CHAPTER V
RESEARCH METHODOLOGY

5.1 IDENTIFICATION OF PROBLEM

The economic development of a nation also depends on the rate of mobility of people. State road transport corporation plays a crucial role in mobilizing people. State road transport corporation was established with the objectives providing efficient, safe and economical services to people. Changing time and development of infrastructure in nation has also offered a huge option. The very basic objectives of the corporation still lies but the choice of people for traveling has changed significantly from public transport to owning their own vehicles or privately run vehicles. A study was undertaken to analyse the financial performance of Gujarat state road corporation. Study reveals the facts that most of the state undertakings in India are running into a huge loss (as on year 2009). Government has taken many initiatives to revive this loss making undertakings. GSRTC as a state road transport undertaking is not an exceptional to it. Looking at the amount of loss and the functioning of GSRTC, a very first question that arises is how loss can be reduced? If not, then how long corporations like GSRTC can survive. The financial positions of GSRTC in last the seven years (2002-2009) are not competitive enough. The tough competition from the private operators and at the same time different taxation policy of government is posing a question mark on the competitiveness of the corporation. The research question is the financial feasibility of GSRTC in future. Depending upon the conceptual frame work in the previous chapters, the study is undertaken. Research Methodology chapter follows identifying various parameters for analyzing financial performance of GSRTC.

5.2 PARAMETERS

The study has identified and categorized the parameters as below:

- Kilometers Effectively Utilized: Out of the gross kilometers done by the corporation, dead kilometers are deducted for arriving to the kilometer effectively utilized. This was one of the important parameters in measuring the revenue generating capacity.
• Number of Route Operated: This parameter was considered to evaluate the total number of routes undertaken by GSRTC. One can measure the performance of the corporation by comparing the number of routes year by year. Increase in number of routes should not be evaluated solely but it should be in comparison to seating capacity utilization rate.

• Number of Buses on Road: It means the number of buses in working condition. Many a time due to break down or due to delay in maintenance and repairs the number of bus held by the corporation and number of bus on road was not matching. Less number of buses on road directly effect earning capacity of GSRTC.

• Vehicle/Fleet Utilization: Utilization rate has definitely impacted the financial performance. It talks about the return on total investment made by the corporation.

• Crew Utilization: Here crew includes-drivers, conductors and mechanical staff of GSRTC.

• Seating Capacity Utilization: Out of the total seating capacity, how many seats where utilized is known. Increase in utilization rates means more of passengers traveled by GSRTC adding to the revenue, which has help to reduce operational cost.

• Earning Per Kilometer: Commonly terms as EPKM .It reveals the data regarding revenue earned by GSRTC from one kilometer of run. Division wise EPKM has been evaluated to know the gap between them.

• Cost per Kilometer: It speaks about the cost incurred by the corporation for undertaking one kilometer of run. Comparison of EPKM with CPKM can be done to know the profitability position of GSRTC.

• Rate of Break down: Number of break down has added to the cost of operation. It also directly affects the number of routes planned and actually undertaken. Break down rates in terms of division has differed and so has impacted the performance.

• Rate of Accidents: More number of accidents has also affected financial performance of GSRTC. The amount of compensation given due to accident has also added to the cost.
Social Obligations/Concession: As a part of objectives behind establishment of GSRTC, many services are offered by them. Concession to various categories of passengers like student, handicap etc has also impacted the financial performance. As a part of a policy, government does reimburse the amount of concession given, but at the same time the amount spends was more than what was reimbursed by the government.

Government Contribution towards Equity Capital: The very first requirement of capital was contributed by state as well as central government. One can evaluate the performance of GSRTC by calculating the return on equity capital.

5.3 OBJECTIVES OF THE STUDY

For any nation transportation is very important for economic development. It has become an essential need as when we talked of globalization and mobility of manpower for that matter. As far as developing nation like India is concerned, one cannot ignore the need of public passenger services needed by the people. As a part of social responsibility in mixed economy one can not ignore the need of general public. Till now government has not liberalized the services of railway and is still monopoly of the government. The private participant has entered in the road transport services but still government is also active in providing it to the people. Therefore, through the present study, the researcher intends to study the role of Gujarat State Road Transport Corporation in providing safe, economical transport facility to far flung areas of Gujarat. State transport undertaking in India is making a huge loss. So a question arise is there any scope of increasing the cash flow? Operational cost is increasing day-by-day as there is a hike in fuel prices, staff cost, tyre cost, spare parts cost etc.

After studying the working of GSRTC and analyzing various financial parameters, following objectives has been drawn for the study purpose:

1. To study the parameters and its impact on cost and revenue of GSRTC.

2. To study the areas of total cost and its impact on the financial performance of GSRTC.
3 To study the areas of total revenues and its impact on financial performance of GSRTC
4 To study the State Government policy towards social development and its impact on the revenue earning capacity of GSRTC.
5 To study the relationship between the operational result of all divisions of GSRTC.
6 To find out the areas of improvement and to give recommendation for improving the performance of GSRTC.

5.4 HYPOTHESES OF THE STUDY

Hypothesis is usually considered as the principal instrument in research. A research hypothesis is a predictive statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variable. These hypotheses are capable of being objectively verified and tested. Based on the above objectives, following hypotheses are formulated.

1. There is a significance relationship between the working of GSRTC and it’s financial performance.
2. There is a significance impact of Cost on the financial performance of GSRTC.
3. There is a significance impact of total revenues on the financial performance of GSRTC.
4. There is a significant impact of direct and indirect overheads on the total earning of GSRTC.
5. There is a significance relationship between the State government policies of social development and financial performance of GSRTC.

5.5 TIME PERIOD FOR THE STUDY

Seven years (2002-03 to 2008-09) time period was considered for the study purpose. All the required data of these years were available, so a study on financial performance of these specific years was undertaken.
5.6  RESEARCH DESIGN

Research design can be thought of as the structure of research -- it is the "glue" that holds all of the elements in a research project together. We often describe a design using a concise notation that enables us to summarize a complex design structure efficiently. In this step we specify as what methods and procedures are being used for conducting a particular study. A research design is the specification of methods and procedure for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources and by what procedure. There are different categories of research design.

The study of financial performance of Gujarat State Road Transport Corporation is descriptive study. It was undertaken to provide answer to question of who, what, where, when, and how-but not why.

Descriptive study can be classified as under:

1. Cross Sectional Studies-measures units from a sample of the population at only one point of time.
2. Longitudinal Studies-repeatedly draw sample units of a population over time. One method is to draw different units from the same samples from and second method is to use a panel when the same people are asked to respond periodically.

5.6.1  RESEARCH TOOLS

The research tools are usually used, adopted or constructed for obtaining the required information vary from one research study to another. In case of experimental studies, the researcher has to use standardized and sophisticated apparatus for making correct findings, whereas in social researches such experiments are rarely conducted. Mostly, observations, physical trace evidences etc. are used in social science researches can not arrive at meaningful or desired conclusions unless secondary data which is usually available from Census Reports, vital statistics records, company files, sales receipt records, annual reports, prospectus of the company etc. are examined simultaneously.

The present study is mainly based on secondary data obtained form the annual reports of GSRTC, Cumulative Operational Result, Cumulative Costing Statement, Circular
release from GSRTC, Ahmedabad office. For more information regarding State transport corporation as well as GSRTC various journals, newspapers and magazines also referred for the purpose. For the purpose of the analysis of the study, various accounting and statistical tools have been utilized. For analyzing the data, Excel, SPSS and Mini tab software has being used.

Following accounting techniques have been used for measuring financial performance of GSRTC:

1. **Ratio Analysis**
   
   - Debt-Equity Ratio was calculated for analyzing the solvency position of GSRTC.
   - Current Ratio was used to assess the firm’s ability to meet its short-term liabilities.
   - Turnover Ratio viz, Fixed Assets Turnover Ratio.
   - Profitability Ratio: Return of Capital Employed, Return on Equity, Return on assets, Operating Profit Ratio, Net Profit Ratio is calculated to know the profitability position.

2. **Z-Score Analysis**

   The Z-score is a multivariate formula that measures the financial health of a company and predicts the probability of bankruptcy within two years. Z-score analysis has been established to evaluate the general trend in the financial health of an enterprise over a period of time.

   The data collected were first analyses with the help of five accounting ratios. These different ratios are combined into a single measure Z-score analyses with the help of Multiple Discriminate Analysis (MDA). The formula used to evaluate the Z score analysis as established by Altman is as follow:

   \[
   Z = 0.012X1 + 0.014X2 + 0.033X3 + 0.006X4 + 0.999X5
   \]

   “Z” is the overall index and the variables X1 to X4 are computed as absolute percentage values while X5 is computed in number of times.

   **Variables (Ratios) Used in Z Score Analysis:**

   The following accounting ratios are used as variables to combine them into a single measure (index), which is efficient in predicting bankruptcy.
**X1** - The ratio of working capital to total assets (WC/TA*100). It is the measure of the net liquid assets of a concern to the total capitalization.

**X2** - The ratio of net operating profit to net sales (NOP/S*100). It indicates the efficiency of the management in manufacturing, sales, administration and other activities.

**X3** - The ratio of earning before interest and taxes to total assets (EBIT/TA*100). It is a measure of productivity of assets employed in an enterprise. The ultimate existence of an enterprise is based on the earning power (profitability).

**X4** - The ratio of market value of equity to book value of debt (MVE/BVD *100). It is reciprocal of the familiar debt-equity ratio. Equity is value of all shares, while debt includes both current and long term liabilities. This measure shows how much assets of an enterprise can decline in value before the liabilities exceed the assets and the concern becomes insolvent.

**X5** - The ratio of sales to total assets (S/TA). The capital turnover ratio is a standard financial measure for illustrating the sales generating capacity of the assets.

**Altman Guidelines for Healthy Zone:**

<table>
<thead>
<tr>
<th>Public Companies</th>
<th>Interpretation</th>
<th>Privately Held Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.073 and above</td>
<td>Safe” Zone</td>
<td>2.90 and above</td>
</tr>
<tr>
<td></td>
<td>Company has low probability of bankruptcy</td>
<td></td>
</tr>
<tr>
<td>3.075-1.875</td>
<td>Gray area—company requires careful monitoring</td>
<td>2.90-1.23</td>
</tr>
<tr>
<td>1.875 and below</td>
<td>“Distress” Zone</td>
<td>1.23 and below</td>
</tr>
<tr>
<td></td>
<td>Likelihood of insolvency within 12 months</td>
<td></td>
</tr>
</tbody>
</table>

3. **Coefficient of Correlation**

It is used to answer the question—does there exist association or correlation between the two (or more) variables? Coefficient of correlation was used to measure the cause effect relationship. In the study it was used to measure the relationship between:
• Loss due to Student Concession and Total Earnings of GSRTC.
• Loss due to Student Concession and Gross Margin.
• Total Effective Kilometers and Total Earnings.
• Average number of Vehicles on road and average number of accidents.
• Occupancy ratio and average operating revenues.

4. Analysis of Variance (ANOVA)

It is used to test differences among the means of the populations by examining the amount of variation within each of the samples, relatives to the amount of variation between the samples. Here in the study, one-way (or single factor) ANOVA was considered. All the divisions of GSRTC for last seven years i.e. from 2002-03 to 2008-09 was taken for analysis purpose.

5.6.2 UNIVERSE OF THE STUDY

GSRTC as a whole was selected as a universe for the study. Annual financial result of GSRTC was considered.

5.6.3 SOURCES OF DATA COLLECTION

The researcher for the purpose of this study has used secondary data. The study was mainly based on secondary data. Firstly, for procuring the data, a formal permission letter was taken from GSRTC for proving the needed information for conducting the research work. Secondary data have been collected from annual reports of GSRTC. Further information was collected from cumulative operational statement, cumulative costing statement and circular released from GSRTC from time to time. Personal help has been taken from the present employees and the ex-employees of GSRTC. Students of my institute were also permitted to go for a summer internship project report. They have undergone eight (8) weeks training at Central Office –Ahmedabad. The title of the project was “Performance Analysis of GSRTC”.

Various magazines, journals, research publications, newspaper has been used from time to time. Internet was extensively used for collecting the information. An appointment was fixed with the top authority of GSRTC. Formal discussion with the top authority functioning at the Central office-Ahmedabad was conducted. Departmental head of Account, Statistics, Traffic, Operation, Engineering etc were contacted for detail information and for knowing the future steps. Many questions
were posed in front of the authority for clarification of doubts and for checking the accuracy of the data being collected. Theoretical material published by Central Road Transport Institute-Poona as apart of their correspondence courses was also used at many places. Articles published by the Journal of Transport and articles published by local newspaper related to GSRTC was used for gathering information regarding public sector enterprises and public road transport corporation, library of IIM, Ahmedabad were also used.

A paper was presented in the Doctorate conference, organized by Nirma University. As a part of feed back of the paper many good inputs were suggested by the eminent personality present at the conference, which has been incorporated in further research.

5.6.4 CLASSIFICATION AND ANALYSIS OF DATA

The collected data were classified, analyzed and presented in the concerned chapters. For this purpose of analysis of cost structure and its pattern over the period various ratios related to cost, revenue was calculated. With the help of the ratio, Z-Score analysis was conducted. Correlation coefficient was also computed to find out the relationship of various factors with the total cost. Similarly to find out the relationship between total earning with the likely influencing factors were also computed. ANOVA test was applied to know the variation between sixteen divisions in last seven years.

5.6.5 PLAN OF THESIS

All the efforts in collection of data and its analysis are ultimately shown in the form of report so report writing is a very important part of any project. The researcher has followed the sequence shown below in writing this report.

CHAPTER I: Road Transport Industry-An Overview
CHAPTER II: Working and Organization of Gujarat State Road Transport Corporation
CHAPTER III: Conceptual Framework of Study
CHAPTER IV: Survey of Existing Literature
CHAPTER V: Research Methodology
CHAPTER VI: Performance Analysis of Gujarat State Road Transport Corporation
CHAPTER VII: Findings and Suggestions
5.6.6 IMPLICATIONS OF THE STUDY

Unless and until the study does not give any value to any one it is not worth, every research has some benefits in some way to somebody.

This study can be beneficial to the researcher as well as can benefit others too, like Government, State Transport Undertaking Heads, State Transport Undertaking Decision Making Authority and Staff of the Undertaking, Private Transporters, Students, Teachers of Management, and Researchers etc.

➤ Implications to the Researchers

- One can get an overview of the State Own Undertakings. This study helps the researchers in getting exposure to the real world of State Own undertakings particularly Road Transport Undertakings.
- It helps in enhancing the theoretical knowledge of the Public Sector, Privatization, disinvestment, Road Passenger Transport undertaking.
- One can learn about different factors contributing to the performance of state transport undertakings.

➤ Implications to the Government

- Government can use the data for decision making regarding tax on passenger fare, (for both private operators as well as state undertaking), motor vehicles tax.
- The decision relating to further grant can be taken.
- The impact of increase in diesel and fuel price on the performance of corporation-particularly earning per kilometer can be gathered.
- Number of accidents and reasons of persons died in the accidents can be known.

➤ Implications to the Authority of STRUs

- Comparison of overall GSRTC performance with Division/Depo can be done.
- One can identify various parameters of revenue and cost.
- Year to Year comparison of revenue and cost analysis can be done.
- Decision regarding cost control can be taken.
- Strategy for increasing revenue can be drafted.
- Loss making department/center can be identified.
- Corporate model can be used for improving the performance.
5.6.7 LIMITATIONS OF THE STUDY

Despite the contribution of this study, there remains certain limitation in pursuing this study. GSRTC being the government undertaking, certain level of secrecy always lies when the secondary data’s demanded from the central office is concerned. A caution has taken to nullify all the limitations while conducting the study but still certain loopholes are identified. The limitations of the study are as follow:

- Data collected are for a particular time frame so study will not hold true at all the times. Last seven years data’s have been selected which may not truly represent the over all performance of GSRTC for the future coming years.
- As the study was confined to over all performance of GSRTC, division wise and depots wise study was not undertaken. Few Depot or Division may be good at some parameters.
- Annual Report and Cumulative Operational result prepared by GSRTC has not followed a uniform system of presenting the data and information. Annual data available was in Gujarati (for few years), so one has to translate it into English, therefore the chance of differences in meaning will remain in the study.
- Current year i.e. year 2008-09 Annual Report was not available as the work of finalizing was still going on when the data was collected. For the same year unpublished annual report was used.
- A comparative study of GSRTC with other state corporation was not undertaken as the required data for the same was not available.

5.6.8 FUTURE DIRECTION FOR THE STUDY

As the study was confined to only a state of Gujarat, annual financial performance of GSRTC in last seven years was considered. Researchers saw many wide scope of the study which can be further extended for more fruitful results.

- Some different type of result could be derived if more number of years was taken for the study purpose. One can evaluate the performance of GSRTC in the year of profitability that of the loss making years. Factors responsible for earning positive result can be identified and can be implemented for converting the negative result into a positive result.
Overall GSRTC can be compared with 16 different divisions as well as with depos. One can identify divisions/depos with positive result and steps can be taken to increase the level of profit. Same way divisions/depos with negative results can be selected for reviving it.

- Profit/loss making State undertaking can be selected and comparison of GSRTC can be done.
- Comparison of cost and revenue parameters of GSRTC can be done with Private Operators.
- A study of marketing strategy adopted by Private Operators can be compared with that of GSRTC.
- Few techniques/tools are used for measuring the financial performance. Some different techniques/tools can be used for drawing different result.
- Field study can be undertaking for knowing the expectation of the passengers. Passengers’ views can be implemented for improving the performance.
- A feasibility study can be undertaken for re-structuring of GSRTC.
REFERENCES: