CHAPTER – III

RESEARCH METHODOLOGY

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III.1 INTRODUCTION

"AN ANALYSIS OF FINANCIAL PERFORMANCE OF SELECTED POWER GENERATING COMPNAY IN GUJARAT AND IN DEPTH STUDY OF PRE AND POST REFROM PERIOD".

Research Methodology essential a careful, systematic, persistent study and examination in some field of knowledge, undertaken to establish facts of principles. Research is a search for knowledge. It is a scientific and systematic search for pertinent information on a specific topic. It is an art of scientific investigation. Research is a planned question that exploits suitable scientific procedure to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic opinion, arrangement and understanding of data. Although we engage in such process in our daily life, the difference between our casual day to day overview and the assumptions usually recognized as scientific method lies in the degree of decorum, discipline, verifiability and general authority of latter.

Research is an unique input to the existing stock of knowledge making for its progress. The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not yet been discovered. There are various types of research like expressive versus critical research, applied versus fundamental research, quantitative verses qualitative research, conceptual versus empirical research etc. In social science and business research we quite often use the term Ex post facto research for descriptive research studies. In this method the researcher has no control over the variables; he can only report what has happened. It also includes attempts by researchers to discover causes even when they cannot control the variables." (C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

Assess the financial performance of selected power generating company in Gujarat an in depth study of pre and post reform period. It also enumerates gaps identified from literature review, research objectives, hypotheses, sources of primary data and secondary data (drawn from Public Enterprises Surveys and Expertise database from Centre for Monitoring Indian Economy, considered credible in Indian context relating to virtually GEB/GSECL .of Gujarat power sector enterprises), data analysis (primarily in terms of major financial ratios,

namely, profitability, efficiency, solvency, liquidity, and productivity), statistical techniques used (such as ANOVA, paired test, independent *t*-test, frequency distribution techniques), and research model. (C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

III.2 Research Process

The research process consists of a series of actions necessary to effectively carry out the research. The research conducted included the following steps:

1. Objectives of the study
2. Time period of the study
3. Scope of the study
4. Nature of the study.
5. Tools and Techniques of Analysis.
6. Sources of data collection.
7. Sample size.
8. Significance of the study.
9. Hypothesis of the study.
10 Limitations of the study.

(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

III.3 OBJECTIVES OF STUDY

Object notify a reader what one wants to attain through the study. It is very important to word them clearly and specifically. Goals should be listed under two heading, the main goals and the sub goals. The main objective is an overall statement of the thrust of the study. It is also a statement of the main associations and relationships that one seeks to discover or establish. The sub- goals are the specific aspects of the topic that one wants to investigate within the main framework of the study.

- The present study proposed to examine the policy prevailing in the an analysis of financial performance of selected power generating company in Gujarat .An in depth study of pre and post reform period in the state of Gujarat The specific objectives of the study are as follows:

1. To measure the growth of selected Power Generating Company in Gujarat.
2. To evaluate the performance of selected Power Generating Company in Gujarat.

3. To examine the financial management problems faced by the Power Generation Company.
4. To evaluate cost of generation and finance.
5. To analysis profitability of Power Generating Companies.
6. To review Company financial performance of pre and post unbundling.
7. To make suggestions for improvement of financial performance."

(RANSARIYA, 2010)

III 4 TIME PERIOD OF THE STUDY

The present study is 'an analysis of financial position of power generating company in Gujarat and depth study of pre and post reform period "The Electricity Act 2003 replenish all others electricity Acts and rules. Gujarat Electricity Board is unbundling with effect from 1st April 2005.Consequently ten years from pre and post period is reasonable so 1995 to 2005 (Erastwhile GEB)period for pre reform period and equal period of ten years i.e 2005 to 2015 (GSECL) period is selected for post reform period.

III.5 SCOPE OF THE STUDY.

An Analysis of financial performance of selected Power Generating Companies in Gujarat and in-depth study of pre and post reform period.

The various factors directly affected for improvement of financial position of the Company especially for pre and post reform period i.e. pre reform period is from 1995 to 2005 related to erstwhile Gujarat Electricity Board (GEB) and for the post reform period is from 2005 to 2015 i.e. Gujarat State Electricity Corporation Ltd. (GSEC). The scope of the financial analysis and Annual Report of the Company comprise Profit & Loss Account, Balance sheet and Cash flow of the Company. On the basis of this analysis, factors, findings and conclusion to be prepared with reference to the various laws related to Electricity and various terms and conditions of tariff determined by Gujarat Electricity Regulation Commission (GERC) and Central Electricity Regulation Commission (CERC), and what is the scope of further improvement of financial performance of Power Generating Companies

III.6 SOURCES OF DATA COLLEECTION

The study is based on the secondary data taken from the annual reports of selected power Generating Company. (GEB, GUVNL,GSECL)and data base websites. And all the data relating to history , growth and development of power sector have been collected mainly from the books and magazine relating to the power sector and published paper ,report, article and from the various news papers, bulletins and other various research reports published by power industry and research organizations, various web sites viz;

1. Central Electricity Authority (CEA)
2. Central Electricity Regulatory Commission. (CERC)
3. Chief Electrical Inspector (CEICED)
4. Energy & Petrochemicals dept of, Gujarat.
5. Gujarat Urja Vikas Nigam Ltd.(GUVNL)
6. Gujarat Electricity Regulatory Commission (GERC)
7. Gujarat Energy Research and Management Institute.(GERMI). Gandhinagar.
8. Gujarat Energy Transmission Corporation Ltd.Vadodara.
9. Gujarat Industries Power Corporation ltd.,Vadodara.
10. Gujarat State Electricity Corporation Ltd,Vadodara.
11 Gujarat Energy Development Agency.(GEDA) Gandhinagar
12 Ministry of New & Renewable Energy.
13. Ministry of Power and coal
14. Ministry of Finance.
15. National Load Despatch centre.
16. National Thermal Power Corporation (NTPC).
17. Power Trading corporation of India Ltd.(PTC)
18. State Load Despatch Centre of Gujarat.(SLDC).

III.7 SELECTION OF SAMPLES:

The study has been carried out on the micro levels ,as it is not possible for the research to conduct it on the macro -level. The population of the study consists of power generating Companies of Gujarat State . As the study is to be carried out by the individual researcher on "an analysis of financial position of power generating company in Gujarat and depth study of pre and post reform period. In Gujarat state following power Generating companies are available. GSECL,TPL,APL,ESSR,GIPCL,CPL(TATA).However out of six companies only one GSECL is the power Generating company in Gujarat working converted from GEB under reform process. " There fore GSECL and Erstwhile GEB selected for the research . So , the convenient study is carried out of state of Gujarat power Generating Companies i.e GSECL.

III.8 NATURE OF THE STUDY.

The researcher desires to utilize the facts and information available in various secondary sources to make critical analysis of financial performance evaluation from this point of view ,the nature of the study is diagnostic.

III.9 TOOLS AND TECHNIQUES OF ANALYSIS OF RESEARCH METHODOLOGY.

I will use mainly two types of Techniques for Research methodology. viz

(A) **Financial Analysis** and
(B) (B) **Statistical Techniques**

(A) Financial Analysis

"Financial analysis will be made in Five ways.

A.1 Ratio Analysis	A.2 Standards of Comparison
A.3 Time Series Analysis	A.4 Cross-Sectional Analysis
A.5 Industry Analysis	

(A.1) Ratio Analysis:

"Ratio analysis is a powerful tool of financial analysis. A ratio is defined as "the indicated quotient of two mathematical expressions" and as "the relationship between two or more things. In financial analysis, a ratio is used as a benchmark for evaluating the financial position and performance of a company. The absolute accounting figures reported in the financial statements do not provide a meaningful understanding of the performance and financial position of a company. An accounting figure conveys meaning when it is related to some other relevant information. The relationship between two accounting figures, expressed mathematically, is known as a financial ratio or simply as a ratio. Ratios help to summarize large quantities of financial data and to make qualitative judgment about the company's financial performance. "

(A.2) Standards of Comparison

"The ratio analysis involves comparison for a useful interpretation of the financial statements. A single ratio in itself does not indicate favorable or unfavorable condition. It should be compared with some standard. Standards of comparison my consist of:

- Past Ratio =Ratio calculated from the past financial statements of the same company.
- Competitors' Ratios =Ratio of some selected company's, especially the most progressive and successful competitor, at the same point in time.
- Industry Ratios =Ratios of the industry to which the company belongs
- Projected Ratios=Ratios developed using the projected, or pro forma, financial statements of the same company. "

(A.3) Time Series Analysis

"The easiest way to evaluate the performance of a company is to compare its present ratios with the past ratios. When financial ratios over a period of time are compared, it is known as the Time Series Analysis. It gives an indication of the direction of change and reflects whether the company's financial performance has improved, deteriorated or remained constant over time."

(A.4) Cross-Sectional Analysis

"To compare ratios of one company with some selected company's in the same industry at the same point in time is known as the Cross-Sectional Analysis or Inter-Company Analysis.

This kind of a comparison indicates the relative financial position and performance of the company."

(A.5) Industry Analysis

" To determine the financial condition and performance of a company, its ratios may be compared with average ratios of the industry of which the company is a member. This sort of analysis, known as the Industry Analysis, helps to ascertain the financial standing and capability of the company vis-à-vis other company's in the industry. Industry ratios are important standards in view of the fact that each industry has its characteristics, which influence the operating relationships. "

(B) Statistical Techniques:

Statistical Tools and Techniques will analysis by applying following Techniques

B.1 Measures of Central tendency	B.2 Pearson's Correlation Coefficient
B.3 Regression Analysis	B.4 t-TEST
B.5 Analysis of Variance (ANOVA)	B.6 PAIRED TEST
B. 7 Hypothesis Testing (P-value approach)	

(B.1) Measures of Central tendency

" Measure of Central Tendency is a central value for distribution . it may also be called a centre or location of distributions. Measure of Central Tendency are often called "Averages."

The most common measures of Central Tendency are the arithmetic mean,the median, and the mode. A Central Tendency can be calculated for either a finate set of Values or the theoretical distribution. The tendency of quantitative data to cluster around some Central Value.

Central Tendency of a distribution is typically contrasted with its dispersion or variability , dispersion and Central Tendency are often characterised properties of distribution.

Analysis may judge whether data has a strong or weak central tendency based on its dispersion. (S.P.Gupta, 2002)

(B.2.) Pearson's Correlation Coefficient

Correlation is a technique for investigating the relationship between Two quantitative continuous variables. From correlation we can only get an index describing the linear relationship between two variables. Correlation quantifies the degree to which two vaiable are related . correlation coefficient (r) that tells you how much one variable tends to change when the other one does.

r = -1 data lie on perfect straight line with Negative slope.
Negative correlation indicate that one variable increase, so
Other decrease and vice varsa.
r = 0 No liner relationship between two variables.
r = +1 data lie on perfect straight line with Positive slop
Positive correlation indicate that both variable increase, or
decrease together.
(S.P.Gupta, 2002)

(B.3) Regression Analysis.

A regression equation is used in stats to find out what relationship ,if any, exists between sets of data. Simple Regression is used to examine the relationship between one dependent variables and one independent variable. Regression goes beyond correlation by adding prediction capabilities.

(S.P.Gupta, 2002)

(B.4) t-TEST.

T-test is based on T distribution and is considering an appropriate test for judging the significance of sample mean., coeffients of simple and partial correlations. The relevant test statistic, is calculated from the sample data and then compared with its problem value based on T –distribution at a specified level of significance for concerning degrees of freedom for accepting or rejecting the Null Hypothesis.

(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

(B.5) Analysis of Variance (ANOVA)

Analysis of Variances is collection of statistical models used to analyse the difference among group means and their associated procedures e.g Variation among and between group.in the ANOVA setting the observed variance in a particulars variables in partitioned. ANOVA are used for comparing /testing the or mode on groups or variable for statistical significance.

(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

(B.6) PAIRED TEST

Paired test is a scientific experiments of ten consists of comparing two or more sets of data. This data is described as unpaired or independent when the sets of data arise from separate individuals or paired when it arises from the same individuals at different points in time.
(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

(B.7) Hypothesis Testing (P-value approach)

Hypothesis is a statement of a prediction that can be tested or an educated guess. In a Hypothesis statement researcher scholar makes a prediction about what they think will happen or is happening in their experiment.

A Hypothesis is used in an experiment define the relationship between two variables. The purpose of a Hypothesis is to find the answer to question. A formalized Hypothesis will force as to think about what results we should look for in an experiment. The first variable is called the independent variable.

Hypothesis that a relation exist cannot be examined in a same way one might examine proposed new law of the nature. The statistical testings are used to determine now likely it is that over all effect would be observed if the hypothesis relation does not exist. In statistical hypothesis testing, two hypothesis are compared. These are called **"null hypothesis"** and **"alternative hypothesis".**

A **null hypothesis** is a type of hypothesis used in statistics that proposes that no statistical significance exists in a set of given observations. The null hypothesis attempts to show that no variation exists between variables or that a single variable is no different that its mean.

A Null Hypothesis is Hypothesis that says there is no statistical significance between the two variables.

An Alternative Hypothesis is one that states there is a statistically significant relationship between two variable.

- What is p value ?

The **P value**, or calculated probability, is the probability of finding the observed, or more extreme, results when the null hypothesis (H_o) of a study questions is true – the definition of 'extreme' depends on how the hypothesis is being tested.

It is usually set at or below 5%. For example, when *a* is set to 5%, the conditional probability of a type I error, given that the null hypothesis is true, is 5%, and a **statistically significant** result is one where the observed **p-value** is less than 5%.

When P value is higher than significance level?
Reject the null hypothesis if the **p-value** is less **than** the **level** of **significance**. You will fail to reject the null hypothesis if the **p-value is greater than** or equal to the **level** of **significance**.

The **p-value** is a number between 0 and 1 and interpreted in the following way: A small **p-value** (typically ≤ 0.05) indicates strong evidence against the null hypothesis, so you reject the null hypothesis

If the **p-value is less than or equal** to the **alpha** (**p**< .05), **then** we reject the null hypothesis, and we say the result is statistically significant. **If** the **p-value is greater than alpha** (**p**> .05), **then** we fail to reject the null hypothesis, and we say that the result is statistically nonsignificant (n.s.).In the majority of analyses, an alpha of 0.05 is used as the cutoff for significance. If the p-value is less than 0.05, we reject the null hypothesis that there's no difference between the means and conclude that a significant difference does exist. If the p-value is larger than 0.05, we *cannot* conclude that a significant difference exists.

Formulation and testing of Hypothesis

Step – 1 State the Null Hypothesis

Step – 2 State the Alternative Hypothesis

Step – 3 Set Alpha

Step – 4 Collect data

Step – 5 Calculate a test statistical

Step – 6 Construct Acceptance / Rejection regions

Step – 7 Based on steps 5 & 6, draw a conclusion about Ho.

1. If the P-Value is less than or equal to the significance level (x Alpha), we reject the Null Hypothesis. If we reject Null Hypothesis, we conclude that there is enough evidence to infer that the Alternative Hypothesis is true.
2. If the P-Value is greater than x Alpha, then Null Hypothesis will be accepted (i.e. not rejected). If we do not reject Null Hypothesis, we conclude that there is no enough statistical evidence to infer that the Alternative Hypothesis is true.

When the P-Value is greater than 0.05 & in the majority of analysis an "ALPHA" of 0.05 is used as the cut off for significance. If the P-Value is less than 0.05, we reject the Null Hypothesis that there is no difference between the means & conclude that a significant difference does exist.

A small P-Value (less than 0.05) indicate strong evidence against the Null Hypothesis. So you reject the Null Hypothesis. A large P-Value (more than 0.05) indicate weak evidence against the Null Hypothesis that rejects the Alternative Hypothesis.

(S.P.Gupta, 2002)(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.)

III.10 SIGNIFICANCE OF THE STUDY.

The study is useful and important for the following purpose.

1. This study aims to enhance the knowledge pertaining to the financial performance and financial position of power generating companies..

2. This study aims to assist the Government and regulators to take various informed decision pertaining to financial performance of power generating companies which subsequently help in determination of appropriate tarrif.
3. The study is significant from society's point of view as the power sector is a regulator sector where in power companies are not permitted to charge excee tariff.

III.11 HYPOTHESIS OF THE STUDY.

NULL HYPOTHESIS & ALTERNATE HYPOTHESIS OF THE STUDY

HYPOTHESIS NO. 1

Null: There is no significant improvement in means score of Profitability indicators on the financial performance of power generating company in Gujarat during period of pre and post reform

ALTERNATE: There is significant improvement in means score of Profitability indicators on the financial performance of power generating company in Gujarat during period of pre and post reform

HYPOTHESIS NO. 2

Null: There is no significant improvement in means score of liquidity indicators on the financial performance of power generating company in Gujarat during period of pre and post reform

ALTERNATE: There is significant improvement in means score of liquidity indicators on the financial performance of power generating company in Gujarat during period of pre and post reform "

"HYPOTHESIS NO. 3

Null: There is no significant improvement in means score of Leverage indicators on the financial performance of power generating company in Gujarat during period of pre and post reform

ALTERNATE: There is significant improvement in means score of Leverage indicators on the financial performance of power generating company in Gujarat during period of pre and post reform "

"HYPOTHESIS NO. 4

Null: There is no significant improvement in means score of Operational Key parameters indicators on the performance of power generating company in Gujarat during period of pre and post reform.

ALTERNATE: There is significant improvement in means score of Operational Key parameters indicators on the performance of power generating company in Gujarat during period of pre and post reform."

III.12 LIMITATION OF THE STUDY

The major limitation of this study are as under. As usual every live and non live has its own limitations which restrict the usability of that factor. The same rule applies to research work.

1. This study is mainly based on secondary data derived from the annual reports of GEB and GSECL. The reliability and the finding are contingent upon the data published in annual report.
2. There are different ways to approaches for evaluation of profitability and Liquidity. There are no common views among experts.
3. Accounting ratios have its own limitation, which also applied to the study.
4. In this study effect of Inflation is not considered .Inflation plays vital role in Indian economy. If we do not considered inflation when analysis of financial condition ,is studied ,evaluation maybe not truly representative. This is one of the limitation.
5. This is study for the limited for the ten years pre and post reforms only.
6. Financial analysis considered on express in monetary terms only. However Those facts cannot express is not considered in study which equally important viz, efficiency of workers., image and impression of management, confidence of customers and suppliers.
7. his study is limited to Gujarat state only. Any generalization for not applicable to other state of India."

(RANSARIYA, 2010)(C.R.Kothari, Revised 2nd Edition, New Delhi, 2004.) (S.P.Gupta, 2002)

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