CHAPTER THREE
A STUDY OF RELATED LITERATURE
CONTENTS

3.1. Need

3.2. Source of Information : Primary and Secondary

3.3. Survey of Different Aspects or Salient Features.

3.4. Conclusive Aspects
CHAPTER PLAN: THREE

3.1. NEED

3.2. SOURCES

PERIODICALS

NEWSPAPERS & MAGAZINES

RESEARCH ABSTRACT

BOOKS

RELATED LITERATURE

JOURNALS

PRIMARY

SECONDARY

3.3. DIFFERENT ASPECTS OR SALIENT FEATURES

3.4. SELECTION OF THE RESEARCH PROBLEM (CONCLUSION)
3.1. **NEED**

Related Literature reflects the current trends of the research problem under investigation. Since it varies from time to time as well as place to place, research literature also varies correspondingly. Different sources emit different information-bits. So the job of the researcher is, to cull out all these information-bits for analytical study. Classification is possible during the parametric-analysis of these bits. Such a classification reflects different phases or aspects of the available literature. Studying all these aspects in a homogeneous way, justifies the selection of the research problem. Hence this chapter.

3.2. **SOURCES OF INFORMATION PRIMARY AND SECONDARY**

Generally, this related literature is taken from two sources. They are

(i) **The Primary Sources**:

Directly taken from the source by the researcher.

(ii) **The Secondary Source**:

Collected information or gathered information from T.V., Newspapers and such mass media. Sometimes contamination is seen in such sources, if the 'Subjectivity' creeps into it.
So to avoid such things, the researcher has adapted the 'Cross-checking' matrix format, wherever necessary.

3.3. **SURVEY OF DIFFERENT ASPECTS/SALIENT FEATURES**

The culled material from different sources are then analysed.

The flow of continuity of thought is also maintained through the following classification of components.

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>ASPECTS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONGESTION MANAGEMENT</td>
<td>Congestion pricing signals, traffic flow management, &amp; queue management.</td>
</tr>
<tr>
<td>2</td>
<td>EMERGING TRENDS</td>
<td>Impact, Modernisation, Political change, Privatisation, trend.</td>
</tr>
<tr>
<td>3</td>
<td>ENVIRONMENTAL AND ECOLOGICAL AWARENESS</td>
<td>Environmental profile, Politics, Protection and its impact.</td>
</tr>
<tr>
<td>4</td>
<td>FINANCIAL IMPLICATIONS</td>
<td>Fare evasion, Road Pricing, transport investment and infrastructure costing and Tolling roads.</td>
</tr>
<tr>
<td>5</td>
<td>FUEL AND ENERGY PROBLEMS</td>
<td>Carbon emission, Energy Conservation, fuel and lubricants, gasoline demand and tyre care.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>MAINTENANCE AND PREVENTIVE MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PERFORMANCE APPRAISAL</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PLANNING, POLICIES, ACTS</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>QUALITY MANAGEMENT AND TRAINING PROGRAMMES</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SAFETY MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>STRATEGY MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SYSTEM ANALYSIS: DATA COMMUNICATION AND TECHNOLOGICAL UPGRADE</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>TRAVEL DEMAND MANAGEMENT</td>
<td></td>
</tr>
</tbody>
</table>

Quality Road planning and speed management.
Measurement of quality of service.

Business planning, deregulations and regional development, Government transport policies, and New economic policy.

Employee's participation in management, their training and motivation, driving skill and Total quality management.

Rates and Patterns of injuries, risk management and road safety audit.

Fleet assignment, global strategies, leadership, styles, organisational structure and strategic thinking & planning.

Information system and use of computer in the vehicle.

Switching behaviour of commuters and travel analysis.
ASPECT: ONE

CONGESTION MANAGEMENT

A working paper on the Bombay city's traffic status, prepared by W.S. Atkins and Co. in 1993 reveals that a whopping 5338 (approx) vehicles passed through the 'Traffic Circular Chowks' (Junctions) every peak hour at an average speed of 30 km/h causing a chaos of jostling bumpers, honking horns, traffic jams, hoards of commuters and pedestrians vie for every inch of space available on the pavements and sidewalks.

Factors of traffic and operations managements are discussed by some of the researchers as follows:

1. The new models were developed by converting the block and unblock periods in traditional gap-acceptance modelling to effective red and green periods by analogy to traffic signal operations. This enabled the modelling of performance statistics (delay, queue length proportion queue and queue move-up rate) in a manner consistent with models for signalised intersections.

2. The scheme to reduce car traffic in the city of Amsterdam has its impact on the city's economy and on environmental qualities.

3. Three broad traffic congestion strategies are transportation supply additions, traffic demand management and land-use strategies mitigate congestion problem.

4. In Australia, 83% of all vehicle kilometre travelled (VKT) is by passenger cars and 25% of car VKT is for journeys to/from work, car commuting therefore constitutes only about 21% of all road travel demand. A small reduction in road demand can substantially reduce congestion delay and other social costs including delays, vehicle operating cost, accident, noise and air pollution costs.


5. Management systems pertain to pavements, bridges, safety, congestion, intermodal transportation facilities and systems and public transportation facilities and equipment may significantly influence how tens, if not hundreds, of billions of dollars will be spend over the next several decades.

6. An integrated and co-ordinated prolonged approach is necessary to tackle the problem of increasing traffic congestion involves developing comprehensive traffic management of existing arterial roads and area traffic management schemes (LATMs) as well as encouraging the use of public transport.

7. To test the effectiveness of 'congestion pricing in an urban area, a new toll road being planned for Orange County, California. It is proposed that instead of changing flat rate tolls,

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the transportation agency could charge peak and off-peak toll.

8. Congestion pricing schemes continued to face formidable political barriers. Once the idea of differential pricing has been tested and accepted in the framework of new private toll roads, the way may be opened for wider schemes.

9. Congestion pricing is back on the transport policy agenda. Most transport economists have along favored road congestion pricing and their case seems to be growing stronger. The use of an economic model of a congested road network in a stationary state to investigate objections to road congestion pricing was developed.

10. The lot of projects, types of construction methods, statistics regarding the commuters, the speed and safety measures adopted and the cleanliness,

pollution-free atmosphere are essential aspects of Mass Rapid Transit System (MRTS).

11. Transportation planning today has to deal with the one of the hottest topic of congestion Management. Congestion Management Programme (CMP) formed a part of the transportation legislation of California legislature in 1989 & 1990. Its intent is to reduce congestion through a combination of transportation movements, land-use planning, trip-reduction programme (travel demand management - TDM) and transit service improvements. Significant aspect of CMP is to force local jurisdiction to integrate land-use and transportation decision making processes.

12. For park and ride to be successful 'package' policy will need to be strengthened to favour conventional public transport and that particular care will need to be taken by other local authorities adopting park and ride.

13. The amount of car traffic generated by a parking space depends on parking duration and parking turnover as well as on search traffic. Policy is discussed in this paper as a part of strategies to reduce car traffic.

14. Some councils have decided to formalise parking policies in an attempt to improve planning decision making and outcomes consistent with broader municipal objectives. The Researcher shows how parking policy can affect land use and the economics of development. It also discusses parking 'limitation' policies and their effects, using 'shared' parking and schemes for provision of additional parking.

15. Efforts are being made to change traffic management in such locations, to slow traffic and better manage the inherent conflict between traffic and pedestrian.

16. In an analysis of whether to replace STOP signal by YIELD signs, the value of a life lost aggregated at $15,00,000 and the value of time per hour. These numbers simply that when traffic delays accumulated by many is equal in duration to the average lost life in fatal crash (37.3 years) the delay is higher than the cost of average lost life.

17. Dynamic computerised urban traffic control system in Singapore called the GLIDE system locally has three main functions. These are the allocation of the maximum green-time to each of the approaches at a function according to the volume of traffic on each of these approaches; the provision of linking for adjacent traffic signals and the ability to monitor the

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status of the traffic signals in the system centrally.

18. On the basis of the growth expected in economic and the changes under way in the countries of Easter Europe, it would seem highly likely that road traffic will increase at a far more rapid pace than the overall capacity of the transport infrastructure available and therefore, be conducive to much more congestion.

19. Excess travel, fuel consumption, air pollution, vehicle guidance and control, the risk of a traffic accident area factors of efficient traffic management of congestion.

20. It is generally accepted that the problem of Urban traffic congestion has now reached such proportions that it is no longer merely a nuisance, it is becoming a threat to the economic viability of urban centres.

TRANSPORT is undoubtedly one of the most vital sectors in the development of an economy. The direct relationship between transport and economic development becomes obvious when we compare the state of transport in developed and developing economies.

There are billions of people employed in the transport system in the world. In India there are 20 billion persons (2 crores) involved in the sphere of transport. Their aims, approaches, theories and implementation differs. But they are not under one roof theoretically. If they start to receive the real know-how and what's taking place in other area of transport from their counter parts it will be a great boon for everybody and much beneficial to the nation.

The entry of the private sector in the field of transport to help the government out is expected in the immediate future to halt the constant deterioration of transport sector.

The issues like privatisation, modernisation, liberalisation of transport are discussed below.
A. IMPACT

1. The reasons for mismanagement of development are embedded in the socio economic process. In the end people as individuals manage or mismanage developmental processes. Their learning of management comes from their ability to manage themselves in their various roles.

2. With foreign competitors invading domestic markets, firm must aggressively identify 'windows of opportunity' and then institute programmes to achieve continuous improvement, creativity and innovation to enhance their competitive position.

3. The demographic variables such as qualifications, age, sex, experience and designation had small and statistically non-significant correlations with interpersonal trust in an organisation.

4. Continuous improvement or 'Kaizen' is acclaimed as a reason for the success of Japan. It is a strategy of making small improvements across the organisation, paving the way for overall development. While initiating this, organisations need a 'focus' so that their efforts do not get dissipated.

5. In 1989, after 11 years of applying public transport deregulation policy number of vehicles had doubled (at the same time reducing the transport capacity per vehicle) the fares more than doubled in real terms, the cartel of operators strengthened, the external effects were increase (traffic congestion, pollution and accidents) and to the contemporary view of the population in relation to public transport that become totally negative.


B. MODERNISATION

6. The kind of 'modernist' thinking that produced the urban freeway with its grandiosity, its simplicity in the midst of complexity, its neglect of the social and environmental, its machismo, is now easily parodied by commentators paradigms are widely used in this new thinking.

7. We are still at the beginning of an era which electronics, computers, communications will be increasingly support to our transport systems. New applications which are known as Road Transport Information Advanced Transport Telematics and Intelligence vehicle Highway Systems (IVHS) are novice to the Indians.

C. POLITICAL CHANGE

8. The nature of political regimes is important both for the likely intensity of environmental policy and for the types of policy instruments that are favoured. Even within democracies, however, there is a


tendency to favour command and control instruments over fiscal policies and the reasons behind this are examined.

9. The implications for urban-rural interaction in developing countries of the increasing trend towards the creation of vast megalopolitan urban systems and of recent political changes in the world order are studied by some agencies.

10. In only three years, ridership on public transport, fell by almost 50% and auto registrations per 1,000 population rose by almost 60%. The massive shift from public transport to the auto has caused due to the economic and political reunification of Germany and created severe problems of pollution, safety, equity and congestion. Urban transport policy in Eastern Germany should adopt strategies Auto free zones, traffic calming, parking restriction and vehicle emission standards used for years in Western Germany.

D. PRIVATISATION

11. The private sector sometimes may be able to build facilities faster and operate them at lower cost, financial considerations are not the only barrier to the provision of infrastructure.

12. Privatised utilities subject to price cap regulation will have inadequate incentive to invest comparison of the likely social costs of under investment and overinvestment suggest that the former will generally be higher in some cases significantly so, under existing regulatory mechanisms.

13. The 'Magna Carta' of the state transport undertakings (STUs) is the Road Transport Corporation Act, 1950 (RTC Act) and the Motor Vehicle Act (MV Act) when RTC Act came into force in 1950, India had just become a Republic. The passenger transport industry was in its infancy. Today more

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than 3,00,000 buses operate in the country of which over 1,00,000 belong to STUs. The changing Socio-economic environment is to be considered to understand why the future of STUs is so hotly debated today.

14. It is concluded that in restructuring and privatising the trucking industry, the key strategic elements are (a) breaking up monopolies and (b) entry of new operators, to provide the stimulus to reform. In the bus industry, reform will be slower and attention must be paid initially to fares reform and establishing existing enterprises as autonomous corporations.

15. While focussing on liberalisation as policy description to bring about macro-economic equilibrium in LDC's causations against blanket adherence thereto in view of varying economic environment and needs (Particularly to efficiency and accountability) among LDC's, one can suggest the adoption of a


balanced approach based on proper analysis of available policy options keeping in view the long term interest.

16. Privatisation has attracted considerable attention recently and reflects a world-wide interest in reduction of the state's role in the national economies and at the same time enhancing the role of private sector either by private ownership or by introducing market and competitive forces in state operations. The global economic scenario is also undergoing dynamic changes and privatisation is being increasing resorted to as the panacea for the malaise in developing countries.

E. TREND

17. Customer-oriented mission could be a valuable source of inspiration.


18. Behavioural and institutional changes have complicated the land use/transportation interaction, leaving urban spatial policy in despair.

19. Knowledge based specific applications in the transport environment give the user some support in maintaining greater consistency in his (her) decisions.

20. The problems like congestion, pollution etc can not be solved by simply increasing transport supply, demand management is both desirable and necessary because of the complexities of city structure an integrated systems approach to travel demand management provides the best opportunity to develop equitable, efficient and sustainable urban transport systems. Our cities can be developed in a more ecologically sustainable way whilst retaining features which contribute positively to city living.


The ecological and environmental effects of vehicular traffic have not been given enough attention to date. Recently the continuing threat of unchecked automotive emission of toxic gases and fumes is considered the most significant source of air pollution in urban environment. The rapid growth of road traffic in the Greater Bombay has adverse impact on noise level, public health, government expenditure and the quality of life of the citizens.

The "Hindu", dated April 27, 1995 rightly mentions the World Bank's remarks on the defects of the three Es - Engineering, Education and Enforcement of our roads/highways.

All these 3 Es are fully discussed by some research agencies/researchers, as:

1. The selection and evaluation of road schemes through the Leitch framework is based on a combination of cost-benefit analysis and environmental impact assessment.

2. The managerial problems are closely associated with the factors that affect the urban environment. The status of the environment in the urban region, the interaction between urban development and the environment and the institutional setting for environmental management are essential items for research study.

3. The current approaches to environmental situation are grossly inadequate.

4. Community policies associated with both environment and transport could be classified and the relevant directives or other legislation could be incorporated under different headings. The effort to formulate a comprehensive economic policies has made considerable progress, a lot has yet to be done in order to clarify where the goals for transport improvements with

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simultaneous environmental protection are conflicting or where there is simply no provision or action foreseen.

5. One researcher concluded that Australian Road Research Board (ARRB) should consider the adoption of research strategy which includes an expansion of its environmental expertise, sponsorship of immediate research tasks and the development of a strategic process for selecting longer terms research tasks.

6. Components of road assignment, emissions modelling and estimation of pollutant concentrations requires representation of network, time, fleet mix and trip-end emission dispersion modelling, within the framework of a Geographic Information System (GIS).

7. The interactions between technology, transport and environment describes the different types of environmental impact of transport on global and local pollution, quality of life aspects and resource utilisation.

8. Environmental Approval should be done by an independent state board endowed with the mission of franchising highways.

9. Road traffic accounts for about one fifth of fossil energy consumption worldwide. It is one of the major causes of global environmental pollution and contributes significantly to the greenhouse effects.


10. Congestion-priced toll tunnels will
(1) be self-financing via user charges
(2) operate in a low-emission, constant
speed mode (rather than in a stop-and-go
manner) and divert significant traffic off
existing urban freeways and streets,
reduced noise and street level emissions.

ASPECT : FOUR

FINANCIAL IMPLICATIONS

The development of road transport can take
place in a country only when road
administration is efficient and roads are
adequately financed. Roads are of basic
necessity. Therefore, their provision and
maintenance is considered the prime
responsibility of every civilized society. The
funds should be carefully invested in roads so
as to yield maximum advantage to the society

10. Robert W. Poole, Jr. Yuzo Suglmoto, Congestion
Relief Toll Tunnels, Transportation Quarterly,
with a minimum of waste. There are three aspects of road financing viz., items of expenditure requiring finance like construction and maintenance, state responsibility of road financing and sources of road financing. Such financial implications need a critical review as:

1. Transport network should be co-related with the traffic demand.

2. It is demonstrated that the level of service of public transport is correlated with the population income distribution in a way that those better off, who are mostly located in the city's centre, are provided a better service, both in quantitative and in qualitative terms, while those in lower income categories, who are mainly concentrated in peripheral areas are provided a much poorer service.


3. The hedonic cross-sectional regression method has been a rich source of information on the price of urban amenities and disamenities generated by transport facilities. Not withstanding the problems of measurement, the hedonic regression method is a rewarding avenue of exploration as to the external effects of transport works.

4. The state highway assets in New Zealand of 10,000 kms of state highways has replacement value of $ 9.4 billion. Replacement based on annual depression expenditure should be $ 116 million while the current level of expenditure is only $ 10 million. This gap in funding has been filled in by the transit New Zealand (TNZ) in preventive maintenance programmes.

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5. Manufacturers have been concentrating on quality of incoming materials and outgoing products, but they have not been paying as much attention to the cost associated with transporting and storing them.

6. A perspective on the allocation of transport investments by public authorities is offered, whereby politicians and political parties allocate public investment specially in such a way as to gain electoral support from localities so benefited.

7. A model which shows analytically the impact of changes in accessibility caused by the structure expansion, on location and output decisions and on the use of labour by production firms is developed.


8. The 1991 Intermodal surface transportation efficiency Act (ISTEA) will eliminate some of the current restraints on congestion pricing and toll highways.

9. Electronic toll collection (ETC) offers the opportunity for toll facility operators to supply a substantially greater amount of traffic capacity than any other currently available form of toll collection.

10. The 'double taxation' argument against tolling also complicates matters but can be handled by reference to the economies of the operation resulting from toll roads.

11. Fare evasion is a phenomenon that is inherent in virtually any public transport system.

12. The recent developments in eastern Europe and the anticipated growth of the post-communist states will put further strains on the fiscal ability of authorities in these countries to fund transport investments.

13. Australian rail transport is well placed to acquire a significant share of land transport for freight movements.

14. A more comprehensive strategic assessments of future transport infrastructure requirements are the need of the hour.


15. Public sector undertakings such as State Transport Undertakings (STUs) are particularly suffering from the dichotomy of competing claims. While social responsibilities were being imposed on these undertakings, both in the legislature and elsewhere, they were also being subjected to trenchant criticism for accumulated losses.

16. The road sector is however, not getting the allocation of funds to the desired extent. This has adversely affected the modernisation of the existing highway system and its expansion.

17. Road pricing in fact should lead to improvement in road conditions, reduction in congestion, better parking facilities and a quicker and efficient public transport system.

As a consequence of a public transit firm contracting out a paratransit service to a private provider, the firm may be able to provide the same level of mass transit service but at a lower cost.

ASPECT: FIVE

FUEL AND ENERGY PROBLEMS

There is a case for the condition of roads being improved through preventive maintenance and resource constraints should not be allowed to impede steps in this direction in the interest of fuel economy. It is well known that because of poor maintenance of roads, trucks have to travel at sub-optimal speeds. Even on highways, the flow of traffic is impeded, leading to a waste of fuel. As of how, the state governments are only interested in the revenue yield from road transport and do almost nothing for its orderly development by way of improving the condition of roads.

These 'fuel problems' have different dimensions, which are discussed below.

1. Multi-leaf steel springs are produced from carbon alloy spring steels to the grade and properties specified in the international standards as SAE-HS-7889 etc. to absorb, store & release energy during the operation of the vehicle. The standard recommended fatigue life of the leaf spring is minimum 10,00,000 cycle and should open at the designed load stress levels in the need of 600 - 750 MPa for passenger cars and 350 - 550 MPa for heavy commercial vehicles.

2. Energy services (e.g. lighting, refrigeration, motive power, transport) are essential for fueling economic growth and improving the quality of life in all countries. But the cost of meeting the rising demand for these services by increasing the energy supply is quite high. Large percentages of export earnings are also spent on imported oil and serving energy - debt.

3. Management of technology encompasses many aspects generation of technology its dissemination and absorption, acquisition and formal transfer, innovation etc. In all these phases, standardisation plays a vital role.

4. Two blended binders wire manufactured by air blowing 180 % penetration grade bitumen plus 1 and 20 WODB to 80/100 grade. These binders were found to have the desirable property of being less temperature sensitive than converter 80/100 bitumen at low temperatures but it has similar susceptibility in the 70 - 135°C return.

5. Aspect such as legislation, subsidies, tax reduction financial incentives and advice system and those which involve introduction of technologies in industrial fields such as rationalisation of combustion, rationalization of heating/cooling, prevention of radiation heat loss, waste heat

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recovery, prevention of conversion loss from electricity to power and heat are essential for energy conservation.

6. The Italian transport system is based on the dominance of the mode which has the highest energy consumption: that of road transport.

7. Fourier transform Infrared (FTIR) spectroscopy has been used to monitor the chemical composition of lubrication oils. Moreover, the degree of additive depletion can be measured as a reliable indicator of the overall quality of the oil.


8. There are different methods of reducing the fuel consumption during first few minutes of an engine cold start. Most of the methods focus on improving the fuel droplet vaporisation rate in the induction manifold through the addition of heat. The head energy is derived from a variety of sources (engine coolant, exhaust, electrical) each having its own response time.

9. Policy options in the large Australian city context for reducing greenhouse emissions from vehicular transport are evaluated. The evaluation is made in the context of widespread public perception of the external diseconomies of urban transport. Mainly two proposed technical solutions are considered in the research increasing vehicular fuel efficiency and switching to natural gas based fuels.


10. To control emission in order to improve air quality and to increase fuel economy in order to reduce oil consumption have always been considered separately in the U.S. Typically when analysis estimate how high fuel economy standards should be, they compare the extra costs of efficiency-improving technology (including perhaps such things as reduced safety and performance) with the benefits of reduced fuel consumption. Such cost-benefit analyses have indicated an 'optimal' level of fuel economy where benefits balance costs of between 30 to 40 mpg.

11. As per the latest statistics available as on 31-12-1991 state transport undertakings (STUs) together spent Rs. 335 Crore annually on tyres and tubes. Riding comforts, Noise levels and Mileage requirements should be given priority together with safety aspects.

12. In India, nearly 30 % of the total commercial energy is being consumed by the


Transport Sector of this, about 78 percent is accounted for by Road Transport which is totally dependent on petroleum products while total consumption of petroleum products is expected to double to more than 100 million tonnes by 2001 from 50 million tonnes in 1990-91, Road traffic is expected to rise by about three times during the same period, freight demand from 295 btkm to 800 btkm and passenger transport from 1200 btkm to 3000 btkm.

13. Gasoline demand elasticities in the OECD are analysed using various models. The elasticities from the preferred model, the lagged indigenous, are used to forecast gasoline consumption and carbon emissions under various assumptions about gasoline price and tax policy. The results show that if the whole OECD had taxes as high as in Italy, omissions could be reduced by more than 30% in the year in the year 2000 instead of increasing by almost 50% if taxes remained unchanged.

14. The principal compounds which are present in motor oils designed for today's engines include ashless dispersants, metallic detergents, acidation, inhibitors, rust inhibitors, antiwear additives and oil soluble polymers.

15. The tyre as it is the last link between the road and vehicle. It shoulders the load and the economy of the Industry is very much dependent in the service the tyre gives.

16. Increase in real fuel prices would lead to a short run reduction in both traffic and consumption, due to more careful driving and differential responses for different journeys, in the long run the effects would be increased.

MAINTENANCE AND PREVENTIVE MANAGEMENT

Maintenance has been, more or less neglected in the past in all forms of transport. For the road sector, again not merely maintenance practices are obsolete but also the necessary financial provisions have been wanting. All this has resulted in tremendous avoidable costs in terms of energy consumed and of repair and maintenance of vehicles etc. It is necessary, at the same time, to bring in use improved materials and tools for maintenance and arrange for the necessary training of staff at all levels.

1. Widening of national highways, upgradation of state highways and major district roads, and new roadlinks are the major issues in improving the traffic flow on the existing road network.

2. Automated Highway System hold the promise of being able to increase the highway capacity many fold, by enabling vehicles to operate in close — formation platoons on the highway.

1. Dr. N.Srinivasan, Dr.V.Ramesh, T.Satyamurty, D. Robinson and T. Ramakrishnan, District Level Planning of PWD Road Network — Palghat, Indian Highways, 20(3), March 1992, pp. 31-42.

3. The use of evaluation of traffic management strategies information with an eye maintaining a cost effective mix of strategies and planning future traffic management programmes are discussed by some researchers.

4. The toll payable should not exceed the benefits of the road user. Toll concessionaires involved two distinct operations construction & operation. This system is now being pursued by many European Countries.

5. A recent study identified only $550 million of potential benefits or less than 1% of all resources used in the road sector, despite congestion cost estimates of nearly $4 billion in Sydney and Melbourne. Due to a more focus given on pricing policies and neglect of investment effect.


6. Maintenance is one of the most important functional activities of a transport organisation. The state Road Transport undertakings are following good maintenance practices which reaped benefits of extended lives and have improved their operational effects.

7. The use of Quality Management System (QMS) emphasised in heavy road vehicle operation becomes one of preventing rather than detecting non-compliance to road regulations.

8. A number of examples of road building in different urban areas of Britain, Germany and Sweden were examined to see whether these schemes met their stated objectives with particular attention to re-distributing traffic and relieving traffic congestion.


9. There is not a strong relationship between speed and path radius, but the friction demand does tend to increase as speed increases.

10. Intersection delay is a significant component of traffic delays. Root mean square error of the prediction was found to decrease marginally with increase in the level of detail with which delays at intersections are modeled.

11. Criteria and procedures for determining the advisory speed for curves on roads vary considerably from country to country and thus the derived advisory speed.


12. As road roughness increases, users are prepare to drive further to take advantage of a smoother alternative route. Thus the road user's perceptions of ride quality and an objectives have changed during last few years.

13. Local Areas Traffic Management (LATM) schemes have been implemented in Australia and Opinion surveys have shown that motorists feel disadvantaged by speed control measures such as speed humps. Hence, some devices have had to be removed even because of complaints from local residents.

14. Pavement maintenance management system (PMMS) studies are required in order to programme the investments on pavements a selected road network so as to achieve optimal results.


ASPECT: SEVEN

PERFORMANCE APPRAISAL

Under modern democratic managerial style, employees are themselves required to appraise or evaluate their performance that is through self-appraisal studies and the manager or leaden is merely a guide or his advisor enabling the employee to rate his merits. Hence, merit rating by the superior is how replaced by self-appraisal studies. ‘Management by objective’ (MBO) is the best device for employee appraisal.

These have some of their reflections in the following research findings.

1. Indices which collapse attributes of quality of service into a single abstract value appear to have limited appeal. Existing methods based on passengers waiting times, lost mileage, expanded sets of measures and indices are to be reviewed. Both relevant performance measures and psychometric measures, can be selected as indicators of the defined set of quality of service attributes.

2. A set of interacting analysis models were used to evaluate alternatives in terms of potential for business expansion, new business attraction, and tourism, as well as auto passenger user benefits.

3. Polyniminal time algorithms are used to solve the mean-variance location problems. The solutions produced by these algorithms are compare to optimum solutions.

4. Human efforts to Human Resource Performance have been restricted to general measures of limited value and sophisticated measures. As a result, adjustments in human resource policies and practices tend to be based on intuition rather than methodical assessment.

5. One major problem is the lack of a unique standard method and it is argued that several tools should be used in a

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practical evaluation of large-scale investments in the transportation system.

6. The performance of many areas of Australian Road transport is still below best practices observed in other countries. Road transport represents a shining beacon compared to other areas of Australian transport.

ASPECT: EIGHT

PLANNING, POLICIES, ACTS AND OTHER SAFETY MEASURES

Services such as roads, railways etc. come under the purview of the Consumer Protection Act and mishaps caused due to their faulty maintenance should be questioned by the user. The transportation system in the country on the


whole still remains deficient in several respects and there is no in-built assurance that transport capacities will be always available in step with the economic development in the country. However, efforts have already been initiated to prepare a perspective transportation plan on an integrated basis, with a view to absorb emerging technologies and improve productivity, efficiency and safety of the services. Now what is needed is more liberalised, balanced and stable policy regime. A few studies throw new light on these areas of investigation.

1. A taxonomy of Planning should be based on level of application, purpose and the configuration.

2. The New Economic Policy (NEP) spells out a package of informatory measures in respect of public Enterprises (PEs).

3. German transport policy would tackle challenges of the transport of the future with the aid of five strategies: (a) the integration of the individual modes of transport (b) the exploitation of the possibilities offered by modern technology (c) investments in the construction of new traffic routes and the improvement of existing ones (d) the consistent utilisation of the forces of the market in the transport sector, and (e) the protection of the environment and the enhancement of road.

4. The New Economic Policy in India enunciated by the Government since the middle of 1991, has serious implications for both quantity and quality of employment with respect to Road Transport System.

5. Strategic business planning plays an increasingly important role in the global economic market. It is a subset of artificial intelligence—expert or knowledge based systems. The use of expert systems in strategic planning may be one of the few viable alternatives to forced restructuring for large enterprises.

6. In India, the three main factors, namely, the management the Trade Unions and the State have been playing a key role in determining the employment relationships, the rules governing their relationships and other aspects of Industrial Relations.


Planning of Productivity is normally understood at micro level phenomenon, something to be achieved by the Managers through techno managerial decisions. This is true in case of Asian region, particularly from the republic of Korea, Republic of China, Singapore, Hongkong and India.

The Transport Act, 1985 allowed on the road competition between bus services after 50 years of protection through road services licensing. However, the status of regulations in control Bus Industry in United Kingdom since 1980 and the impact of deregulation during the period of 1985 to 1990 mainly on fares, costs and subsidies, operations, patronage on the bus industry in terms of managerial policies.


9. Some of the initiatives which have been introduced to deregulate the transport system in New Zealand include a 'user pays' charge system for operators of heavy vehicles, corporatisation of the railways and other transport enterprises, reviews of the school bus, passenger bus and taxi industries, reforms to transport legislation, the establishment of Transit New Zealand and changes to the road freight industry.

10. Melbourne has recently emerged as a world leader in traditional neighbourhood design. It has been argued that the land use planners continue their long-established approach of discouraging public transport use through declining service quality and expanding the road network.

11. In June 1991 the Road and Traffic Authority (RTA) of New South Wales published the findings of a study entitled

road transport future Directions. They developed a process which offers advantages over traditional road planning techniques for road authorities and other transport agencies involved in strategic planning.

12. Demand-following and supply-leading transport policy and economic growth and regional development are inter-linked, especially with changing spatial patterns of transport systems and traffic flows in particular.


ASPECT : NINE

QUALITY MANAGEMENT AND TRAINING PROGRAMMES

Quality is the result of a management policy to turn out a Zero-defect product or service. It is not something special that provides a marketing advantage, but a uniform that a Company wears to be able to play in the market. It is a choice that a management makes.

This is partly sums up the message of 'Quality Revolution Training Programme', which is highlighted below through the following research findings.

1. An organising framework for conceptualising training research attempts to bridge the gap between 'training', 'theory' and 'practice'.

2. Employee participation is only meaningful when management directs and channels the thoughts and energies into areas that account for productivity.


3. An important surge has emerged in recent years in quality management. The Quality Process Analysis (QPA) approach strengthens the capacity of the management to implement quality strategies to achieve organisational objectives.

4. The training needs in context to Public Sector Enterprise, to overcome weaknesses, to increase productivity, efficiency, etc. At the different levels individual/occupational/organisational are all to be taken into consideration for management training.

5. Major, multi-national corporations around the world have adopted Total Quality Management (TQM) as a driving force in the global market place.

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6. A Multiple Skill Test (MST) introduced in different organisations yielded better motivation in terms of annual increment.

7. Strategic leadership has to be focused more on the management style and on the marketing prowess.

8. Total Quality Management (TQM) draws lessons for future research and application and challenges.

9. During this micro-sleep surge, exist for a few seconds at a time, drivers, not always be aware that they have lost consciousness briefly. When drivers lose consciousness and fall asleep it presents results of recent research on that increase the Severity of this and reviews its frequency of occurrence in traffic accidents.


10. Factors associated with performance in the driving test include driver's attitudes and the development of driving skill.

11. Elderly drivers make up a high-risk group in traffic safety management.

12. While it is known that drivers as a group rate their skills as better than the average, the mechanism underlying this illusion is unclear. It is possible, for example, that it is due either to a "Positive Self" or "negative others" bias. A test of these alternative hypothesis discussed as it is revealed that judgments are consistent with a "positive-self" bias.

13. The number of drinks that would have resulted in the rater having blood alcohol concentrations (BACs) of 0.3 %, 0.10 % and


0.15 % and established that there is a close link between ‘driving’ and ‘drinking’.

**ASPECT: TEN**

**SAFETY MANAGEMENT**

Quoting the data available from all the metropolitan cities on traffic enforcement, the Department of Environment and Road Traffic Safety in the Central Road Research Institute, New Delhi, dated Feb. 27, 1993 said that at present the emphasis was given on issuing only licences on large scale. Adequate attention was not paid to persuade road users to comply with traffic laws and also moving violations like abrupt lane changing, overspeeding, jumping red lights as well as loading, vehicle condition, driving licence, alcoholism of driver, corruption and such things.

All these aspects are fully dealt in various research abstracts, which are discussed below.

1. Injury rates per 10,000 persons in the population were highest for those persons

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aged 5 to 24 years and were considerably higher for males than for female. Injury rates per 1,00,000 kilometers travelled were similar for males and females and were highest for persons over 65 years of age. Police reports of bicyclist causalities arose primarily from bicycle - motor vehicle collisions were lower on weekends than week days were highest in the late afternoon and about half were the result of collisions at intersections.

2. The assessment of the effectiveness of engineering measures in reducing accidents at a site requires a comparison of the observed accident frequency at the site in the period after treatment with the expected accident frequency had no treatment taken place.


Transport planners and road safety objects can use the Graphic information system (GIS) effectively to analyse the trends and profiles with greater ease and correlation of accidents.

Death rates were calculated for each specific category of motor vehicle injury for each state and were then managed to determine patterns of geographic variation. In general, noon-traffic pedestrian death rates and death rates for crashes involving light trucks and/or rollovers were higher in the west and rates of pedestrian deaths in traffic were highest in the south.

Statistical relationships between accidents and traffic flow for roads with different types of carriage way and adjacent Land use have many useful applications in the field of highway and traffic engineering.

6. Many Potentially reportable road accidents are not reported to the police and therefore do not appear in official statistics.

7. The probability of a pedestrian fatality is 5% at 20 mile/h, rising to 37% at 30 mile/h and 83% at 45 mile/h. This is clearly crucial in urban areas with speed limits currently set at 30 to 40 mile/h. A reduction in motor traffic speed to 20 mile/h would not only reduce the levels of pedestrian injuries sustained in collisions, but also give both parties a better chance of avoiding the collision in the first place. Each year around 2,25,000 people are reported injured in road accidents in urban areas of Great Britain.

8. The greater emphasis now placed on rehabilitation of existing highways rather than the construction of new highways has resulted in more work zones and greater

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accident exposure. The primary means to help avoid traffic accidents at work zones is suitable traffic control devices.

9. Alarming increase in the number of road accidents force to take up studies to probe into the causes of accidents. One such study was conducted in the state of Illinois for accidents that occurred for more than a year (1988-89).

10. Most road authorities have active 'blackspot' programmes concerned with accident reduction. Accident prevention—via road safety audit is now beginning to gain interest throughout Australia.

11. Road safety is a complex issue. To arrive at satisfactory solutions, it is essential to have thorough knowledge of the underlying facts, road safety engineering, these basic facts include accident, highway and traffic data. Including such


data it is possible to investigate the underlying principles relating to the occurrence of various types of accidents and to develop standards which incorporate safety measure into the design of roads.

12. Mathematical relationship were developed between road accidents within the frontage distance of the town, and town planning, traffic, and road geometry variables. The results indicated that town population, distance from the town to the road, distribution of the town around the road and school location had significant effects on the pedestrian accident density.


The relationship between traffic volumes and traffic safety (based on fatality rates) is applied to New Zealand and Australian data to compare these countries' development in traffic safety to other countries.

14. 'Road user fault' is the major contributors factor for the high incidence of road accident, in a developing country like India in particular.

15. The vehicle crashworthiness ratings were normalised for the driver sex and speed limit at the crash location, the two factors found to be strongly related to injury risk and/or severity and to vary substantially across makes and models of Australian crash-involved cars.


16. The epidemiology of occupant injuries for those involved in passenger car crashes indicate that there is scope for further improvements in occupant protection.

17. Recent studies in epidemiology and physiology of exercise indicate that moderate amounts of non-athletic walking or cycling can have a significant, positive impact on fitness and health on the drivers of transport.

18. Traffic accidents are generated the loss of life, damages and grievance to the public from 1987 to 1989, the figure of accident involving vehicles in Hong Kong is well above 25,000 per annum and the total accidents account for over 4000. In order to minimise the occurrence of accidents and to improve the road safety, Hong Kong government has put great effort to eliminate factors like to cause traffic accidents.

19. Traffic congestion, emerging technology and the increasing age of the driving population these trends may bring impact on future safety.

20. Two examples show how crosswalk laws are hazardous and uneconomical solutions to driver/pedestrian conflicts. The walk alert programme teaches pedestrians how to protect themselves by abstaining from their legal right. Anti jay walking laws do not assure safety the best location to cross a street is at a refuge in midblock.

21. Most of the U.K. Bus companies have implemented the computer-based programme giving statistical analysis of accidents and helping management to cut costs and avoid the risks.


The modern concept of Management involves manifold responsibilities. It is the Management that has to satisfy diverse business requirements. Even today profit-motive is the prime-mover of all business activities. Every transport firm must have concrete scheme whereby resources and advantages are managed in order to surprise and surpass competitors or to exploit opportunities.

A time therefore has come to have a comprehensive strategy having sustainable competitive advantage to tackle all managemental problems of transport industry. Different facets of such managemental strategies are discussed below through various research studies.

1. The international expansion of services require somewhat distinctive strategies. The factors like High fixed cost, Government regulations cause fragmentation and senior management faces the challenges of integrating service subsidiaries so that a unified strategy can be forged and implemented.

2. Without a robust measure of strategic progress, managers have no targets to aim, for no indications of resources required or the prowess being made. These measures drive the change process, because 'what gets measured gets done'.

3. Many companies in the World over recognise and indeed are participants in the accelerating pace of investment in services, numerous firms find themselves grappling with fundamental questions about whether and how to offer their services globally. Companies need motivation and appropriate strategies for globalisation.

4. Necessary changes in the organisation structure are proposed to empower junior employees to enable them to provide good service. Customer dissatisfaction leads to loss of existing and potential customers and is therefore detrimental to an

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organisation especially in a competitive environment.

5. Leaders were generally perceived by subordinates as being more directive than they think themselves to be. Subordinate's general preference was for a less directive leadership style than prevailing style.

6. Innovation life style is the history of an innovation which is defined as the ability of an organisation to conceive, develop and commercialise an idea, to realize an innovation. Sensitivity, problem solving feasibility and experimentation are the critical stages in innovative process.


7. Business strategies have to be linked to functional strategies. Time is used in conjunction with other strategies to offer a strategic mix which best suit various market segments of a Company's product portfolio. In this way companies may create a prolonged record of success and be highly focused to market needs.

8. The executive dominantly used democratic, authoritative and coaching style of leadership. There were no significant relationships between leadership styles and problem solving styles and that the field of specialisation of executives did not have any influence on their problem solving styles.

9. Strategic thinking and operational thinking are not synonymous.

10. Prevention of and response towards crises produce several important issues that management should be aware of. These

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concern the changing of the culture, communications, configuration, contingency planning, control, cost and systems, coupling and complexity of the organisation.

11. Even the institutional or social environment can be changed in a longer period of time as shown in Japan during the past hundred years. Various management tools are used in Japanese firms. They cover modern management from its philosophical, strategic level down through managemental and operational level.

12. An attempt at historiography by assessing some management styles. Management by objectives (MBO) and organisation development (OD) and their contributions towards the growth of work organisation in

the public sector, both in developing and developed countries. In the final conclusion, the role and influence of MBO and OD on current management thinking in the public sector and the extent to which cultural and economic factors had affected the growth of these techniques in a developing context is established.

13. Strategic planning activities can to, varying degrees be anticipatory or hindsight in orientation. Anticipatory activities prepare the firm for future strategic surprises and enhance the firm's effectiveness in dealing with turbulence and unpredictability in the external environment. While both sets of activities are necessary to maintain the balance between effectiveness and efficiency, a relatively greater emphasis on one set or the other is crucial under different degrees of environmental turbulence and unpredictability.


14. The successful management of technology requires the capacity to integrate functional and specialist groups for the implementation of innovations, continuous questioning of the appropriateness of the existing divisional markets, skills, for the exploration of technological opportunities and willingness to take a long view of technological accumulation within the firm.

15. There are several reasons why a firm would enter a strategic alliance. Two firms come together to give birth to an idea, a product or research that embodies the best characteristics of each parent.

16. It is argued that corporate responses to the challenges of the 90s have revolved around the problem of choice of appropriate organisation structure, the recurring issue of downsizing, the rising


importance of strategic management, the
search of appropriate responses to
emerging social phenomena and the
influence of new technology.

17. Today strategic planning is a much used
business management tool.

18. The major problems facing senior
executives is that of effecting
significant strategic change in their
organisations.

19. Previously, manager who wanted to assess
the technical functions, overall strategy
have had to content them-selves with
fragmented, piecemeal approaches.

16. Rachid Zeffane, Strategic Thinking for
organisational Structures and Management, ASCI
Journal of Management, Vol. 22, No. 2-3,

17. A.Lynn Daniel, Strategic Planning - The Role
of the Chief Executive, International Journal
of Strategic Management, Vol. 25, No. 2, 1992,
pp. 97-104.

18. Gerry Johson, Managing Strategic Change
- Strategy, Culture and Action. International
pp 28-36.

19. Paul S. Adler D. William McDonald and Fred
MacDonald, Strategic Management of Technical
pp, 19-37.
20. A gap has emerged between theory and reality in communicating corporation visions and missions.

21. Good decision making requires more than knowledge of facts, concepts and relationships, it also requires metaknowledge - an understanding of the limits of our knowledge.

22. The condition under which a saving of a few buses in the fleet is possible by inserting express and partial services in the schedule with alternative fleet assignment strategies are discussed by one researcher.

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The recent years have witnessed significant technological upgradation in the transport sector. The automotive sector in India is undergoing a major transformation. The introduction of fuel efficient, environmentally clean and modern vehicles and rapid quantitative growth are important aspects of this information. During the last few years a series of policy measures have been taken to open the industry to competitive impulse. The effects of these measures have been discussed in the following research conclusion.

1. There is a need for Artificial intelligence (AI) approach to solve semi and unstructured problems in vehicle scheduling. It describes a research collaboration between Central Institute of Road Transport (CIRT) Pune and the Centre For Development of Advanced Computing (C-DAC) in developing an expert system.

2. ALIGN-3D is a computer package to generate the horizontal and vertical alignment of a route which minimises costs while complying with the various constraints.

3. Application of a particular image analysis algorithm, IMPACTS, to the problem of incident detection in urban streets. IMPACTS was originally developed for use on motorways.

4. Information systems have become a key tool for transportation officials in government, providing accurate and timely data for decision making. Operational system, however, often do not meet this need because they have been developed for day-to-day transaction oriented tasks, whereas the information needs of senior management information systems (EMIS) can close this gap.


5. Strategic information systems planning (SISP) is a critical issue facing today’s businesses. It is process of deciding the objectives of computing for an organisation and then identifying the applications that the organisation should computerise.

6. As information processing and telecommunications technology increase in sophistication and complexity, organisations are finding it more difficult to manage their information systems (IS) for business success.

7. Automatic Incident Detection is one of the major challenges in urban freeway operations. To avoid the limitations of existing detection system a new wide-area video detection system (Autoscope) was recently developed in Minnesota and was installed in the field for rigorous around the clock testing for over two years.


8. Listening is more than the information gathering of traditional market research. Listening is establishing and building rapport with the goal of creating a different more collaborative relationship with the customer. Listeners concentrate on the key distinctions that can serve as a bridge between their world and customer's. The skilled listener becomes ever more sensitive to how a customers' past has shaped his or her view of the market and the World.

9. Motorists prefer to receive traffic information before entering the freeway as traffic information has the greatest influence on route choice and departure time and all motorists rely most on commercial radio for receipt of traffic information and find it most useful. A majority of motorists want to see highway advisory radio developed first, followed by a phone hot-line and a dedicated cable T.V. Station.

10. Duration Models are applied to estimate vehicular delay and for a fully automated motorist information system are the need of the hour.

**ASPECT: THIRTEEN**

**TRAVEL DEMAND MANAGEMENT**

The current patterns of use of transport modes in our urban areas are the result of a large number of individual decisions. These individual decisions do not result in urban-wide welfare maximisation and effective policies must be adopted to influence individual decisions on choice of transport mode. Travel at any point, in time reflects both structural and marginal effects. Structural properties reflect the location decisions and route choice decisions reflect the marginal properties of travel by the competing transport modes. Clearly these two groups of travel characteristics are interrelated; changes in the marginal

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properties may be large enough to trigger off changes in the structural properties of travel.

The short- and medium-term measures to influence the choice between different kinds of Urban transport are discussed below through several research aspects.

1. The journey to work is a product of the spatial separation of workplaces and residences and thus may result from the changing location of either of those two phenomena. Therefore, many questions related to the changing journey to work of the middle classes are remained to be answered.

2. One researcher reviews those models that they are broadly classified as suitable for assessing travel demand management (TDM) measures. These models are grouped into those for improved asset utilisation, physical restraint, pricing and urban and social changes. There has been valuable

analytical research in areas. Such as the understanding of peak spreading mechanisms, the allocation of transit lane segments to an arterial road and price elasticity analysis. Models of physical restraint have been successfully employed for traffic claiming and traditional four-step transport models for highway planning.

3. Pedestrianisation and traffic-calming schemes have their effect on retailing. There is generally a positive effect on retailing with shops inside pedestrian areas being more successful than those outside.

4. Introduction of a new mode in a metropolitan environment results in switching over of commuters of existing mode into the new mode introduced. The switching behaviour of the commuters is mainly guided by the cooperative utilities between the existing and new mode.

5. Countless commuters choose and/or follow daily some path from their origin to their destination in a transportation network. The travel times along arcs which depend on exogenous congestion are represented by functions of arrival time at the origin mode of the arc.

6. Information technology in transport and traffic demand management have increased interest in activity-based approaches for analysing travel behavior.

7. Empirical results indicate that the method of linking work and non-work travel. The more general organisation of non-work method varies with respect to household structure.

8. Transport is an essential activity of modern civilisation and affects everyone each day of their activities.

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5. Andre De Palma, Pierre Hansen & Martine Labbe, Commuters’ Paths with Penalties for Early or Late Arrival Time, Transportation Science, November 1990, pp. 276.
Communications and transport systems are more developed in countries with a high Gross domestic product (GDP). Historically, the demand for movement has increased in relationship to GDP. Constraint on this demand would only be possible if everyone was prepared to accept a different lifestyle with less opportunities for travel not very likely in this day. Transport planning is concerned with striking a balance between various demands and methods of meeting that demand.

3.4 CONCLUSIVE ASPECT

Thus the researcher has culled the research material from different sources and made an analytical study in different facets. One can identify certain common things present in all these sources:

(i) Road Transport System is an ever-growing phenomena.

(ii) The west is leading in all respect production, preservation and propogation.

(iii) Day by day problems are increasing in this transport sector.

(iv) Most of the researcher are aimed at — accidents, congestion, energy and environment.

(v) Managemental problems, as a whole, was not touched by any of the researcher so far, Greater Bombay in particular.

So the researcher feels that the selection of the problem is highly justified.