Chapter - 1

Nature, Scope and Research Methodology of Thesis
Chapter - I

NATURE, SCOPE AND RESEARCH
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
METHODOLOGY OF THESIS
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

- Introduction
- Objectives
- Reference period
- Geographical area
- Research methodology :
  a) Survey of literature
  b) Experience survey
  c) Descriptive study
     i) Survey of operators
     ii) Survey of Passengers'
- Other details of methodology :
  i. Selection of vehicles for study
  ii. Interest on borrowed capital
  iii. Insurance, road taxes, licence fees, etc.
  iv. Rent paid
  v. Depreciation
  vi. Salaries paid to drivers
  vii. Fuel cost, kms operated and receipts
  viii. Repairs and maintenance of vehicle
  ix. Utilization of data collected under case study
  x. Tabulation of data
  xi. Concepts defined

1
INTRODUCTION:

The development of villages into towns, towns into cities and cities into metropolitans has led to augment the demand for the urban passengers transport, and new modes of mechanised transport. This gave a bearth to the system of mass-scale public transportation, mostly operated by the publicly controlled organization. Though this system has reasonable cost advantage distributable on number of users, it lacks in convenience as expected by the users. This inadequacy is met by the Auto-rickshaw Passenger Transport (APT). The APT business gives two fold satisfaction to users i.e. firstly it provides convenience in the respect of privacy, mobility from narrow roads and time consciousness. Secondly, it has competitive cost advantage as against the mass scale public transport under the circumstances when the vehicle is fully occupied by the passengers along with the luggage.

As against the mass scale public transport, the APT business has much utility. The Indian Cities would need un-imaginable amount of investment for converting their narrow roads into wide enough sizes to carry heavy public passenger vehicles. However, if Government makes a small fraction of the above investment in the development of APT business, it would
be benefiting to the cities having narrow roads on which the Auto-rickshaw passenger vehicles are running with speed. Looking the importance of the auto-rickshaw vehicle in urban passenger transportation, it has thought worth to study the APT business carried at important capital places i.e. Aurangabad and Pune in Maharashtra. The study has main concern to investigate cost/profitability of business and find out how far the operators and passengers are satisfied.

OBJECTIVES:

The following are the objectives set for study :-

(i) Review briefly the development of passengers transport business.

(ii) Knowing the legal frame work of the business and understand how far the same is benefiting/obstructing to the operators/passengers.

(iii) Ascertaining the cost, profitability, investment, social utility and economic aspects of business.

(iv) Investigate demand, competition, pricing policies and passengers' & operators' satisfaction.

(v) Suggest the model plan for the development of APT business in Maharashtra.
Keeping in mind the above main objectives, the present study has attempted to answer the following broad based questions:

(i) Whether the investment in APT business is justified against the background of passengers and operators satisfaction?

(ii) Whether APT business investment is appropriate for catering the urban passenger transportation demand?

(iii) What is opinion of passengers regarding quality of APT services?

(iv) What is the public opinion on municipalization of APT business?

(v) What should be the logical cost-profitability model for Auto-rickshaw operation?

(vi) How economy in auto-rickshaw operation would be devised?

(vii) How the investment in auto rickshaw would be made benefitting?

(viii) What is the supply cost of APT business?

(ix) In what way APT business has concern with economic variables?
REFERENCE PERIOD :

The reference period for study was kept different for different purposes as below:

(i) While collecting the information on the development of passengers transport, the reference period was for ten years preceding to the year 1995 and in some cases it was kept beyond that.

(ii) The data on receipts and cost of the APT business were collected for the year 1996 or 12 months preceding to September 1996 when the interviews of the vehicle operators/passengers were conducted.

(iii) While working out the per day average vehicle fuel cost, business receipts and the scale of operation, the reference period for the data collection was also (like above) the September 1996. During this month, the APT business is reported as "Steady" fetching the normal return. Since the aim of study is to know normal returns from the APT business and then to detect the deviations from these experienced in practice, the selection of only one month seems to be appropriate.

It was told that the APT business excepting in July and August fetching "Steady" return. Hence, it is appropriate to choose any one of the months,
excepting above for the purpose of estimation of annual receipts, fuel cost and the scale of operation. In accordance to this logic, the month of September 1996 was selected for working out the per day average receipts, fuel cost and the scale of operation (in Kms.) For this purpose, ten vehicles from each of the two selected places i.e. Aurangabad and Poona of the different owners were kept under observation.

GEOGRAPHICAL AREA :

The geographical area of the study was confined to Pune and Aurangabad only. Whenever the need was felt, the information of other places was also referred to substantiate the main theme of the thesis.

RESEARCH METHODOLOGY :

The research methodology of study is both exploratory and descriptive. While using this methodology only relevant dynamics were used to form the research design.

(a) Survey of Literature :-

The first task is to review the available material with an aim to explore the possibilities of developing hypothesis from it. In the transportation science, numerous hypothesis have been stated by previous research workers. Hence, it was thought
appropriate to gather these various hypotheses with a view to evaluate their usefulness for further research and to consider whether they would suggest new hypotheses.

In order to collect information, the need was felt to refer literature. Accordingly the books, journal and dissertations in related subjects were referred. This had facilitate to enrich the insight over the subject and to design the subsequent course of research pursuit.

A recent statistical and other information about the development of transport was collected from the libraries of Dr. B.A.M. University, Aurangabad, the Gokhale Institute of Politics and Economics, Pune and from the offices of RTO, Aurangabad/Bombay and Directorate of Bureau of Economics and Statistics (State Government).

(b) Experience Survey :

Many people having concern to transportation business, by virtue of their particular placement - as Banker financing transport, as RTO officials controlling transport, as operator undertaking APT business - are in position to observe the effects of different policies, legal implications, controls, etc. They can find out solutions to problems as the incidence of
their experience in the field. These people are good source for collecting the information. For example, the RTO officials are likely to develop certain insight into characteristic of research material required by particular researcher in transport and may search out the possible ways or devices to assist the research worker in this work. The Banker financing transport may acquire rich insight in respect of the relevant categories of transport operators’ financial needs. The Traffic policemen controlling transport vehicles on roads for safety are, too, advantageously positioned to obtain fruitful insight into what really works in a practical situation. The passengers who use the auto rickshaw frequently may have good many things to tell about transportation. They can enlighten over many matters which are not even seen by the common men. Similarly the transport management institutions, insurance agents for vehicles, repair shopmen, vehicle manufacturers and such others have many ideas about the functioning or working of the APT business.

All the above referred to people are with rich fund of experiences about APT business, its utility, its problems etc. It was thought appropriate to gather and synthesize such experiences. This had done by contacting all the key positioned people who had concern to APT business by one or other purpose.
This had facilitated to obtain the insights into the nature of the problem and the useful leads to the possible hypothesis. Since, the aim of experience survey was to look for provocative ideas and useful insights, the respondent were chosen on the basis of the likelihood that they would be able to contribute such ideas and insights. In order to avoid waste of time in an experience survey, only the people who had competence, relevant experience and communicability were contacted. The strategically placed administrators working in the transportation field were found more useful.

During the experience survey the people only from Aurangabad were contacted and interviewed. Efforts were made to select informants so as to ensure a representation of different types of experience. Variations in the points of view were also accorded an adequate representation in the purposive sample of respondent. Thus, in an experience survey of "Passengers' Satisfaction", it was proved advantageous to interview the passengers frequently using the Auto rickshaw.

In an experience survey, the best way to determine the sample size is to identify the point (in the process of interviewing informants) after which an
additional interviewers seen to fall into the pattern which has already emerged from earlier interviews. This logic was observed while interviewing. Only the required number of people were contacted. For example, while collecting the information on financing vehicle, only one or two bankers were contacted. As against this, while collected the opinions over the passenger satisfaction, about 50 passengers from the each selected city were contacted.

When the exploratory study was begun, there were vaguely felt "Originating Questions" concerning to problems. Hence, the exploration were directed toward these problems and solutions thereon.

An author did not have any clear cut idea as to what specific, predetermined set of questions he would ask to the informants to able to get the relevant information or answer. Hence, investigating net was kept wide by asking general and flexible questions. On picking up a clue in the course of conversion - for which maximum opportunity and freedom was allowed to informants - the process of querying was slowly tightens the net, i.e. by asking the respondents more pointed questions.

The above may be explained through example. A general question was asked as opinion about RTQ Officials or Bankers. This general question provided numerous types of information, since much freedom was given to respondents for answering. On the basis of information provided or opinions advanced on the above question, it was possible for author to knit more and more pin-pointed questions. For example, once the respondent told about "Unsatisfactory" services of Bankers. It was then, appropriate to know what types of services the operators required? and how Banker is lacking in these services? What are available remedies? etc.

Thus, an experience survey was "Non-structured" flexible method of data collection. Questions were asked on the basis of information provided. In other words one question led to frame subsequent question and so on.

The experience survey assisted in the following ways:-

(i) It assisted in developing subsequent purposive sample survey of operations and users and framing questionnaire.

(ii) It furnished practical aspects on the various matters that observed in the survey of literature.
Thus, it was learnt from the Motor Vehicle Act, about legal expenses to be incurred for APT business. However, its realities were remain when the survey of operators was conducted.

(iii) It developed the insight over the subject.

(iv) It was a sort of pilot investigation before beginning the purposive sample survey and hence it provided nut-shell ideas about occurrence of difficulties in sample survey. All such difficulties, when felt in advance were removed neatly so as to avoid the bias in the investigation.

(c) Descriptive Study:

(i) Survey of Operators:

After completing an experience survey it was thought appropriate to undertake the sample survey of the APT operators. This survey was an attempt (i) to evaluate the social-economic and entrepreneurial profile of the owners/operators (ii) to know the cost, profits and operational details of the APT business and (iii) Operators’ satisfaction on various matters of APT business.

The procedure of sample survey was carefully planned for Aurangabad and Pune with an aim to obtain complete and accurate information of APT business. The
sampling frame and other consequent requirements were neatly adhered to. For the purpose of sample survey, 50 vehicle operators from Aurangabad and 50 from Poona were purposively selected from the queue of vehicles waiting for passengers.

A survey of passengers for knowing their satisfaction and travel characteristics was conducted both in Poona and Aurangabad. The methodology of the same is explained ahead:

ii) Survey of Passengers:

Hired transport vehicles are used in Aurangabad and Poona for multiple number of purposes like going to or coming back from the workplace, shopping, recreation, education, business, health care (Medical treatment). All these users are difficult to hold as the target for enquiries about their journey characteristic, cost etc. on account of the following reasons:

: Very few users or passenger are regular users of hired vehicles.

: The users are residing all over the city along with non-users and hence they are very difficult to locate and catch up for enquiries.
: If the users or passengers are managed to be contacted, they might be unable to provide information for the journeys which were made sometimes in the past.

As the incidence of the above hurdles in the data collection from the passengers' undertaking journey sometimes in the past, it is thought appropriate to contact them while they are using the hired vehicles. In order to facilitate this enquiry the following steps were designed:

(i) Selection of Routes:

The two main roads going to stations were selected, as they are invariably busy streets of the city and almost more than 90% of the passengers transport vehicles use these streets.

(ii) Selection of Time for Interview:

The morning peak hours i.e. 9.00 a.m. to 12.00 p.m. and evening peak hours i.e. 6.00 p.m. to 9.00 p.m. were selected for the purpose of survey.

(iii) Selection of Vehicles and Passengers:

During both peak and slack hours vehicles carrying passengers were requested to stop for few minutes and the passengers sitting inside were
interviewed. While collecting the information, the help of Police, Union leaders, lady investigators and students were sought.

(iv) Period of Survey:

The survey was difficult to be started simultaneously at all the places due to huge expenses required for hiring the investigators. Hence, the author with the help of few had conducted the survey for seven days during the month of May 1996. The survey timing was confined only to peak hours.

(v) Number of vehicles and passengers' contacted:

Only 50 auto-rickshaw were randomly contacted under each category of vehicles i.e. auto-rickshaw and cycle-rickshaw.

While interviewing, only the passengers who has a responsibility to remit fares were interviewed. Rest of the passengers were not interviewed. When there were passengers sharing fares, only the passengers sitting left side of the driver was interviewed.

Sometimes the passenger paying fares was not earner. In such cases, the person who is incurring cost of transport was considered as the point of enquiry in the respect of total income.
(g) Nature of Interviews:

Only the following questions were asked to passengers:

(i) Time required to get the vehicle.
(ii) Purpose of journey.
(iii) Frequency of journey
(iv) Regular/Occasional
(v) Occupation
(vi) Monthly income bracket i.e. upto Rs.500, 500 to 1000, 1000 to 2000, 2000 to 3000, 3000 to 4000, 4000 and above.

Auto - rickshaw operator is asked about "time" required for getting the passengers travelling in his vehicle.

During the course of interview the passengers were asked only few questions without asking their names. As a result of this, the information, especially about income was sought immediately. Similarly, the vehicle operators were also not asked about their names etc. and hence they were also cooperative in pursuing passengers for providing the information. As the information is a sort of surprise contact with the respondents, the probabilities of exploring true and fair information were more.
OTHER DETAILS OF METHODOLOGY:

i) Selection of Vehicles for Study:

During the last five years, the maximum number of Bajaj Auto-rickshaws were financed by the bankers or financial institutions. And, hence, it was decided to consider or select only the above model or vehicles for study.

ii) Interest on Borrowed Capital:

This information was collected from the Banks financing vehicle purchases. Normally the rate of interest is 18% per annum for auto rickshaw finance.

iii) Insurance, Road taxes, Licence fees, etc.:

This information was collected by visiting RTD office, commission agents, operators of the vehicle and the owners of the vehicles.

iv) Rent Paid:

Although there is no practice to keep the vehicle in garage when it is not being operated. However, the MV Act insists for parking of the vehicle in garage during rest hours and for that purpose it was required to assume that the vehicle owner incurs some rent charges. They are, hence, taken into account in consultation with the vehicle owners.
v) Depreciation:

Truly speaking the depreciation has concern to the scale of operation. However, the bankers' and experts are of the opinion that the Bajaj model of auto rickshaw gives services up to ten years in Aurangabad and 5 years in Poona. Taking the same for granted, the annual depreciation charges were worked out as below:

<table>
<thead>
<tr>
<th>Expected scrap value</th>
<th>Purchase price - at the end of ten years</th>
<th>Depreciation per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life span of vehicle</td>
<td>(10 years in Aurangabad and 5 years in Poona)</td>
<td></td>
</tr>
</tbody>
</table>

vi) Salaries paid to Drivers:

The vehicle operator, though he is owner of the vehicle was assumed to receive salary for his driving. In case, if driver is appointed no question of estimation arises.

vii) Fuel cost, Kms operated and Receipts:

Each selected vehicle owner was asked to fill up the following proforma for the month of September 1996. In order to maintain accuracy the author had made a point to keep contact with each vehicle owner.
### Table

<table>
<thead>
<tr>
<th>Dates</th>
<th>No. of kms. operated</th>
<th>Fuel required (in litre)</th>
<th>Total Fuel Cost</th>
<th>Total Receipts from passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the basis of data collected in proformas, the fuel cost and receipts from the business were estimated for the year i.e. for 300 working days.

The working period of the vehicle for the year is assumed as 300 days, since it is told by the RTO officials, drivers and other experts that, normally, the vehicle is being operated for 300 days out of 365 days in the year due to the following reasons:

- i) Illness of operator
- ii) Holidays, leave of operator for his domestic work
- iii) Repairs and maintenance
- iv) Any other unforeseen events.

### Repairs and Maintenance of Vehicle:

The owners were asked to quote the average R & M expenditure that they would have to incur per year.
by taking into consideration (a) the life span of
vehicle, (b) likely occurrence of expenditure on
account of overhaul replacement of spare parts, tyres,
tubes, cushion, metre etc. and (c) repair/maintenance
charges to body. The reporting on the above, from the
ten operators were collected and the average expendi-
ture per year on R&M was worked out.

ix) Utilization of Data Collected under Case Study :

Not all the data asked for, were used. Only
the necessary data and information were summarised.
This exercise is done in the subsequent chapters at
appropriate places.

x) Tabulation of Data :

After collection of primary data, there was a
need to tabulate the same. Before tabulation, the
data were examined for completeness, comprehensibili-
ty, consistency and reliability. The process of
analysing the data was, then followed by coding the
responses, placing each item in appropriate category,
tabulating the variables and performing statistical
computations.

The secondary data were restructured and were
tabulated by keeping in view the objectives of the
study.
(xi) Concepts Defined:

1. "axle weight" means in relation to an axle of a vehicle the total weight transmitted by the several wheels attached to that axle to the surface on which the vehicle rests;

2. "certificate of registration" means the certificate issued by a competent authority to the effect that a motor vehicle has been daily registered in accordance with the provisions of Chapter IV;

3. "contract carriage" means a motor vehicle which carries a passenger or passengers for hire or reward and is engaged under a contract, whether expressed or implied for the use of such vehicle as a whole for the carriage of passengers mentioned therein and entered into by a person with a holder of a permit in relation to such vehicle or any person authorised by him in this behalf on a fixed or an agreed rate or sum —

   (a) on a time basis, whether or not with reference to any route or distance; or

   (b) from one point to another,

and in either case, without stopping to pick up or set down passengers not included in the contract anywhere during the journey, and includes —
(i) a maxicab; and

(ii) a motorcab notwithstanding that separate fares are charged for its passengers;

(4) "dealer" includes a person who is engaged -

(a) in the manufacture of motor vehicles; or

(b) in building bodies for attachment to chassis; or

(c) in the repair of motor vehicles; or

(d) in the business of hypothecation, leasing or hire-purchase of motor vehicle;

(5) "driver" includes in relation to a motor vehicle which is drawn by another motor vehicle, the person who acts as a steersman of the drawn vehicle;

(6) "driving licence" means the licence issued by a competent authority under Chapter II authorising the person specified therein to drive, otherwise than as a learner, a motor vehicle or a motor vehicle of any specified class or description;

(7) "goods" includes live-stock, and anything (other than equipment ordinarily used with the vehicle) carried by a vehicle except living per-
sons, but does not include luggage or personal effects carried in a motor car or in a trailer attached to a motor car or the personal luggage of passengers travelling in the vehicle;

(8) "goods carriage" means any motor vehicle constructed or adapted for use solely for the carriage of goods, or any motor vehicle not so constructed or adapted when used for the carriage of goods;

(9) "gross vehicle weight" means in respect of any vehicle the total weight of the vehicle and load certified and registered by the registering authority as permissible for that vehicle;

(10) "heavy goods vehicle" means any goods carriage the gross-vehicle weight of which, or a tractor or a road-roller the unladen weight of either of which, exceeds 12,000 kilograms;

(11) "invalid carriage" means a motor vehicle specially designed and constructed, and not merely adapted, for the use of a person suffering from some physical defect or disability, and used solely by or for such a person;

(12) "learner's licence" means the licence issued by a competent authority under Chapter II authorising the person specified therein to drive as a
learner, a motor vehicle or a motor vehicle of any
specified class or description;

(13) "licensing authority" means an authority
empowered to issue licences under chapter II or, as
the case may be, Chapter III;

(14) "light motor vehicle" means a transport
vehicle or omnibus the gross vehicle weight of either
of which or a motor car or tractor or road-roller the
unladen weight of any of which, does not exceed 6,000
kilograms;

(15) "medium goods vehicle" means any goods
 carriage other than a light motor vehicle or a heavy
goods vehicle;

(16) "motor car" means any motor vehicle
other than a transport vehicle, omnibus, road-roller,
tractor, motor cycle or invalid carriage;

(17) "motor vehicle" or "vehicle" means any
mechanically propelled vehicle adapted for use upon
roads whether the power of propulsion is transmitted
thereto from an external or internal source and in-
cludes a chassis to which a body has not been attached
and a trailer; but does not include a vehicle running
upon fixed rails or a vehicle of a special type adapt-
ed for use only in a factory or in any other enclosed premises or a vehicle having less than four wheels fitted with engine capacity of not exceeding thirty five cubic centimeters;

(18) "permit" means a permit issued by a State or Regional Transport Authority or an authority prescribed in this behalf under this Act authorising the use of a motor vehicle as a transport vehicle;

(19) "public place" means a road, street, way or other pale, whether a thorough fare or not, to which the public have a right of access, and includes any place or stand at which passengers are picked up or set down by a state carriage;

(20) "registered axle weight" means in respect of the axle of any vehicle, the axle weight certified and registered by the registering authority as permissible for that axle;

(21) "traffic signs" includes all signals, warning sign posts, direction posts, markings on the road or other devices for the information, guidance or direction of drivers of motor vehicles;

(22) "trailer" means any vehicle, other than a semi-trailer, and a side-car, drawn or intended to be drawn by a motor vehicle;
(23) "transport vehicle" means a public service vehicle, a goods carriage, an educational, institution bus or a private service vehicle;

(24) "unladen weight" means the weight of a vehicle or trailer including all equipment ordinarily used with the vehicle or trailer when working, but excluding the weight of a driver or attendant; and where alternative parts or bodies are used the unladen weight of the vehicle means the weight of the vehicle with the heaviest such alternative part or body;

(25) "weight" means the total weight transmitted for the time being by the wheels of a vehicle to the surface on which the vehicle rests.