Chapter 2:

Research Methodology
Research methodology refers to framework designed for conducting the research in a scientific and orderly manner. It acts as a guideline to proceed with the research work in a hassle free manner. The essence of good and productive research work is reaching at some meaningful conclusion so that the outcome of the research can be presented for study by other interested researchers. It calls for effective research methodology to navigate the research to some conclusion.

The present research aims at studying the perceptual difference of quality in financial services with special reference to banking sector. In order to conduct the research effectively, research design has been formulated with some provisions of flexibility made wherever required. The objectives of the research are as under:

1. To identify the quality parameters from the bankers point of view.
2. To identify the quality parameters that plays an important role in forming the customer’s perception of quality with regard to banking services.
3. To study the quality standards set by apex regulatory bodies like RBI, and the recommendations Banking sector reform committees.
4. To analyze the gap between customer’s perceived quality level and banker’s quality of services.
5. To suggest measures to reduce the gap between perceived quality level and actual quality of services with regards to the banking sector.
Research design

Research Design is the blueprint, which guides the researcher throughout the study and eliminates subjectivity in the research. It may be worthwhile to mention here that proper research design helps the researcher to proceed in a systematic way. The research design constitutes the blueprint for the collection, measurement and analysis of data. It aids the scientist in his allocation of his limited resources by posting crucial choices. It is the blueprint to include experiments, interviews, observation, and the analysis of records, simulation or some combination of these.

Research design is the plan and structures of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research. It includes an outline of what the investigator will do from writing hypothesis and their operational implications to the final analysis of data. A structure is the framework, organization, or configuration of the relations among variables under study. A research design expresses both the structure of the research problem and the plan of investigation used to obtain empirical evidence on relations of the problems (Donald & William, 1995)

The proposed study attempts to measure the difference (gap) between the perception of quality from customer and service providers point of view. The study also aims at relating perception of customers with their satisfaction level. The research design used for this study is descriptive in nature. The
perception of customer and perception of service providers on service quality dimensions for actual service provided and received are measured. The study also aims at measuring the expectations of customers and view of service providers for the services of banks in general. It will help to identify the point of agreement and disagreement between the customers and service providers regarding the services of banks in general, which is useful for the bankers to redesign their services to minimize the gap and attain higher customer satisfaction.

**Servqual Methodology (Modified)**

In the present research modified servqual methodology has been used. It is done to incorporate some dimensions which are important specially keeping in view the nature of banking services.

Parasuraman et al. (1985) define a set of gaps occurring at different stages of the service design and provision, which altogether result into the ultimately relevant gap between consumers' expectations prior to the service delivery and consumer perceptions during the service delivery. This gap was first defined for 11 dimensions or domains of the service provision (access, competence, responsiveness, reliability, courtesy, communication, credibility, security, understanding and knowing the customers, and tangible), which were later reduced to five (responsiveness, reliability, assurance, empathy and tangible) by Parasuraman et al. (1985) (Carme Saurina and Germà Coenders).
The present study measures the service quality perceptions on the basis of eight dimensions which are Reliability, Responsiveness, Competence, Accessibility, Courtesy, Product range, Security, Tangibles. All these dimensions are subset of the above mentioned 11 dimensions of servqual with addition of product range since the product mix is considered as the most significant aspect of quality. Moreover the first part of the modified servqual measuring the perception of customers (of the actual service) and service providers on eight quality dimensions is based on rating on a seven point scale. The second part which is broken into 16 statements aims at measuring the perceptions of customers and service providers in general. These 16 statements are constructed on the basis of eight quality dimensions used in the first part.

Measuring the perceptual gap in quality

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<tr>
<th>Quality Perception</th>
<th>Actual Service</th>
<th>Quality Perception</th>
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<tr>
<td>of customers (Actual service received)</td>
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<td>of Banking executive (Actual service delivered)</td>
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<td>Quality Perception of customers (Expected service)</td>
<td>Ideal service</td>
<td>Quality Perception of banking executives (Ideal quality service)</td>
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Rationale behind using descriptive design

The objective of descriptive design is to learn the who, what, when, where and how of the topic. The descriptive design aims at studying at the characteristics of the subject of study and relates one variable to another. It aims at studying the sample to verify whether the characteristics of the sample are as proposed in the hypothesis. It calls for using structured instruments to study the behavior of the sample. The present study aims at studying the characteristics of the customers and the executives of the banking services. The perceptual gap in the service quality between the service providers and customers and its relation with the customer satisfaction is being analyzed to understand whether higher difference in perception leads to low satisfaction of customers. The research also aims at studying whether the gap in perception is higher or lower in Private, Public, and foreign sector banks. The study also aims at studying the demographic characteristics of the sample to ascertain the relation between the demographic variables and the behavior of the customers. The study is also intended to know as to why the customers are availing the services of more than one banks instead of one. It will help to unearth the reason behind using the services of more than one Bank.
Hypothesis

Hypothesis is considered as the principal instrument in the research. The descriptive studies aims at developing hypothesis and thereby testing them through various statistical tests to make generalizations out of it. Hypothesis is a tentative and declarative statement formulated to be tested describing relationship between concepts. “In other words it may be defined as a proposition or a set of propositions set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts” (Kothari. C.R). Hypothesis is being stated initially at the start of the research and guides the researcher throughout the study. It also helps to formulate the questionnaire, which should have questions consistent and related to the parameter under study. Hypothesis is of two types;

Null Hypothesis: It is an assertion about population parameter that is being tested by the sample results.

Alternative hypothesis: It is a claim, which is accepted once the null hypothesis is being rejected.

The following hypotheses are formulated

1. That the quality of services offered by banks differ from that expected by the customers.
2. That the satisfaction of the customers is dependant on the quality of services.
3. That the quality of services of the private banks are better as compared to the public banks.
4. That the quality of services does not significantly deviate from the standard quality norms.
Sampling design

The basic idea of sampling is that by selecting part of the elements in a population, conclusion may be obtained about the entire population. An element is the subject on which the measurement is being undertaken. Deming argues that the quality of study is often better with sampling than with a census. He suggests, "Sampling possesses the possibility of better interviewing (testing, more thorough investigation of missing, wrong, or suspicious information, better supervision, and better processing than is possible with complete coverage" (Cooper.R.Donald and Emory C.William)

Sampling also provides much quicker results than does a census. The speed of execution reduces the time between the recognition of a need for information and the availability of that information. Some situation requires sampling, as it is not practically possible to undergo a complete census. These situations arise when census would mean complete destruction of subject under study or when population is infinite.

There are certain economical considerations as well as it is expensive to collect data from each of the population units. Hence the method of sampling is adopted, which enables us to collect information from few selected samples and estimate the characteristics of population on the basis of the data collected from the sample

The sampling method used in this study is convenience and judgmental sampling.
Important Decisions in Sampling

There are several decisions to be made in securing a sample. Each requires unique information. The first and foremost decision is the assessment of the population under study followed by clearly specifying the parameters of interest in the study. Once the above decisions are taken the selection of appropriate sampling frame is to be chosen. After specifying the sampling frame the important step is to select sample from the already selected sampling frame. For this, either a probability sampling or non-probability sampling can be adopted. Probability sampling refers to that type of sampling in which the probability of inclusion of each element of the population in the sample is same. It is considered to be most representative sample. Non-probability sampling however is a more subjective approach, which adopts procedures, which are more practical and easy from researchers point of view. There are several considerations for selecting non-probability sampling over probability sampling, of which the most important is the non-availability of the population list. Secondly probability sampling calls for more planning and repeated call back to assure that each selected sample member is contacted, which is sometimes very expensive, and in pragmatic.

Population

The population comprises of all the Banks executives (public sector, private sector and foreign banks) located in India and the customers of all these banks. As is very much evident that the population is large enough since
there are nearly 27 Public sector Banks, 196 RRB's, 30 private banks, 36 foreign banks in India.

**Parameters of Interest**

The parameters of interest in the present study are the mean and variance of the perception of quality dimensions of the population. The population parameters are estimated on the basis of sample statistic. Another parameter of interest is the estimation of satisfaction of customers of the population under study. The study also aims to ascertain the proportion of customers of who behave in a certain way (proportion of customers who deal with a number of banks instead of one.) These proportions of customers will be estimated on various reasons, for ex. what is the proportion of customers who deal with a number of banks due to product options, service quality, location or any other reason as specified by them.

**Sampling Frame**

The sampling frame is closely related to the population. It is the list of elements from which the sample is actually being drawn. Ideally it is the complete and correct list of the population members only. But in practical situations the sampling frame often differs from the theoretical population (Cooper, R. Donald and Emory C. William).

The sampling frame consists of executives of Banks from the available information such as web sites of different banks like SBI, PUNJAB NATIONAL BANK, ORIENTAL BANK OF COMMERCE, ICICI, IDBI, ABN AMRO, ALLAHABAD BANK, ETC and also the web site of Indian Bank Association.
Since nearly everybody are customers of banks in some way or other hence the sample frame consists of all those who are friends, relatives and people who are present in the bank at the time of making visit to the bank for the purpose of data collection.

**Sampling Method**

Non-probability samples that are unrestricted are called convenience sampling. In this type of sampling the researcher have the freedom to choose whomever they find convenient. Examples include informal pools of friends, neighbors or people intercepted at the street corners. While a convenience sample has no controls to ensure precision it may still be useful procedure. The sampling method used in the present study is convenience sampling, Out of the sample frame already described the survey is being conducted on those who are friends, colleagues and were sure to respond. Moreover customers of banks are also intercepted at the branches of the banks and are requested to fill the questionnaire.

**For customers:**

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For banks

The sample is selected on the basis of E-mail address of executives of various banks collected from the websites of different banks and also the website of Indian Banking Association. Apart from selecting the sample from the above frame, visits have been made to various branches of Banks and executives of these branches are approached to collect the information. The Branches, which are easily accessible, have been selected on convenience basis.

Sample size: The sample size of the study is:

1 Bank Executives: 90, (which is divided in the following manner):

<table>
<thead>
<tr>
<th>No of banks</th>
<th>No of HO/branches of each bank</th>
<th>No of executive of each HO/ branch</th>
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<tbody>
<tr>
<td>a) Public sector banks:</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>b) Private sector banks</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>c) Foreign Banks</td>
<td>3</td>
<td>5</td>
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</table>

2. Customers: 30 from Public sector banks
30 from private sector banks
30 from foreign sector banks.

The sample size has been kept less keeping in view constraints like cost and time.
Data collection tools

It is supposed to be most important part of any research since the data collected will be analyzed and interpretations will be made on the basis of this data. Hence care need to be taken while formulating and administering the tools to the respondents. There are basically two most popular methods of collecting data; primary and secondary method.

Primary method

Primary method is aimed at collecting first hand information by the researcher itself by using two different approach. One approach is to observe conditions, events, people or processes. Another approach is to survey people on the various topic to gain response of the subject under study. Surveys are more economical and efficient than observation, information can be gathered by a few well-chosen questions. Surveying using the telephone or the mail as a medium of communication can expand geographical coverage at a very low cost. The most popular and widely used tool of conducting survey is questionnaire. Questionnaire is a set of questions framed according to the desired information required by the researcher. The questionnaire technique has its shortcomings as well. The major weakness of questionnaire techniques is that the quality of information secured depends heavily on the ability and willingness of the respondents to cooperate.

In this study also questionnaire has been used to collect information from the respondents i.e. customers and bank executives. These questionnaires have been send to customers through e-mail and also given to them at the
bank branches or at any convenient place selected. The respondents are then asked to fill the questionnaires on their own. Similarly response from bank executives has been obtained in the same manner i.e. sending questionnaires to them on e-mail and also approaching them at the bank branches.

Questionnaire Design

Questionnaires and interview schedules are the most effective survey instruments used to collect information from the respondent in case of personal interview or mail survey. The questionnaire construction involves some critical decisions like, questions structure, sequence of questions, type of questions, scaling used. In structured questionnaire the respondent is given fixed set of choices often called as closed questions, whereas unstructured questions do not have a limited choice but do provide a frame of reference for respondents answers. These unstructured questions are sometimes also called as open ended questions. The questionnaire should be so designed so as to incorporate research questions (those questions which are instrumental in knowing the response of the subject under study), investigative questions and measurement questions. The design of survey questions is influenced by the need to relate each question to the others in the instrument. Question sequencing is particularly important.

The basic principles to guide sequence decisions is:

1. The question process must quickly awaken interest and motivate the respondent to participate in the interview.
2. The respondent must not be confronted for early requests for information that might be considered personal or ego threatening.

3. The questioning should begin with simple items and move to the more complex, and from general items to the more specific.

4. Changes in the frame of reference should be small and should be clearly pointed out.

The first challenge is to awaken the respondent's interest in the study and motivate participation. We try to bring this about by choosing questions that are attention getting and not controversial. If the questions have human-interest value, so much the better. It is possible that the early questions will contribute hard data to the major study objective, but their task is to overcome the motivation barrier. Those questions seeking sensitive information should not be put in the beginning of the questionnaire. Moreover the questions seeking personal information should be put at the end of the questionnaire. The questionnaire should be made on the funnel approach, which calls for putting general questions in the beginning and specific questions at the end.

Another major consideration in designing survey instruments is whether the purpose of study should be disguised or not. Disguising the questions is usually done when the chances of respondents giving stereotyped or false response increases if they are told the true purpose of study.
Questionnaire for customers

The questionnaire for customers is divided into four questions, which are designed in the following manner:

**Question 1:** This question attempts to seek information about the services of various banks which they availing. It is an open ended question aimed at finding out the different services of banks which the customer avails.

**Question 2:** This question attempts to find out the relative preference (best service provider) of customers amongst the various banks they have mentioned in question 1.

**Question 3:** This question is intended to know the reasons as to why the customers avail the services of more than one bank instead of only one. It is both closed (three choice) and open ended question (Any other please specify) since the customer is allowed to select the reason on his own.

**Question 4:** The forth question is aimed at knowing the perception of customers about the services of bank (best service provider) on various quality dimensions. These quality dimensions have been selected on the basis of servqual method (Parasuraman, Zeithmahl & Berry). The basic objective of this question is to know their rating on various dimensions on the basis of their experience with the bank. This question is designed on the seven point Likert scale. The customers are also given the choice of striking out those dimensions, which they feel are not significant in evaluating quality of service.
Question 5: This question aims to know the general perception of customers regarding the service of an ideal bank on quality dimensions. The statements have been framed on the basis of quality dimensions already used in question 4. This question aims at knowing the perception of customers in general and will be correlated with their real experience with the banks to which they are associated. This question also uses seven point Likert scale.

The other part of the questionnaire is aimed at knowing personal information of customers to make demographic study about the customers.

Questionnaire for Banks executives

The questionnaire for Bank executive is very much similar to that administered to the customers except the first two questions. The first question attempts to know the different services provided by their bank whereas the second question aims to know the three important factors, which are critical in providing quality services to the customers.

Data Analysis Tools

Data is known to be crude information and not knowledge by itself. The sequence from data to knowledge is: from Data to Information, from Information to Facts, and finally, from Facts to Knowledge. Data becomes information, when it becomes relevant to your decision problem. Information becomes fact, when the data can support it. Facts are what the data
reveals. However the decisive instrumental (i.e., applied) knowledge is expressed together with some statistical degree of confidence.

Fact becomes knowledge, when it is used in the successful completion of a decision process. Once you have a massive amount of facts integrated, as knowledge, then your mind will be superhuman in the same sense that mankind with writing is superhuman compared to mankind before writing. The following figure illustrates the statistical thinking process based on data in constructing statistical models for decision-making under uncertainties.

The above figure depicts the fact that as the exactness of a statistical model increases, the level of improvements in decision-making increases. That's why we need statistical data analysis. Statistical data analysis arose from the need to place knowledge on a systematic evidence base. This
required a study of the laws of probability, the development of measures of
data properties and relationships, and so on.

Statistical inference aims at determining whether any statistical significance
can be attached that results after due allowance is made for any random
variation as a source of error. Intelligent and critical inferences cannot be
made by those who do not understand the purpose, the conditions, and
applicability of the various techniques for judging significance.

Considering the uncertain environment, the chance that "good decisions"
are made increases with the availability of "good information." The chance
that "good information" is available increases with the level of structuring the
process of Knowledge Management. The above figure also illustrates the
fact that as the exactness of a statistical model increases, the level of
improvements in decision-making increases.

The data obtained from the executives and customers of the different Banks
will be analyzed by different statistical tools. The tools used in the present
research are as under:

Non-parametric tests:
Since the data has been obtained on ordinal scale (Likert scale) and the
assumption of normality has not been undertaken hence non parametric
tests seems appropriate in the present study. Although non parametric tests
are not as powerful as parametric tests yet they often are useful in deriving
meaningful conclusions from the sample if applied carefully.
The non parametric tests used in the current study are Kolmogorov-Smirnov two sample tests and Kruskal-Wallis tests for significance (for K-samples). Kolmogorov-Smirnov tests will be used to test whether the sample means of different banks obtained on different quality dimensions are significantly different or they can be considered to be from the same population.

The quality dimensions (Reliability, Responsiveness, Accessibility, Competence, Courtesy, Product range, Security and tangibles) for different banks is being assessed on the basis of Likert seven point rating scale. These dimensions are assessed for Private, Public and Foreign Banks. Komogorov-Smirnov tests will be used to know whether the rating given by the executives and the customers are significantly different or not at the desired level of significance.

GENERAL CONCEPTS

Factor analysis is employed to examine questions that lend themselves to both exploratory analysis (absence of a null hypothesis) and confirmatory analysis (presence of a null hypothesis). Analysts employ factor analysis to assist in the task of reducing accumulated data. Simply stated, one may prefer to reduce large amounts of data to a more manageable form. In order to extract a smaller number of "factors," one must examine the interrelationships that exist among the variables. Therefore, the focus must be on determining exactly what characteristic(s) the variables have in common. Furthermore, factor analysis is not a predictive or dependence
technique— it is an interdependence technique. This means that an analyst does not have to specify a-priori whether variables are independent or dependent. Factor analysis can accommodate multiple metric or if appropriately dummy-coded, non-metric variables.

Language of Factor Analysis

Anti-image correlation matrix: A matrix of the partial correlations among variables after factor analysis, or the degree to which the factors explain each other in the results.

Bartlett’s test of sphericity: Statistical test for the overall significance of all correlations within a correlation matrix.

Common variance: Variance shared with other variables in the factor analysis.

Communality: The amount of variance an original variable shares with all other variables included in the analysis.

Eigenvalue: Column sum of squared loadings for a factor also known as latent root, represents the amount of variance accounted for by a factor.

Factor loadings: Correlation between the original variables and the factors. The squared factor loadings indicate what percentage of the variance in an original variable is explained by a factor.

Factor score: Composite measure created for each observation on each factor extracted in the factor analysis. The factor weights are used in conjunction with the original variable values to calculate each observation’s score.
Measure of sampling adequacy (KMO): Measure calculated both for the entire correlation matrix and each individual variable evaluating the appropriateness of applying factor analysis. Values above .50 for either the entire matrix or an individual indicate appropriateness.

Orthogonal: Mathematical independence of factor axes to each other (at right angles; 90 degree angle)

Orthogonal factor rotation: Factor rotation in which the factors are extracted so that their axes are maintained at 90 degrees. Each factor is independent of, or orthogonal from, all other factors. The correlation between the factors is determined to be zero.

ASSUMPTIONS IN FACTOR ANALYSIS

There are various assumptions that need to be met for successful application of factor analysis. As with most scientific studies, random sampling must have been employed. The analyst also must ensure an adequate sample size (on average, about 20 observations per variable). As concerns statistical inference, variables that are homoscedastic and multivariate normally distributed are preferred. In employing factor analysis, the analyst must meet the assumption of the existence of a linear relationship among the variables. If there is not a linear relationship among the variables in the model, the analyst should obtain more data or employ a transformation technique. A small degree of collinearity among the variables is acceptable (> .30). Lastly, the analyst hopes to meet the assumption of the absence of outliers among the observations.
The main goal of Factor Analysis is to determine the relative factorability of the variables prior to proceeding with the analysis. Multiple methods exist for the analyst to employ in completing this task. In order to determine the amount of shared variance between variables (while understanding that what is not shared is unique), an identity matrix must be produced and examined. An identity matrix contains coefficients of 1 along the diagonal and 0 on the off-diagonal. A coefficient of 0 represents no shared (or 'common') variance among the variables, as well as no problems of collinearity.

The tools explained above, have been applied in the study. The details are presented in the next chapter, which focuses on analysis and interpretation of the data.