CHAPTER–III
RESEARCH METHODOLOGY

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CHAPTER III
RESEARCH METHODOLOGY

3.1 INTRODUCTION:
The present chapter is concerned with the research methods that have been followed in the study. Communication is the backbone of any economy, from the view of development. There is close relationship between postal performance and economic development. The Indian economy has scaled new height over the last few years and is still in acceleration mode. Emergence of several significant trends such as liberalizations, Globalization, Demographic shift towards urbanization leading to increasing internal and external migration required to be serviced.

Changing communication technology especially mobile telephone, World Wide Web, courier services, financial deficiency, low-productivity and inefficiency are the challenges before India post. It is also facing problem of competition from private courier services and technological advancement. To Measure the performance and efficiency of public utility like postal services is both complex and difficult. This is because the objectives according to which the organization needs to be assessed are spread all over the district and often conflicting. Measuring the degree to which the objectives have been satisfied would inevitable computing weightage to the indicators. Measuring administrative and operational efficiency, productivity of any organization would be a simple exercise given that the DEA technique is known. DEA is the non-parametric mathematical programming approach to frontier estimation.

3.2 HYPOTHESES OF THE STUDY:
The present study is based on the following hypotheses in India post Solapur District.

1. In the period under study there is significant enhancement in administrative and operational efficiency of India Post in Solapur district
2. There are variations as to the perception of service users and customers about service provided by private courier agencies and India Post.
3. The enhancement in terms of quality and efficiency of India Post has resulted in improving level of customer satisfaction.
4. The changes in the business environment, competition and customer perception has changed the approach, service quality and practices of India Post in Solapur District.

3.3 OBJECTIVES OF THE STUDY:

Objectives of research are the important elements for conducting research as it helps in determining the possibility of conducting the study. Basically the broad aim of all researchers is to confirm the reliability of existing knowledge and also find the deviation of existing knowledge. A clear objective helps in easy investigation and analysis of the problem under study. The present study, deals with an analytical study of Administrative and operational efficiency of India Post, with reference to Solapur District. In the light of above hypotheses, the objectives of the study are as follows:

1. To examine whether the resources are utilized in productive and efficient manner by India Post in Solapur District.
2. To study the perceptions of different customer segments about the services provided by India Post in Solapur district.
3. To examine the level of customer satisfaction about the services provided by India Post in Solapur district.
4. To study the efforts of India Post in Solapur District to adapt to changing business environment.
5. To make suggestions to improve efficiency and sustainability of India Post in Solapur district.

3.4 SCOPE AND LIMITATIONS OF THE STUDY:

A study on administrative and operational efficiency of India Post in Solapur District is a vast subject. A large network of Post Offices of India Post throughout the district which included 91 sub-post offices with various services i.e. mail services, general services and financial services etc, of which more than seventy percent Post offices are in the rural areas is indicative of the commitment to provide basic postal facilities throughout the district at an affordable price. Due to competition India post is urging to improve its efficiency & sustainability. Hence the study limits its scope to overall efficiency or Technical efficiency, Managerial efficiency or Pure Technical efficiency and Scale efficiency or efficiency according to the size of operation of the post office. In this study, an attempt is also made to assess the opinion of customers of postal services in Solapur District with reference to quality of postal services,
customer satisfaction and customer’s opinion about overall efficiency of postal services in the district.

In order to study the efficiency of India post in Solapur District the study limits its scope to Post Offices in solapur district only. 10 percent of sub post offices in the solapur district i.e. 10 sub post offices out of 91 in both Pandharpur Division and Solapur Division area are considered as per sample size. There are 11 Tahasils in the solapur district; the researcher has taken 6 from it for the study. The study is focused on the period from April 2011 to March 2014. There are many criteria for computing efficiency of service sector. Here efficiency of Department of Post in Solapur District is evaluated on the basis of productivity. An important characteristic of this study is that it focuses on the administrative and operational efficiency of India Post in Solapur District.

The study has limitation of time, money as well as the availability of data and the respondent’s inability to communicate effectively might be some of the limitations that present the scope of using this study for further elaborations. As any other survey research faces the element of bias, some of the respondent’s response on biased judgment may also affect future utility of the study.

3.5. SOURCES OF THE DATA:

After preparing research design, the sources of the data and information are most essential to carry out any research for the purpose of analysis. The method of collection of data depends mainly upon the nature, purpose and scope of enquiry on one hand and the availability of data on the other, statistical data may be classified into primary and secondary depending upon the nature of data and mode of collection.

A study of administrative and operational efficiency of India post in Solapur District has posed many challenges and also has various aspects for in depth study. This requires emperical data as well as analytical tools for its processing. This leads one to go through analytical research. In analytical research the Researcher has to use facts or information already available and analyze these to make a critical evaluation. Considering the objectives of the study it was initially decided to collect data pertaining to the profile of Solapur District. In addition to it, it was thereafter decided to collect data regarding evolution of India post and recent development and various schemes provided by India post, the issues and challenges facing by India Post. It was decided to collect all the data related to the profile of the district and various issues, aspects related to the study i.e. issue related to effective utilization of available
resources, customers awareness, customers satisfaction and service quality through quantitative and qualitative data. Accordingly two surveys were conducted during the study first-of post office wise data relating to input variables (Number of employees, Area of the post office and its rent, number of computers and equipments), output variables (Volume of Registered mail services, Unregistered mail services, financial services etc); second of the perception of various segments of customers of postal service with reference to quality of services and their satisfaction, opinion survey of postal customers regarding overall efficiency of postal services in Solapur District was made. The Methodology adopted for collecting the qualitative and quantitative data listed above is explained as under.

3.5.1 Qualitative Data:

The topic of research entitled “An Analytical Study of Administrative and Operational Efficiency of India Post with reference to Solapur District” is an attempt to analyze administrative and operational efficiency and the perception of customers about quality of services and customers satisfaction of India Post in Solapur District. For this purpose following questionnaires were designed. With the help of questionnaire framed for the opinion survey, sample postal customers were interviewed in depth and the objectives of the said opinion survey were discussed with them and then the survey was conducted. It is done to get qualitative data. It was collected from residents, business men through frequent visit to Branch post offices, sub post offices and Divisional post offices of Pandharpur and Solapur Division.

a) First questionnaire Part-I for mail services and general and Part-II for financial services. In Part- I there are 21 questions related to mail & general services and relative efficiency. In part-II there are total 18 questions related to financial services and its relative efficiency. Survey was done through random sample. 250 questionnaires were distributed to the citizens of the research area Solapur District at random. The 225 questionnaires were answered by customers and were returned to the researcher at the same time or after few days. Out of the two hundred were used.

The objective of this questionnaire was to study awareness about postal service, problems faced by the customers, Competition faced from Private couriers, buyer’s behavior and alternative media of communication used by the customers. The aim was also to assess the customer satisfaction in relation to postal mail services and financial services through studying the expectations of the customers and the extent to which India Post in Solapur District is successful in fulfilling them.
The questionnaire consists of Total 29 questions divided into two parts, part-I consists 21 questions of which 2 were open ended, 11 were multiple choice and 8 were close ended questions. Question No.7 included 8 criterias on which customer’s perception about service quality of India Post and private couriers as well as satisfaction of customers was judged. A five point scale was used to measure satisfaction of customers (Highly-satisfactory, satisfactory, indifferent, unsatisfactory, highly unsatisfactory). The questionnaire includes 3 questions including question no.7 which aimed at comparative study of customer’s perception about services of India Post and private couriers.

Part- II Questionnaire for customers for financial services: This questionnaire was framed with the objective of examining awareness of customers about postal saving schemes the factors affecting investment decisions, the resources of information and difficulties faced by the investors. The aim was also to assess the customer’s satisfaction in relation to postal financial services through studying the expectations of the customers and the extent of which India Post is successful in fulfilling them. This part of questionnaire consists of 18 questions of which 1 was open ended 10 were multiple choice and 7 were close ended. Question no.3 and 4 aimed at finding out the ranking of the factors which make the investors invest in postal saving schemes and factors which discharge them for the same. Likert’s scale was used to analyze the responses.

3.5.2 Quantitative Data:

To examine whether the resources are utilized productively and effectively by India Post and to know the determinant factors of administrative and operational efficiency following sources were used to collect quantitative as well as qualitative data.

a) Second Questionnaire was prepared to get post office wise quantitative data: To avail the sub post office wise quantitative data structured questionnaire consisting of 35 questions were prepared and collected data of each one, related to output (volume of registered and unregistered mail and general services, volume of financial services etc.) The outputs have been weighted by their percentage of income contribution to the total income. Only two Inputs (Number of postal staff representing labour and Area of the Post office or rent of the same, number of computers and equipments representing capital have been taken) Data for the period from April 2011 to March 2014 was used for the study, as the data was available for this period only.
b) Reports Referred:
   India post Annual Report,
   District Statistical Department- Socio-economic abstract of Solapur District,
   Reports, of Accenturs International Management Consultant Pvt. Ltd.
   Divisional Post offices, Pandharpur and Solapur. Head post offices, Solapur
   and Pandharpur.

c) Internet: Collected data - Search engine Google
   All India level data and abroad.
   Solapur District data.
   Website of India Post.
   Articles related to India Post through internet.

d) Publications: Visited libraries,
   Jawaharlal Nehru Library University of Mumbai,
   Ghokhale Institute of Politics and Economics, Pune,
   Jaykar Library, Savitribai Phule Pune University, Pune.
   Department of Economics, University of Mumbai.
   Department of Commerce, Liabrary, Savitribai Phule Pune University, Pune.
   Ness Wadia Commerce College and Research Centre, Liabrary, Pune.
   Research Papers, Articles in Economic and Political Weekly.
   Articles in Southern Economist, Articles in news papers, Times of India,
   Indian express etc.

3.6 RESEARCH METHODOLOGY:

Any research work is carried out on the basis of certain methods and
techniques. The data and information were collected from different sources of primary
and secondary data. These data have been organized, processed, percentage and
proportions have been calculated as per requirement for analysis and finally tabulated
in desired tables. The selection of study area, population size and sample size as wel as
the research methods to be used are summarized as given below:

Selection of Study area: Most important stage in the research process was
selection of study area wherein study was to be conducted. It was decided to select
one district from the state of Maharashtra and for this purpose following criteria were
adopted:
- It should be a developing and well populated district that promotes employment opportunities and source of earning through various sources.
- Marketing of goods and service market are strongly influenced by purchasing power and willingness of people.
- Convenient for collection of data as the origin of the Researcher is solapur district.

Based on the above criteria it was decided to select Solapur district for the purpose of study. The main purpose behind this is that Solapur is pre-dominantly a commercial and Industrial district, with textile industry as a major industry generating a good portion of foreign exchange revenue. The strategic geographic location joining 3 states i.e. Maharashtra, Andhra and Karnataka has brought invaluable commercial value to solapur.

The research is descriptive as well as exploratory in nature. It is also a combination of qualitative and quantitative research.

a) **Descriptive Research:**

The research is descriptive research as the purpose of this research was to describe the state of affairs during the research period, with the help of surveys and enquiries in relation to following variables.

- **India Post-Solapur District:** Input variable-I (Number of employees) and Input variable –II Capital (Comprises of area of the post office in sq. mtrs, or annual rent of the office, Number of Computers and equipments) are the two input variables. where as Output variable-I total mail and general services (Registered and Unregistered) and output-II Postal Savings schemes (Number of accounts and no of deposits/ withdrawals), Money order tariff, Recurring Deposits and other financial services are the two output variables.

- Satisfaction of the customers with reference to the factors affecting service quality like physical facilities, reliability, attitudes, of the employees assurance and knowledge etc.

- Relation between satisfaction of customers and demographic characteristics.

- Change in business environment including the factors like government policy, competition, customer’s expectations and use of technology.
bullet Efforts of India Post towards adopting to changing environment like computerization, nature of organizations objectives, new services introduced and business process reengineering and other initiatives.

b) Exploratory Research:

The research was also exploratory research. Exploratory research is a type of research that is undertaken to explore survey participant’s response to the survey topic. Exploratory research helps the researcher to check the viability of the research proposal and modify the same. It provides more ideas and alternative technique for analysis of data.

In many social science circles, exploratory research seeks to find out how people get along in the setting under question, what meaning they give to their actions and issues concerned with them. The goal is to learn what is going on here? And to investigate social phenomena without explicit exceptions. The research being exploratory research helped the researcher to study the perception of customers about the service quality of services provided by India Post in Solapur District.

The researcher has studied the relationship between variables i.e. the relationship between satisfaction of customers of India Post in Solapur district and the demographic characteristics of the customers. This research is an exploratory research as the researcher collected interviews with customers, employees.

c) Quantitative Research:

The research is quantitative in nature as it relates to the collection, analysis and interpretation of quantitative data relating to the performance and efficiency of India Post in Solapur District, in terms of mail and general services, financial services, number of post offices, number of employees, number of computers, economic performance etc. The data was collected through frequent visits to Solapur Head Post office, Divisional post office Pandharpur and Solapur, as well as Sub post offices, Branch Post Offices in Solapur District. The quantitative data collected was analyzed and interpreted to assess the efficiency of India Post in Solapur District.

d) Qualitative Research:

It is also qualitative research as far as it relates to perception of customers about quality of services offered by India Post and perception of past and present employees about work environment and satisfaction of customers. For this purpose qualitative data was collected from primary and secondary sources. Qualitative data
also includes secondary data in the form of opinions of writers and experts of various articles collected from internet, news papers and magazines. It is a data based research coming up with conclusions. Which are capable of being verified by observation? The researcher has tried to collect various facts, which may prove or disprove the hypothesis.

3.7 SAMPLING PROCESS:

The research covers on area of 6 Tahashils out of 11 Tahashils in solapur district and for administration purpose post offices are classified under two Divisions i.e Pandharpur and Solapur Division. Divisional Post Offices and head Post Offices are controlling and monitoring units over the sub post offices spread throughout the district. There are 91 sub post offices in the district, which are operational units, where operational efficiency can be studied. For the study sample size of 10 percent sub-post offices were considered as functional units. 10 sub post offices out of 91 sub post offices i.e. 5 from Pandharpur Division and 5 from Solapur Division are considered for the study and quantitative data was collected from these post offices with the help of questionnaire.

Table 3.1

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Classified Name of Post Offices</th>
<th>Population Size No. of post offices</th>
<th>Sample Size in number</th>
<th>Sample Size in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>DivisionalPostOffices-Controlling Units</td>
<td>02</td>
<td>02</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Head Post Offices - Monitoring Units</td>
<td>02</td>
<td>02</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Total of Controlling offices</td>
<td>04</td>
<td>04</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Sub-Post offices (Operational Units)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub Offices( LSG)</td>
<td>11</td>
<td>01</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>A-Class Sub Offices</td>
<td>09</td>
<td>01</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>B-Class Sub Offices</td>
<td>20</td>
<td>02</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>C-Class Sub Offices</td>
<td>51</td>
<td>06</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Total of Sub-Post Offices</td>
<td>91</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by the researcher.

The researcher has made opinion survey of postal customers, regarding quality of services provided and customer’s satisfaction by India post in solapur district. The
area covered and the number of customers though not infinite, is large in size. Therefore practical purposes stratified sampling was used. Since the population size is infinite, sample size for the study was considered 200 respondents of mail, general and financial services. Questionnaire was administered to 200 postal customers belongs to all the categories from different areas, income groups and age groups including business customers to make the sample representative.

3.8 QUESTIONNAIRE DESIGN:

The topic of research entitled “An Analytical Study of Administrative and Operational Efficiency of India Post with reference to Solapur District” is an attempt to analyze administrative and operational efficiency and the perception of customers about quality of services and customers satisfaction of India Post in Solapur District. For this purpose following questionnaires were designed.

While designing questionnaires the following objectives were given priority.

i) To collect accurate information from respondents about the research subject.

ii) To provide standard from in which facts and comments can be used.

iii) To facilitate data processing

iv) Structured questionnaire was used, because it makes all respondents reply the same analysis. It was however experienced that structured questionnaire restrict the free response, some open ended questions helped to overcome this limitation to some extent.

a) First questionnaire Part-I for mail and general services. Part-II, for financial services. In Part-I there are 21 questions related to mail & general services and relative efficiency. In part II, there are total 17 questions related to financial services and its relative efficiency.

b) Second questionnaire was prepared to get post office wise quantitative data. To avail the post office wise quantitative data questionnaire consisting of 35 questions were prepared and collected data of each one related to Input (Number of employees, post office area in Sq. feet and annual rent for it, number of computers and equipments etc.) and output (volume of registered and unregistered mail and general services, financial services) were considered.

3.9 PARAMETERS CONSIDERED FOR THE STUDY:

To analyze the administrative and operational efficiency of India Post in Solapur District, following parameters are considered.

1. Overall efficiency or Technical efficiency of post office
2. Pure Technical efficiency or Managerial performance, efficiency of post office
3. Scale efficiency or efficiency based on size of operations of post office.
4. Quality of postal services.
5. Customer satisfaction.
6. Adoption of changes by India Post as per changing business environment.

3.10 DATA PROCESSING AND STATISTICAL TECHNIQUES USED:
The data collected through questionnaires was scrutinized carefully. It has been used intensively to analyze the research work.

Analysis of Quantitative Data:

For analyzing the quantitative data DEA technique was used i.e. Efficiency = \( \frac{\text{Output}}{\text{Input}} \). Using data envelopment analysis (DEA), the present study is an attempt to measure the extent of technical, pure technical, and scale efficiencies of individual Sub-Post Offices using data envelopment analysis (DEA) methodology. In the methodological framework, technical, pure technical, and scale efficiency scores for individual Sub-Post Offices have been obtained by employing two popular DEA models, namely, CCR and BCC models, and is based on the assumption of variable returns-to-scale, involving only the conventional inputs and outputs.

Before proceeding further, the researcher feels that the concepts of technical, pure technical, and scale efficiencies need some elaboration. Technical efficiency (TE) relates to the productivity of inputs (Sathye, 2001). The technical efficiency of a firm is a comparative measure of how well it actually processes inputs to achieve its outputs, as compared to its maximum potential for doing so, as represented by its production possibility frontier (Barros and Mascarenhas, 2005). Thus, technical efficiency of the Post office is its ability to transform multiple resources into multiple mail and financial services (Bhattacharyya et al., 1997). A Post Office is said to be technically inefficient if it operates below the frontier. A measure of technical efficiency under the assumption of constant returns-to-scale (CRS) is known as a measure overall technical efficiency (OTE). The OTE measure helps to determine inefficiency due to the input/output configuration as well as the size of operations. In DEA, OTE measure has been decomposed into two mutually exclusive and non-additive components: pure technical efficiency (PTE) and scale efficiency (SE). This decomposition allows an insight into the source of inefficiencies. The PTE measure is obtained by estimating the efficient frontier under the assumption of variable returns-to-scale. It is a measure of technical efficiency without scale efficiency and purely
reflects the managerial performance to organize the inputs in the production process. Thus, PTE measure has been used as an index to capture managerial performance. The ratio of OTE to PTE provides SE measure. The measure of SE provides the ability of the management to choose the optimum size of resources, i.e., to decide on the Post Offices size or in other words, to choose the scale of production that will attain the expected production level. Inappropriate size of a Post Office (too large or too small) may sometimes be a cause of technical inefficiency. This is referred as scale inefficiency and takes two forms: decreasing returns-to-scale (DRS) and increasing returns-to-scale (IRS). Decreasing returns-to-scale (also known as diseconomies of scale) implies that a Post Office is too large to take full advantage of scale and has supra-optimum scale size. In contrast, a Post Office experiencing increasing returns-to-scale (also known as economies of scale) is too small for its scale of operations and, thus, operates at sub-optimum scale size. A Post Office is scale efficient if it operates at constant returns-to-scale (CRS).

**Analysis of Qualitative Data:**

The finished data have been represented through various cartographic and statistical techniques. Statistical analysis is carried out by SPSS statistical software to analyze and interpret the opinion of the postal customers in Solapur district. Descriptive statistics such as percentage was used to present the data. Comparison between two service providers was done by using z-test for proportion and chi-square test for association, a test for the equality of multinomial distribution used for testing whether two or more multinomial distributions are equal. The test for equality /homogeneity is a method, based on the chi-square statistic, for testing whether two or more multinomial distributions are equal.

**Object:**

To test the equality of h independent multinomial distribution

**Method:**

Let \( P_{ij} = P(A_i) \), \( i = 1,2,\ldots,k \); \( j = 1,2,\ldots,h \)

1. the letter \( i \) will index the \( h \) row categories, and
2. the letter \( j \) will index the \( k \) column categories

(The text reverses the use of the \( i \) index and the \( j \) index.)

It is required to test,

\( H_0: P_{i1} = P_{i2} = \ldots = P_{ih}, i = 1,2,\ldots,k \)
Repeat the jth experiment nj independent times and let Y1j, Y2j, ……, Ykj indicate the frequencies of the respective events A1, A2, ……, Ak. Then

\[ Q = \sum \sum (Y_{ij} - njP_{ij})^2 / njP_{ij} \]

Has an approximate \( \chi^2 \) distribution with h(k-1) Df.

Under H0, we estimate k-1 probabilities using

\[ P_i^* = \frac{\sum Y_{ij}}{\sum nj} \quad i=1,2,\ldots,k \]

As the estimate of Pk follows from Pk = 1 - \( \sum P_i \), then

\[ Q = \sum \sum (Y_{ij} - njP_{ij})^2 / njP_{ij} \]

Has an approximate \( \chi^2 \) distribution with

h(k-1) - (k-1) = (h-1)(k-1) degrees of freedom

with:

(1) \( y_{ij} \) denoting the number falling into the \( j^{th} \) category of the \( i^{th} \) sample

(2) \( p^ij = y_{ij}/n \) denoting the proportion in the \( i^{th} \) sample falling into the \( j^{th} \) category

(3) \( n_i = \sum kj=1 y_{ij} \) denoting the total number in the \( i^{th} \) sample

(4) \( p^j = (y_{1j} + y_{2j})/(n1+n2) \) denoting the (overall) proportion falling into the \( j^{th} \) category

With the notation defined as such, we are now ready to formulate the chi-square test statistic for testing the equality of two multinomial distributions.

The Chi-Square Test Statistic

**Theorem.** The chi-square test statistic for testing the equality of two multinomial distributions:

\[ Q = \sum_i=12 \sum_j=1 k(y_{ij} - nip^j)2nip^j \]

follows an approximate chi-square distribution with \( k-1 \) degrees of freedom.

Reject the null hypothesis of equal proportions if \( Q \) is large, that is, if:

\[ Q \geq \chi^2 \alpha, k-1 \]

A statistical analysis is carried out with the help of SPSS statistical software for the all forty four tables out of these 28 tables are concerned with mail and general services and 16 tables are concerned with financial services. The results of the analysis are subsequently presented by means of tables, charts and diagrams wherever it is found necessary. After thorough discussion with computer experts, programme for computerization was prepared and finally all data was computerized. Great caution was taken to avoid any possible errors in Computerization.
Observation Method:
The researcher has used observation method to observe the counter postal operations, interactions between customers and employees, delivery services of various sub-post offices in Solapur district. It was observed and recorded.

Interview Method: Researcher has used interview technique also, interviews of superintendent of post, sub post masters and branch post masters and postmen has been taken and their views and experiences are taken into account in this study for getting good results.

Interviews of the following people have been taken:
- Superintendent of Post - 01 Number
- Ex-Superintendent of Post - 01 Number
- Post Master - 01 Number
- Sub-Post Master - 10 Numbers
- Postal Assistant - 10 Numbers
- Branch Post Master - 14 Numbers

3.11 SUMMARY:
To sum up for the analysis of quantitative data, DEA Models has been used. The multiple-output multiple-input feature of India Post has been modelled using the DEA model. According to output oriented variable returns to scale (VRS) model two outputs and two inputs are considered. Outputs variables of Post offices are considered as volume of mail, general services and financial services provided by the post offices are considered in this study. Labour and capital (Area of the post office if it is owned by Department or annual rent of the same and computer and equipments) are considered as Input variables. In this study overall technical efficiency, pure technical efficiency and scaler efficiency of the post offices in Solapur district is calculated by using DEA technique.

For the analysis of qualitative data (postal cutomers opinion), descriptive statistics such as percentage was used to present the data. Comparison between two service providers was done by using z-test for proportion and chi-square test for association, a test for the equality of multinomial distribution was used for testing whether two or more multinomial distributions are equal.
REFERENCES: