CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Research Design

The research type is used for type of research which connects with areas of study, important data to be used, the type of data to be taken, and the analysis process (Philliber et. al., 1980). Research generally requires a particular methodology before getting data or analyzing the data.

The research design tries to make sure that the results got will help us to answer the questions in an effective way. Identifying the type of proof required to find the answer to the research question is important. Research is required to answer research question and the methodology of finding the answer is very important.

Research design is all about handling a problem logically (Yin, 1989). In social research sampling, data collection (methods like questionnaire, observation, literature analysis etc.), and questionnaire design are all secondary compared to the proof of data collection.

Research designs deal with changing the research questions into a work which can be tested. The best method of research is very much related to the research questions.

Research design is not the same as the method by of information collection. Sometimes research design is very much used as a tem useful for method of data collection.

Research design can be something which is rigid or it can be flexible (Robson, 1993). These are also defined as Qualitative Research and Quantitative Research. Quantitative can be fixed or flexible and same applies to qualitative.
In rigid or fixed designs, the study is not changed in the beginning. Fixed designs depend on theory and variables which have to be controlled are known in advance. Generally these variables are quantitative. Flexible designs are more flexible and here the variables are not quantitatively measurable.

**Quantitative Design**

Experimental research design: In this design, the research is done to adjust the situation, circumstances or participant experience (called as manipulation). This causes a change in working behavior of the respondents of the study. The samples are exposed to different situations and relevant parameters are identified. All the other factors are rigid and controlled. Fixing of experiments happens in the beginning before the data collection starts.

Non-experimental research design: Non-experimental research is similar to causal one. The non-experimental research has no manipulation of the whole situation, or experience of the participants. Non-experimental research designs are of 3 types.

The first type is called as relational design which is also called as correlation studies, since correlation is most often used in the analysis. The second one uses comparison and so is called as comparative design. These designs generally compare two groups in natural setting. Longitudinal design is also there as a design.

Quasi research design: Quasi research designs follow the normal route of causal research procedure, but here randomness of sample is not taken into consideration.

**Qualitative research designs**

A qualitative research design is similar to a case which we study. here one single item is only studied in depth. This situation can be talking of an individual or a firm or a group of people or situation

**Descriptive**-The research design is descriptive as the study aims to find out the characteristics of consumers as well as the employees. The problem is known and in descriptive research we define the population characteristics using sample. It is
generally a detailed study which defines the 5W and 1H (who is buying, when is the customer buying, where is the customer buying, why is the customer buying and what is the customer buying and how is he/she buying) get more data from other parts

<table>
<thead>
<tr>
<th>Quantitative Research</th>
<th>Qualitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Important aim is to ascertain cause-and-result. Very important Primary aim is to entail on-going relationships.</td>
<td>□ Primary purpose is to describe on-going processes.</td>
</tr>
<tr>
<td>□ Precise hypotheses are stated before the start of the process; lot of theories rules the aim of the process.</td>
<td>□ Hypotheses are formed during the process; questions are there during process; theories are formed.</td>
</tr>
<tr>
<td>□ The independent variable is controlled and manipulated.</td>
<td>□ There is no specific independent variable; the main point is to understand process naturally</td>
</tr>
<tr>
<td>□ Research design is specified before the beginning of the process .</td>
<td>□ Data collection in Objective manner is not required; Researchers can contact the participants and have interaction.</td>
</tr>
<tr>
<td>□ Data are shown and summarized in numerical form or verbal form.</td>
<td>□ Research design is not rigid and is developed throughout the process.</td>
</tr>
<tr>
<td>□ Reliability and validity of the data is ascertained by different methods of statistics and by logic.</td>
<td>□ Data are represented and summarized in narrative numerical form or verbal forms.</td>
</tr>
<tr>
<td>Samples are selected to represent the population.</td>
<td>Reliability and validity are analyzed using different sources of information (called as triangulation).</td>
</tr>
<tr>
<td>Study of behavior is in the natural or artificial setting.</td>
<td>Samples are taken with purpose or single sample is studied.</td>
</tr>
<tr>
<td>Use of design or statistical analyses to control for threats to internal validity.</td>
<td>Use of logical analyses to control or account for alternative explanations.</td>
</tr>
<tr>
<td>Use of inferential statistical procedures to demonstrate external validity (specifically, population validity).</td>
<td>Use of same cases to find the generalisability of findings (logical generalization), if at all.</td>
</tr>
<tr>
<td>Rely on research design and data gathering instruments to control for procedural bias.</td>
<td>Rely on researcher to come to terms with procedural bias.</td>
</tr>
<tr>
<td>Phenomena are broken down or simplified for study.</td>
<td>Phenomena are studied together as a complete system.</td>
</tr>
<tr>
<td>Conclusions are stated with a predetermined degree of certainty.</td>
<td>Conclusions are not sure and subjected to ongoing examination.</td>
</tr>
</tbody>
</table>
STRENGTHS OF QUANTITATIVE RESEARCH

1. The data collected has high reliability

2. The area covered is high and so cross sectional study will high reliability and validity

3. Since statistical analysis is involved the study has in depth analysis which helps in more accurate findings

4. The study can be repeated without much difficulty

LIMITATIONS OF QUANTITATIVE RESEARCH

1. The amount of exploration which can be done in this case is limited

2. Quantitative data can be sometimes difficult to interpret
3. It can be affected by other factors and so it can mislead the researcher

4. It is generally not reflecting the dynamic nature of human life

STRENGTHS OF QUALITATIVE RESEARCH

1. Qualitative research is an ideal tool for exploration

2. It helps in forming the foundation for quantitative research

3. It gives deeper and more penetrative feedback

4. It generally provides human perspective in a better fashion

LIMITATIONS OF QUALITATIVE RESEARCH

1. The number of participants here is very less

2. It is difficult to generalize the results here

3. Data interpretation is not easy in this case

4. Qualitative research generally does not find minute differences in opinions
In this research, a mixture of quantitative and qualitative is used to define parameters and rating questions are used which can be quantified easily. In short, though the objective is to find out the opinions of people on service quality, the questions are formed in such a way that it can be quantified. The study uses more of descriptive methodology than exploratory, and so the data interpretation and analysis becomes much easier.
5.2 Research Question

The aim of this study is to find out if there are significant differences between the three banking sectors (private and public and co-operative sectors) in terms of client thinking of quality of service. It is also looking into account employee thinking in all these types of banking sectors and the differences between them. So this will give indicators of quality from both client perspective and also from employee point of view to see whether employees are able to meet the expectations of clients.

The question is whether there are relevant differences in client perceptions of quality of service within the different banking sectors? (From both customer and employee view points)

To give clear answer to these questions we require the use of an efficient scale which will measure perceived quality. Here the secondary data was helpful to arrive at useful and effective questionnaires for both customers and employees of these different types of banks. This will help to find the answer to the questions and help us to give a direction for further research in this area.
5.3 PILOT TEST AND RELIABILITY

PILOT TEST OBJECTIVES

1. To find out the components and the parameters in each component (components are not named)
2. To find out the most important statements
3. To find out the relationship between age group (also gender) and the most important statements for service quality obtained from the study

RESEARCH METHODOLOGY

The study is qualitative in nature as it finds out the important parameters why a consumer is doing his transactions but at the same time it attempts to quantify the rating given by consumer to the parameter.

PILOT TEST SAMPLING

Convenience sampling is used as this is the easiest method of collecting samples for the purpose of improving the questionnaire

The banks are taken as a whole and the objective is to understand the factors responsible for quality and the parameters in each factor.
SAMPLE SIZE

**Sample size.** The number of respondents to be surveyed is given by this

Sample size is 66 and the sampling area is Navi Mumbai.

SAMPLING UNIT

**Sampling Unit.** The type of respondents is answered by this

The sampling unit is customer of bank (generally and not of any particular bank)

The questionnaire consists of the statements form SERVQUAL and parameters from Bahia and Nantel scale(2000). It is a combination scale which is used here. Secondary data is also done to understand works in this area by other researchers

Pilot test was not done with employees as getting employees were difficult. After pilot test with customers some questions were eliminated. The initial questionnaire was a combination of SERVQUAL questionnaire and Banking Service Quality questionnaire by Bahla and Nantel.

Some of the questions were eliminated because their factor loading was very less. The questions that are eliminated are given below.

BANK HAS VARIETY IN PRODUCTS
TIME TAKEN IN CLEARANCE OF CHEQUES AND DRAFTS IS LESS

THERE IS LESS INTERRUPTION OF SERVICE DURING WORK HOURS

EMPLOYEES ARE AVAILABLE FOR PROBLEM SOLVING

BRANCH MANAGER IS AVAILABLE FOR ANY PROBLEM

EMPLOYEES ARE COURTEOUS TO THE CUSTOMERS

PROCESS IS TRANSPARENT AND QUALITY POLICY OF BANK IS COMMUNICATED TO CUSTOMERS

THERE IS A FEELING OF SECURITY WHEN CUSTOMERS TRANSACT WITH BANK

For a research to be good, the findings must be reliable and valid. Reliability is defined as consistent result of the study if repeated. There are 4 different methods of measuring this:

1. Test-retest
2. Multiple forms
3. Inter-rater
4. Split-half

The first method is done by giving the test, survey or by measurement of the same team of people at different points in time. All these values are generally taken as correlation coefficients. The multiple forms technique is done by mixing questions on the survey, and giving it to the same group twice. This is a better test of reliability. Inter-rater reliability is used when others are doing the interviews.

To find this, agreement is found out between people who rate the same subject. Split-half reliability is found by splitting half of the test, survey, and using analysis taking it as a whole. The next step is to connect this result with overall result.
There are different ways of doing this and one of them is called as **Cronbach’s alpha** (a very much used method for computing reliability) which relates performance of each question with overall value (O’Connor, 2011).

Alpha value can be from zero to one and is used to explain the reliability of dimensions taken from yes or no questions (that is, dichotomous scale) or we can use multiple rating survey questions (i.e., rating scale: 1 = poor, 5 = excellent).

Nunnaly has indicated 0.7 to be a level of reasonable reliability but lower values can be used sometimes used (Nunnaly, 1978).

A number of researchers have used Cronbach Alpha to find out consistency of the questionnaire.

Bland and Altman used Cronbach Alpha to measure the consistency of their questionnaire in their study to measure the degree of anxiety or handicap (Bland and Altman, 1997).

Horne et. al. used Cronbach Alpha in their study on satisfaction with information about medicines scale (Horne et.al., 2001).

Choe in her study on cultural effects on information characteristics of accounting information systems used Cronbach alpha to test the reliability of her scale (Choe, 2006).

Erica and Adam used Cronbach-alpha in their study on gambling to compare two different scales to measure gambling tendency (Erica and Adam, 2010).

Oluseyi analysed the impact of style of management and characteristics such as gender, age, education and work experience etc. on efficient management system in terms of work across organizations in Nigeria and used Cronbach-alpha to show the reliability of his instrument (Oluseyi, 2011).
5.4 SAMPLING DESIGN FOR THE STUDY

SAMPLING AREA
The area from where the sample is selected is called as sampling area

The sampling area is Mumbai and it is limited to Mumbai as it is not easy to compare between different regional areas owing to time aspect and cost involved.

The major data collection was done on the samples based in Navi Mumbai from the banks concerned, i.e., State Bank of India, Corporation Bank, HDFC, IDBI, Saraswat Bank and some customers of ICICI (ICICI samples are quite less as the administration did not allow customer interaction from the branches).

The study analyses and compares branches of different banks in and around Mumbai. Employees are taken from different branches of these banks specifically from Navi Mumbai area.

The areas from where the samples are taken are
Sanpada, Vashi and Sion for IDBI
Nerul, Vashi for Corporation bank
Govandi, Vashi, Nerul for SBI
Nerul, Vashi for HDFC
Vashi for ICICI
Nerul, Dadar for Saraswat Bank

The employees are also taken from the branches where customers are taken.
**SAMPLING UNIT**

The unit defines the type of respondents to be surveyed

Banks which are selected are State Bank of India, Corporation Bank, IDBI, HDFC, Saraswat Bank and ICICI. Customers and Employees of these banks mentioned which are there in the sampling area are taken for the study with more emphasis on public sector banks.

Samples were also collected for the purpose of positioning map.

**SAMPLING METHOD**

The method defines whether we have to go for probability or non-probability methods for selecting sample from population.

The study has used method of random for consumers and employees. Convenience method was used after deciding the branches and samples were collected from these branches by sitting there and collecting. Whoever was ready to fill the questionnaires were used and there researcher convenience and randomly the customers were taken for the study.

It is not easy to use method of random for consumers because the population is huge but as far as possible samples were collected in such a way that error is limited.

Bank employees are taken based by getting permission of the bank management and here also randomness is used to limited extent and more or less sampling was based on readiness of employees to answer the questions in the survey.
The employees were selected in such a way that error is less and as far as possible the study tried to take respondents in a neutral fashion so that all branches are represented equally.

Banks are taken by using convenience of researcher as State bank of India, Corporation, HDFC, IDBI, Saraswat bank etc were easy for the researcher to take and whatever samples which could have been collected from ICICI were taken.

Bank branches were selected based on randomness. But the number of branches taken for the study for different banks is not the same and whatever possible was taken for the study.

Samples were taken randomly from Navi Mumbai for the purpose of positioning based on convenience of the researcher.

**SAMPLE SIZE**

Sample size defines the number of people who are taken for the final study.

**Sample Size - Infinite Population (where the population is greater than 50,000)**

\[
SS = \left( \frac{Z^2 \times p \times (1-p)}{C^2} \right)
\]

**Sample Size** = Sample Size

**Z** = Z-value (e.g., 1.96 for a 95 percent confidence level)

**P** = Percentage of population picking a choice, expressed as decimal

**C** = Confidence interval, expressed as decimal (e.g., .05 = +/- 5 percentage points)

\[
SS = \frac{(1.96 \times 1.96 \times 0.5 \times 0.5)}{0.0025} = 384
\]
These are various formulae for calculating the required sample size. These formulae use the knowledge of the variance or proportion of data in the population and it finds out maximum error possible and the acceptable Type I error risk (e.g., confidence level). It can be used to make a table to identify the optimal sample size by incorporating size of entire population size, a particular margin of error, and a required confidence interval.

Many researchers (and research texts) suggest that Confidence Level = 95%, Margin of Error = 5% should suffice (The Research Advisors, 2006).

With the given population size, for a 5% margin of error, and 95% desired confidence interval, responses from a (random) sample of 378 would be sufficient (The Research Advisors, 2006).

With the given population size, population proportion of 0.5, and 0.05 confidence level, responses from a (random) sample of 375 would be sufficient (Krejcie and Morgan, 1970).

With the given population size, a 5% margin of error and 0.05 confidence level, for categorical data, using t-test a (random) sample of 370 would be sufficient (Bartlett et. al., 1970).

But since the data in the current research does not fall under normal distribution and non-parametric tests would be applied, the sample size calculation according to Lehmann proposed in 1998 is that a nonparametric test can be used by first computing the sample size required for a t-test and then adding fifteen percent (Lehmann, 1998). Hence the sample size of 425 would be sufficient.
Sampling methods

Probability Sampling

Probability sampling is a method in which each unit of the population has a known and non-zero chance of being included in the sample. This is the most utilized method by researchers. Probability sampling is the complete objective method of sampling a population. This sampling method also is very less error prone and is more accurate.

The methods in these are

(1) **Simple Random Sampling.** This is a very well known method of probability sampling. Here each element of a population has an equal chance of being selected. The population elements are selected one at the same time, independent of each other and without replacement. This is got by the help of random number tables. This method reduced subjective bias.

(2) **Systematic Random Sampling.** In this sampling method, all elements of a population are not given equal chance of selection. Here every nth person is chosen from a target population list after the first unit is selected at random. Systematic sampling is helpful in cases where you do not require face-to-face contact when collecting your data.
(3) **Stratified Random Sampling.** Here the population is divided into mutually exclusive strata (such as based on education), and random samples are drawn from each group. Stratified sampling method ensures that the elements within strata or clusters are homogeneous whereas between clusters they are heterogeneous.

(4) **Cluster Sampling.** This method is used when groupings are natural in the population. The total population is divided into clusters chosen randomly and within these clusters every unit is sampled. Cluster sampling is opposite to stratified in characteristics as within clusters the elements are heterogeneous but between clusters they are homogenous.

Often a 2-stage sample design is adopted, where the first stage sampling includes the selection of clusters and the second stage the selection of elements within the selected cluster.

(5) **Multistage Sampling.** In this method cluster sampling and stratified sampling are combined.

**Non probability sampling**

Non-probability sampling is the second most common method of sampling. Here the elements of a population do not have equal chance of selection with the sample. This is based on personal judgment of the researcher in the selection process. Types of non probability sampling are

(1) **Quota Sampling.** It is the most widely used type of non-probability sampling. Here the samples are selected in such a way that the proportion of the sample elements possessing a certain characteristic (e.g. age, gender, social class, etc.) is approximately the same as the proportion of the elements with the characteristic in the population.

2) **Purposive or Judgemental Sampling.** It selects the elements of population by means of “expert judgement”. Following this procedure,
experienced individuals in the subject matter of the survey select what they believe to be the best sample for that particular research.

3) **Snowball Sampling.** This method is often adopted when it is difficult to obtain elements of the targeted population. This works like word of mouth as a contact gives the names of other contacts here and thus we get sufficient samples

(4) **Convenience Sampling.** It is also called accidental sampling. Here we take people who are most conveniently available. Convenience samples are often adopted to obtain a large number of completed questionnaires quickly and economically.

The researcher therefore adopted non-probability sampling. The respondents to the survey were chosen using a non-random selection method. A non-probability sample was chosen versus a probability sample primarily due to the large population that potentially could be involved, the absence of a sampling frame, the need for undertaking a survey that covers a large geographical area and the limitations in the timing of conducting the survey and costs.

Non-probability sampling (or non-random sampling) provides a range of alternative techniques to select samples based on your subjective judgment”.
5.5 RESEARCH DETAILS FOR THE SURVEY

For the study non probability sampling is used for consumer survey as it is the easiest method and most suitable method. It is a combination of convenience of consumers and judgment from the researcher part. Employees are taken more using random method

The reasons for adopting convenience sampling are:
1. It is suitable to obtain a large number of completed questionnaires quickly and economically.

2. It helps the researcher to access people who are most conveniently available in the branches of the chosen banks. This allows the administration of the questionnaires face-to-face

3. This method of sampling can obtain a good response rate (Craig and Douglas, 2005).

The sample size is 458 in total for customer survey. Bank branches were selected on the basis of convenience of researcher. For each bank approximately 25-30 customers are taken and 2 or 3 branches are taken for each branch. From banks like State Bank of India, Corporation, IDBI etc more samples are taken due to convenience whereas ICICI had fewer samples due to unavailability.
Only for State Bank of India more branches are taken due to the total number of branches of the bank in Mumbai. Total employees taken from each bank varied from 11 to 33 depending on the number of branches taken and available employees.

Sample size for Customer survey is given below:

<table>
<thead>
<tr>
<th>BANK</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORPORATION</td>
<td>78</td>
</tr>
<tr>
<td>HDFC</td>
<td>83</td>
</tr>
<tr>
<td>ICICI</td>
<td>34</td>
</tr>
<tr>
<td>IDBI</td>
<td>80</td>
</tr>
<tr>
<td>SARASWAT</td>
<td>73</td>
</tr>
<tr>
<td>SBI</td>
<td>110</td>
</tr>
</tbody>
</table>
This shows public sector banks gave better responses as sample size is very large followed by private sector banks.

Employee sample size is 112 out of which 68 were from public sector, 11 from private sector (only HDFC as I did not get any replies from ICICI and 33 from Saraswat Co-operative bank). The number of males and females were taken almost in the same proportion.
### BANK NAME/TYP AND SAMPLE SIZE

<table>
<thead>
<tr>
<th>Bank Name/Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORPORATION</td>
<td>12</td>
</tr>
<tr>
<td>HDFC</td>
<td>11</td>
</tr>
<tr>
<td>IDBI</td>
<td>23</td>
</tr>
<tr>
<td>SARASWAT</td>
<td>33</td>
</tr>
<tr>
<td>SBI</td>
<td>33</td>
</tr>
</tbody>
</table>

75 samples were selected for multidimensional scaling