Chapter 2

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Chapter 2

Review of Literature and Research Methodology

2.1 Introduction

Transport system plays very important role in the economic development of the states as well as the nation as it integrates remote, backward and urban areas. It helps in development of agriculture, industries and even the service sector. It also helps in poverty reduction as it creates employment opportunities.

Faster roads without sacrificing the road safety and concern for environmental pollution are the most desirable improvements in highways and roads aimed by any developing country like India.

2.2 Review of Literature

Review of Literature helps to identify the concepts relating to the research topic and potential relationship between them. It also helps in appropriate analysis of data. Moreover it gives broader vision and even the secondary data to the research. Following literature is carefully reviewed and studied by the researcher.

1) The latest edition of the well known reference book ‘Indian Economy’, by Ruddar Datt and K.P.M. Sundharam was read, especially the chapters on the infrastructure in India. It helped in understanding the importance of transport, especially the road transport, for development of all the sectors in the Indian economy. It also guided to realize and understand various issues related to road transport.

2) ‘Indian Economy Since Independence’, edited by Uma Kapila includes various articles and reports on various aspects of Indian economy. Various articles from this book also helped to understand the meaning and importance of a well developed road network in India.
3) ‘Economics of Growth and Development’, by S. K. Misra and V. K. Puri is also one of the standard and well praised book which further broadened the view of the researcher in understanding the role of roads and highways and therefore the importance of the NHAI in the development of road network in India.

4) Various issues of ‘Economic Survey of Maharashtra’ for the years 1996 – 1997 onwards till 2009 – 2010 are reviewed which gave detailed and reliable information regarding the development of roads and highways in Maharashtra as well as the financial provisions made from time to time for their development.

5) Various issues of ‘India Infrastructure Report’ for the years 2000 – 2001 onwards till 2009 – 2010 helped in understanding the development of roads and highways all over India. It also helped in understanding various issues related to road transport and highway development all over India.

6) ‘Motor Transport Statistics of Maharashtra’ for various years especially for the year 2009 – 2010 compiled by Transport Commissioner Office, Maharashtra State, Mumbai gave the statistics regarding various types of vehicles registered in Maharashtra. It helped to know the Motor Vehicle Population in Maharashtra and the issue of road accidents in Maharashtra with official data.

7) ‘Accident Analysis of Selected Indian Cities / States / Corridors’, published by Centre For Road Safety, Central Institute of Road Transport, Pune 26, included various papers on corridor studies, accident investigations, accident analysis in various cities all over India. It helped to understand the importance of well developed, safe, 4-lane, divided highways with smooth surface and other required road safety features.

8) Various Reports Of Government Of India were reviewed. Some major reports are mentioned below-

   d. Ministry of Finance, Budget Speech of the Finance Minister (Various years).
e. Planning Commission, Five Year Plans.
f. Rakesh Mohan Committee Report.

Various suggestions and recommendations given by these committees for the development of roads and highways were studied.

9) ‘The Detail Project Report’ (DPR) was acquired from the NHAI by using the provisions of Right to Information (RTI) Act. It gave each and every details of the Project Highway. It was in fact the most important document giving each and every details of the Project Highway. It included information regarding land acquisition, design of the road, construction of 4-lanes, Kasara Ghat by pass, construction of road safety devices like flyovers, subways, by passes, ROBs, underpasses, service roads, speed breakers, traffic signals, signs and boards etc. Thus, each and every minute information regarding the actual makeover and improvement of the Project Road was provided. It also provided information regarding traffic studies, roadside amenities, environmental issues, mitigative measures undertaken to deal with these environmental issues during construction as well as operation phase of the road etc.

10) The ‘Concession Agreement’ was also acquired from the NHAI by using the provisions in the Right To Information (RTI) Act which helped a lot to understand the use of Build-Operate-Transfer (BOT) under Public Private Partnership (PPP) Scheme. It gave clear cut idea regarding the financing procedures and rules for the road projects by the NHAI using the PPP Scheme used in construction of the Project Highway.
11) The copy of the ‘Completion Certificate’ with respect to the Project Highway is also acquired from the NHAI (by using the RTI Act). It ensured the completion of the Project Highway with 4-laning and all other safety devices resulting in complete makeover of the Project Highway.

   b. World Development Report (various years).

   Above mentioned publications of the World Bank helped to understand the development of infrastructure especially roads and highways in various countries. It also helped to know the role of private sector in the development of roads and highways.

13) Reserve Bank of India.
   b. Bulletins.
   c. Occasional Papers.
   d. Above mentioned publications of RBI helped in getting reliable data and information related to roads and highways in India. It also helped a lot to understand various issues related to road safety and upgradation of highways in India.

14) Numbers of important books were reviewed to understand various aspects related to development of infrastructure especially roads and highways in Maharashtra and India. Some important books reviewed are as follow
   • Ahluwalia, Montek S, "Financing Private Infrastructure: Lessons from India" in Choices for Efficient Private Provision of Infrastructure in East


- ESCAP, Infrastructure Development as Key to Economic Growth and Regional Economic Cooperation, United Nations, 1994.


- Gupta, D.P., Modernizing Road Infrastructure, Paper presented at National Seminar on Road and Road Transport Policy, Indian Merchants Chamber, Mumbai, 1999.


15) Various issues of ‘Indian Journal of Transport Management’ were also referred to understand the issues related to road transport and road safety. Various case studies, articles, research papers with supportive data in these issues of the Journal helped a lot to understand the topic of the research study in a better way.

16) Following websites helped in giving the information regarding the NHAI, its projects of road development all over Maharashtra and India and various features of the Project Highway. They are :

  i. www.morth.nic.in
  ii. www.mahatranscom.in
  iii. www.mahapwd.in
  iv. www.google.com
  v. www.wikipedia.org
  vi. www.nhai.org
  vii. www.medindia.org
  viii. www.mahades.maharashtra.gov.in
2.3 Significance of the Study

A good road network is the key for the development of the economy. Since independence, there has been tremendous increase in the road traffic, both passenger and freight. This resulted in the problems like increased traffic congestion, road accidents, environmental pollution especially noise and air pollution and deterioration of the road surface. To solve these problems, construction and maintenance of well ‘Developed’ roads and highways is necessary and is of great significance.

A well ‘Developed’ road is that road:

- Which has smoother surface and better riding quality.
- Which is 4/6 lane, divided road.
- Which is longer in length and therefore has larger connectivity to various parts of the State and the Nation.
- Which saves travelling time.
- Which is a safe and less accident prone.
- Which reduces the fuel requirement of the vehicles.
- Which minimizes possible environmental pollution especially the air pollution and noise pollution.
- Which has roadside amenities at proper places and in adequate numbers.
- Which has provisions for quick help in case of accidents and breakdown of vehicles in the form of tow-away vehicles, ambulance facilities and medical facilities.

The NHAI converted number of roads and highways into such well ‘developed’ roads. The Project Road i.e. the Vadape – Gonde section of NH-3 from km 539/500 to km 440/000 which researcher has chosen for the research study is converted into a 4-lane divided road which is faster and safer and it has all above mentioned features of a ‘Developed’ road. Therefore study of this Project Highway is self explanatory of
the role of the NHAI in the ‘development’ of highways in Maharashtra as well as in India.

2.4 Objectives of the Research Study

The objectives of the research study refer to what the researcher specifically proposes to do in the course of study. The main aim of this study is to know and assess, how far the NHAI succeeded in converting the old 2-lane undivided, unsafe NH-3, into a well ‘developed’, 4-lane, divided highway and thereby understand the role of the NHAI in the ‘development’ of highways in Maharashtra and in India. The specific objectives of this research study are:

1) To study the profile of the sample respondents.

2) To know how far the National Highway Authority of India (NHAI) have succeeded in achieving the smoother surface and better riding quality on the Project Highway.

3) To study the impact of road ‘development’ measures constructed by the NHAI on saving the travelling time on the Project Highway.

4) To understand how far the Project Highway became safer, not only during the night time and rainy season but also during the day time.

5) To know how far the Project Highway saves the fuel and transportation cost.

6) To study whether the roadside amenities are provided adequately and at appropriate places along the Project Highway.

7) To understand the issue of access to the two wheelers, three wheelers, pedestrians and cattle on the Project Highway.

8) To understand the impact of the construction of the Project Highway on the flora and fauna in the project area.

9) To know the respondents’ views regarding the expenditure on the toll tax on the Project Highway.
10) To study and assess how far the NHAI succeeded in converting the old 2-lane, undivided NH-3 into a well ‘Developed’ Highway.

2.5 Hypotheses of the Research Study

The ‘hypothesis’ is a formal affirmative statement predicting a single research outcome, a tentative explanation of the relationship between two or more variables.

Highways play an integral part in everyone’s life and overall development of the nation. Therefore development of Highways is essential for development of the nation.

A ‘Developed’ Highway is a highway with smoother surface, better riding quality, reduced traffic congestion, faster and safer transportation at reduced fuel and transportation cost with minimum environmental pollution. It also means 4/6 lane, divided road with smoother surface, road safety devices and road side amenities.

On the basis of the above mentioned objectives the following hypotheses H-1 and H-2 are developed for the present study:

1) The Hypothesis H-1:

H-1: The National Highway Authority of India (NHAI) successfully ‘developed’ the 2-lane, undivided, underdeveloped NH-3 into a well developed, 4-lane, divided highway with smoother surface, better riding quality, improved with more road safety features and road side amenities, reduced traffic congestion, lesser fuel consumption and transportation cost and minimum impact on the flora and fauna and reduced environmental pollution.

The Hypothesis H-1 is divided into sub-Hypotheses H-1 (A), H-1 (B), H-1 (C), H-1 (D), H-1 (E), H-1 (F) as follow:

H-1 (A): The Project Highway is a 4-lane, divided highway with smoother surface and better riding quality.
H-1 (B): The Project Highway is safer than the old highway (NH-3) due to provision of various Road Safety features at appropriate places.

H-1 (C): The Project Highway has adequate number of road side amenities at appropriate places.

H-1 (D): The newly developed Project Highway is faster and quicker and has lesser traffic congestion.

H-1 (E): The Project Highway saves the fuel and the transportation cost.

H-1 (F): The Project Highway has minimum possible impact on the flora and fauna and lesser environmental pollution during its constructions and operation.

2) The Hypothesis H-2:

H-2: The National Highway Authority of India (NHAI) has contributed significantly and successfully in the ‘development’ of highways in Maharashtra.

2.6 Scope and Limitations of the Research Study

The study was carried out purely for academic purpose, within the framework of time limit. The scope of the study was limited only to the Vadape – Gonde section of the NH-3 from km 539/500 to km 440/000 only (It is referred as the Project Highway in this research study).

The study covers the location of the project, the time saving and road safety devices like flyovers, bridges, underpasses, ROBs, by passes, subways, speed breakers, sign boards, road markings, road signs, road delineators, traffic signals, service roads etc. The study also highlights the wayside amenities such as petrol pumps, restaurants, repair shops, toilets, parking places, telephone booths, weigh bridges, bus sheds, pick-up points etc. on the Project Highway. It also takes into account the environmental issues and mitigative measures to deal with these issues undertaken by the NHAI during construction and operation of the Project Highway.
Since the Project Highway (i.e. Vadape – Gonde Section of NH-3 from km 539/500 to km 440/000) partly passes through the Thane District and partly through the Nashik District – this was the area selected for the study. (i.e. the location of the Project Highway).

Probably an ideal effort would have been a comprehensive state wise and nationwide survey of all National Highways constructed / improved by the NHAI. But, in an individual effort such an encompassing survey did not seem feasible within the constraints of cost, time and other resources. Therefore, the scope for the study was limited only to the Vadape – Gonde section of the NH-3 from km 539/500 to km 440/000. In this study the sample of 155 respondents who are regular enough in using the Project Highway is drawn.

The survey was conducted between January 2010 and December 2010 (i.e. the entire year). During this period the questionnaires were distributed to the respondents and actual data collection was made. Six Road trips during the same period were conducted and actual observations were made to get the broad idea of the Project Highway.

2.7 Research Methodology

Research involves a planned approach to unravel the mystery or unexplained. A researcher has to plan his work in advance so as to anticipate any obstacles in the course of research. Such a plan help the researcher to take decisions relating to the sample size, the type of data to be collected, the analytical tools to be applied etc. Hence the research design could be defined as the blue print specifying every stage of action in course of research. The ‘Research Design’ is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

This study seeks to explore and investigate how far the NHAI contributed in converting the underdeveloped NH-3 into a well developed Highway. For this purpose, Questionnaires, survey of the Project Highway by making actual road-trips
and informal interviews of the officers and engineers of the NHAI were used as a source of primary data.

Even the secondary data from various sources such as reference books and journals on transport, Reports of various Government Committees, Infrastructure Reports of Maharashtra and India for number of years, etc. are used along with the documents of the NHAI especially the Concession Agreement, The Detailed Project Report (DPR), The Completion Certificate of the Project Highway etc. For getting access to these documents the researcher used the provisions in the Right to Information (RTI) Act. Various websites on internet also provided lot of information on roads and highways. The researcher used even the website of the NHAI for getting the information.

The Primary data collected through the duly filled questionnaires was studied, coded, processed, tabulated and analyzed with the help of tables and graphs.

Finally the findings from the questionnaires, actual road trips and the secondary data, specifically the data from the NHAI are analyzed and conclusions are drawn. Hypotheses are tested and suggestions are made. The researcher even stated the scope and limitations of the study.

2.8 Collection of Data

‘Data Collection’ is an important step in the research process. The researcher used the ‘Questionnaire’ method. In order to collect the data from the users of the Project Highway, the researcher personally went to the respondents and they were requested to give their responses freely. They were permitted to clarify their doubts and difficulties, if any. After the users of the Project Road (drivers, passengers, transport operators, officers of the STU, Traffic Police) filled their responses, the questionnaires were taken back. In this study, both the primary and secondary data is used to arrive at certain conclusions.
2.8.1 Collection of Primary Data

‘Primary Data’ is collected for the first time and is original in nature. During the course of data collection, the primary data was collected through direct communication with the respondents by getting the questionnaires filled from them. This data is collected during January 2010 to December 2010. Since the Gonde – Vadape Section of the NH-3 is chosen for the study, the area for collecting the primary data is part of Thane District and Part of Nashik district as this Project Highway passes through this area.

In this study the sample of 155 respondents was carefully chosen. The sample was drawn using the stratified and random sampling technique. Variety of regular users of the Project Highway such as transport operators, drivers, passengers, officers of STU, Traffic police etc. were chosen at random. The respondents using variety of vehicles like car, jeep, taxi, truck, bus, trailer, multi axle trailer, tanker, ambulance etc. were included in the population of the survey.

Apart from the collection of primary data using the Questionnaire method, six road trips of the Project Highway were conducted during the period of January 2010 to December 2011 by the researcher for the actual observation of the Project Highway.

2.8.2 Collection of Secondary Data

The ‘Secondary Data’ refers to the information or facts already collected and published. It is the data collected and reported by some source is accessed and used for the study.

The secondary data is already published data, which is available in:

1) Books, magazines, newspapers, periodicals.

2) Public records and statistics.

3) Journals.

4) Various publications of the Central and State Government.
The researcher used the secondary data from the following sources:

1) Various reference books and journals on Transport.

2) Government of India appointed various committees such as Chaturvedi Committee, Rakesh Mohan Committee etc. on Road Transport. Reports of these committees are also a very good source of information.

3) Infrastructure Reports of Maharashtra and India for various years.

4) Documents of Planning Commission for various plans.

5) Documents from the NHAI are one the most significant source of getting exact information regarding the Project Highway. The researcher by using the provisions in the RTI Act, accessed documents like the Concession Agreement, The Detail Project Report (DPR). The Completion Certificate etc. of the Project Highway.

6) Various websites on internet also provided lot of information on the roads and highways. The researcher used even the website of the NHAI for getting the information.

2.9 Data Analysis

In ‘data analysis’ the tables, frequency, percentage and diagrams are used by the researcher.

In the research process, data collected by any method is called a ‘raw data’ unless it is processed, analyzed and interpreted. The data is collected by the researcher through ‘questionnaire’ filled by the respondents from the selected research area. Every attempt has been made by the researcher to examine the data carefully. After the collection of data by the researcher, editing and coding of the data took place. Then tables, graphs, diagrams, pie charts were prepared. The computer generated output is used for analysis and interpretation. After preparing the tables, graphs, diagrams and pie charts, analysis and interpretation of data was done.
2.10 Conclusions and Suggestions

On the basis of the data collected and analyzed in terms of tables, frequency, percentage and diagrams, conclusions are drawn and summarized. Even the valuable suggestions given by the respondents and realized by the researcher on the basis of primary data and secondary data are stated.

2.11 Limitations of the Research Study

The present study has following limitations.

1) The Vadape – Gonde Section of NH-3 from km 539/500 to km 440/000 was taken for the study.

2) The survey was based on the stratified random sampling technique.

3) The survey is based on the responses of 155 respondents chosen at random found in the study area. In other words the size of population is small and consists of only 155 respondents.