operations plan, v) external influences, and vi) organisation.


W. Pereira (1975), in his Study, “Leakage of Revenue in Metropolitan Transport Organisation” published in “Mobile Journal”, made an analysis of Pallavan Transport Corporation and observed that the Corporation, like many others, was incurring loss mostly due to leakage of revenue, the magnitude of which varies from 8 percent to 15 percent of the total revenue. He also pinpoints, the financial viability of a transport system depends on the integrity and efficiency of the checking staff.

Studies on Safety

W. Dhar (1964), in his Study, “A Preliminary Report on Tests conducted at Delhi Clinic” published in ‘Journal of the Indian Roads Congress’, speaks about certain tests for drivers to identify the factors concerning drivers which can increase the propensity for unsafe driving causing accidents. The tests used were simple reaction time, complex reaction time, visual activity, speed judgement etc.

N.S. Srinivasan and Sharafuddin (1968), in their Article, “Effects of Flashing Signal on Pedestrian Safety” published in Mobile Journal, examined the role of pedestrian in pedestrian safety and suggested that ‘Cross Walk’ marking, flashing signal and railway barriers would regulate pedestrian and vehicular traffic and ensure greater road safety.

In a Study on “Safety on Roads”, N.S. Srinivasan (1971), published in Transport Journal, estimated that on an average, every year 21 lakh persons were killed and 7.50 lakhs were injured in road accidents, mostly in Indian metropolitan cities. N.S. Srinivasan et al., (1971) in their Article “Economic Cost of Road Accidents” published in ‘Journal of the Indian Roads Congress’, assessed the cost of road accidents in Delhi and also inquired into the malpractices in finalizing accident claims.


Heinemann (1974), in his Work "Road Accident Reduction", which is a part of the proceedings of a Seminar held in London, incorporated a detailed framework of suggestions for road accident reduction.

K.J. Armitage (1975), in his Paper, "Integrated Road" Published in The Chartered Institute of Transport Journal, made a plea for proper understanding of good and evil aspects of the role of modern transport system's contribution to the quality of human life. Victor Johnson (1975), in his Study, "Traffic Management in Cities" published in Mobile Journal, exhorted that the accident statistics for any city is a measure of the performance of traffic management in that city and cautioned against the tendency to allow things to drift.


V.M. Puvanachandran (1995), in his Research Study, "Effect of Road Curvature on Accident Frequency : Determining Design Speeds to Improve Local Curves", published in 'Road and Transport Research', used conflict analysis to evaluate accident potential at
curved road sections. He views that a significant correlation exists between the number of accidents per million vehicle kilometers and the number of vehicles which transgress into the opposing lane of curved sections on rural highways. Also, he, suggests an approach speed of 70 km/hour requires a minimum curve radius of 110 meters.

Rune 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 have evaluated the effects on road safety of area-wide urban traffic calming schemes are typically implemented in residential areas in towns in order to reduce environmental safety problems caused by road traffic.

C. Jayasinghe and L.L. Ratnayake (2003), in their Article “Prioritizing the Road Safety Programme” published in ‘Indian Journal of Transport Management’, quantified that the total cost of traffic accidents in Sri Lanka was about 1 per cent of the GDP of the country in 2002. They viewed, as the budget available for the road safety would be limited, in developing countries, it is vital to prioritize the road safety improvements.

Studies on Pricing / Cost-Rate Structure

Paul Albert Henry (1965), in his Ph.D. Thesis “A Study of Factors related to State Reimbursement of Pupil Transportation Costs in the 24 Local School Systems of Maryland”, studied the issues relating to pricing and rate structure, with a special focus on Pupil’s Transportation.

Andrew Joshua Gold (1968), in his Thesis titled “Commission Decision Making in Intermode Transportation Rate Cases”, focused on some aspects of decision making in rate fixation.

Glenn Eugene Hinkle (1968), in his Thesis “An Investigation of Costs in District Owned Compared with Private Owned Transportation Services in Nebraska Public Schools”, compared the cost differentials between district owned and private owned transportation services.

While, B. Chand (1969) in his Research Paper, “Rate Making in Nationalised Road Transport” published in ‘The Indian Journal of Commerce’, discussed the rate-making process in nationalised transport services ; J. Sathyanarayana (1969), in an Article, “Cost Structure of Road Transport Industry”, observed that the cost of service of road transport depends upon the size of the fleet, the vehicle condition, the length and road conditions. He viewed that the size of the transport unit is a fundamental factor which influences cost of operation. A. Chandran (1969), in his lecture, “Operation Research in Transport Industry”, was of the firm view that a saving to the order of 7 to 10 per cent can be achieved by using techniques developed by business operations research.
W.J. Tyson (1970), in his Research Paper, "A Study of Peak Cost and Pricing in Road Passenger Transport" published in The Chartered Institute of Transport Journal', advocated to consider travel time and the need for increasing fares during the peak hours. He also studied the effects of differential bus fares in Greater Manchester for the period 1970-75, and concluded that the surcharge on the fares during peak period did not have any adverse effect on the traffic.

V.A. Krishnamurthy (1971) in his Study, "External Factors and Road Transport Costs" in Transport Journal, examined how external factors like inefficient traffic lay out and control would increase the operating cost in transport industry.


A Study conducted by the Highway Research Board in Washington (1973), “Price Subsidy Issues in Urban Transportation”, examined the relevant issues pertaining to subsidy in urban passenger transport.

Armin Clans (1974), in his Thesis, "Optimal design and Cost Allocation for Transportation Networks", dealt with the economics of transportation systems focusing on pricing. Suggesting a non-linear approach for pricing, he presented a minimal-cost design and cost allocation to users in transportation networks.

Norwegian bus companies. The major findings are that: the average cost function is slightly U-shaped; there is no statistically significant difference in the costs between public and private companies; companies which are facing a subsidy policy based on cost norms show greater efficiency than bus operators who negotiate with the authorities over the size of the subsidy; and the efficiency gain by introducing cost norms is significantly higher in companies in public ownership than for privately owned companies.


Tore Langmyhr (1999), in his Research Study, “Understanding Innovation: The Case of Road Pricing” published in Transport Reviews, discusses different aspects of road pricing and views that planners are facilitators for road pricing innovations.

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 will lead to under recovery of total costs for rural roads and possibly for urban roads. He asserts, the only credible justification for attempting to recover exact total costs from users is the ‘user pays’ concept of equity.
General Studies

D.P. Locklin (1972), in his study on "Economics of Transportation" emphasised on the problems related to transportation in general and suggested ways and means to overcome them. Wilfred Owen (1987), in his Volume "Transportation and World Development" has investigated into many aspects of transport. He compared the changes and advancement in transport during the 20th century bringing together carriage by horses and extending upto the space. He concludes that the new mobility had removed national boundaries and at the same time inadequacy of transport facilities is one of the major bottlenecks in development furtherance.

Manohar Lal (1989), in his magnum opus "Rural Roads and Socio-economic Development", has discussed the crucial role played by the rural roads in promoting economic, social and cultural development of a region.

S.K. Modak (1995), in his noted book "Indian Road Transport" has verified different aspects of transport. He focused on the nature and scope of Indian road transport system while explaining the role of goods vehicles in carrying the goods from and into rural areas.

D. Jepson and L. Ferreira (1999), in their Research Paper "Assessing Travel Time Impacts of Measures to Enhance Bus Operation" published in 'Road and Transport Research', focused on reducing travel time for buses which is, they argue, fundamentally linked to the cost and efficiency of this form of public transport.
Hai Yang et al., (2000), in their Article, "Highway Pricing and Capacity Choice in a Road Network under a Build – Operate – Transfer Scheme" published in 'Transportation Research', argued that the private sector should be allowed to build and operate roads in a transportation network at its own expense, in turn it should receive revenue from road toll charge within some years, and then these roads will be transferred to the government.

M.E. Bouwman and H.C. Moll (2000), in an Article, "Energy Use Reduction Potential of Passenger Transport in Europe" published in 'Transport Reviews', 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.

Jean Pherri (2000), in his Research Paper "Analyzing Road Traffic Influences on Air Pollution : How to Achieve Sustainable Urban Development" published in 'Transport Reviews', showed that, the volume of traffic, road speeds and the composition of the vehicle fleet determines air pollution. He concludes that if cities and urban transport are to achieve sustainable development, urban expansion must take place in a controlled way.

In his celebrated Volume, "Public Sector Bus Transport in India in the New Millennium", M.K. Thomas (2000), describes the different modes of transport in India. He comprehensively covers trends in public transport in India, the emerging scene and the present scenario of State Transport Undertakings in India and private participation in road passenger transport. Further, he highlights on the physical and financial performance of selected STUs in India.
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 the Indian Roads Congress’, attempts to appreciate the concept of sustainability, the urban transport problem, its consequences 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.

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, where as the habits of using automobile decreased from before the intervention, even one month after the intervention period. The results suggest that a temporary structural change, such as offering auto drivers a temporary free bus ticket, may be an important travel demand management tool for converting automotive travel demand to public transport travel demand.

In his edited Volume “Geography of Transport Development in India”. B.C. Vaidya (2003), tries to open new directions on transport at regional, national and at the level of metropolitan cities. The Volume deals with the varied facets 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’, has emphasised on changing industrial scenario around Pune City and rapid growth of Population resulting fast growth of various transport means.
Chapter 1

Introduction

The above review of literature on Transport Economics testifies the varied dimensions of the subject. However, studies reveal that only the surface has been scratched. The Researcher feels that this review is not fully exhaustive in itself, and the gap is obvious. The present study can be considered an attempt to bridge the gap between the Research needs and the Research efforts made so far.

1.7. Contemporary Relevance of the Study

It is evident that State Transport undertaking in Karnataka is passing through a crucial period at present and its future is at stake in these days of Privatisation. The effects of recent changes in the policies of the Government of Karnataka, on the transport field, shall surely be adverse, on the physical and financial performance of the State Transport Undertaking in the State. In the light of the noticeable changes in the economic environment overall, the Public Sector Passenger Road Transport Undertaking in the State has to formulate its own operational strategy to sustain in the changed situation. Also, in the wake of observed Privatisation, the State can seldom think of shirking its responsibility in the interest of the public at large. However, the regulatory function of the State has all time significance.

Beginning the year 2003, the Government of Karnataka sanctioned blanket free permits for private bus operation on the nationalised routes, as well, in D.K. District. Erstwhile, issuance of such permits were restricted and selective, despite, private bus transport operators’ lion’s share in the Passenger Road Transport System prevailing in the district for many years. This paved way
for unhealthy competition between and among the Public and Private Bus Transport Operators in the district.

To put it rightly, under the circumstances, there is likely to be a situation of supply of Passenger Transport Services exceeding the demand for and resulting in a market glut. Many a time, the buses plying in the district, do not run optimally, thus leading to financial losses to the operators. Hence, the Study shall be considered relevant, timely and contemporary one. The Study is regarded as more practical in approach, which at the end, proposes policy recommendations, based on the Findings, to the Government which shall certainly help to improve the system of Bus Transport Operation in the district in general.

1.8. Limitations

Region-specificity and issue-specificity are the two major limitations, identified by the Researcher, of the present Study, i.e.,

i. The Scope of the Study is confined to the Public and Private Bus Transport Operational System in D.K. District only.

ii. The Study focused on the varied dimensions, only of the Bus Transport Operation, excluding the Goods Transport System in the district. Hence, the Study is region-specific and issue-specific in nature considering the size of the Thesis, resources and time at Researcher’s disposal in view.

1.9. Chapter Scheme

The present Study is planned in six Chapters. The First Chapter, along with an introduction, points out the research
issues, objectives of the study, scope and relevance, hypotheses, methodology and plan of the Thesis. A fairly elaborate review of literature is also attempted at in this Chapter.

The Second Chapter discusses in general the role of Transport, where a brief reference to the Indian Railways, Air Transport, Inland Water Transport is also made along with a detailed overview of the Road Transport Sector in India.

The Third Chapter is devoted to an analysis of the forms of Transport Ownership. Discussions on privatisation experiences in Bus Transport Operation in the UK, in the USA and in the South East Asian Countries are made. Also, a note on privatisation experience in India is presented. This Chapter also throws light on the Theories of Transport Pricing, Transport Investment and Pricing and the Optimal Bus Fares in general. Further, Pricing Decision Issues are also being dealt with.

The Fourth Chapter, in two parts, presents the Economic Profile of Dakshina Kannada District in Part-I and Part-II is earmarked for the Transport Profile of Dakshina Kannada District.

The Results of the Study are discussed at length in the Fifth Chapter where the views of the Bus Operators, the Users, the Employees and the Transport Authorities are analysed separately with the help of relevant Statistical Tools.

The Sixth Chapter presents a brief Summary of the Research Findings and the suggestions for improving the Bus Transport System in the district followed by suggested areas for further Research and a formal conclusion.