CHAPTER SIX-DATA COLLECTION

6.1-DATA COLLECTION GENERAL-Data for the study was taken through the means of literature review for the purpose of knowing the concepts and structured questions are used for clients and employees. The questions are based on modified Banking Service Quality Model which are obtained using pilot study.

Factors like assurance and effectiveness, price, access, tangibles which are seen, combination of services and reliability were tested in consumer survey and whether employees have the necessary knowledge are found out using survey of employees. Factors of SERVQUAL scale like reliability, assurance, tangibles, responsiveness and empathy are taken for the study but along with that factors like price, access etc. are also taken.

The questionnaire contains questions ranging from layout, facilities, location, parking, cleanliness, decoration, work environment, visual appeal, no of ATM’s, open tellers, waiting time of customers, user friendly technology, convenient working hours, error proof net banking, phone banking, time taken in transactions, training of employees, recognition of client, confidence of employees, confidentiality of transactions, contradictions in decision making between employees and management, maintaining of knowledge of client, understanding the specific needs of customers, error free processing, appreciation of customers, delivery when promised, giving right service first time, telling customer about time of service, grievance handling mechanism, delays, range of services consistent with innovations, explanations of service fees, reasonable charges, user friendly credit and debit cards and overall services.

Statements which were there in the beginning like variety of products, time taken for clearing 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 problem solving, employees are courteous to customers, process is transparent and quality policy of bank is communicated to customers and there is a feeling of security when customers transact with bank were thrown out of the initial questionnaire after pre testing with factor analysis.
The survey has 37 questions for the customer analysis and 30 questions for the employee analysis. Employee questionnaire is different from the customer questionnaire and has questions which test employee training needs, confidence dealing with customers, communication and its importance, interrelationship etc to find out whether they can satisfy the customer queries so as to give sufficient quality of service to customers.

Pilot test was done to correct the questionnaire as well as to modify the questionnaire and then final sample was selected in such a way that maximum error free analysis can be done. Employee questionnaire did not have a pilot test as samples were difficult to be obtained and so the questionnaire was considered as final.
6.2-DATA ANALYSIS (GENERAL)

Data can be analysed using tools as follows

1. Frequencies to define the important parameters

2. Croanbach’s alpha to define the consistency of the data. The nearer Cronbach’s Alpha co-efficient is to the value of one the superior is the consistency of the scale

Cronbach’s Alpha = \(\frac{rk}{1+(k-1)r}\)

Where \(k\) = number of items considered
\(r\) = the mean of the inter-item correlations.

George & Mallory (2003) has given the following techniques:

a. \(> 0.90\) = Excellent

b. \(0.80 - 0.89\) = Good

c. \(0.70 - 0.79\) = Acceptable

d. \(0.60 - 0.69\) = Questionable

e. \(0.50 - 0.59\) = Poor

f. \(< 0.50\) = Unacceptable
3. Factor analysis-This was done for the pilot study to eliminate questions. This is also done to find out the significant dimensions or factors that define quality of service.

Factor analysis is a technique used for coming out with the smallest number of dimensions required to analyse the correlations among a set of Variables. Factor analysis is used in making the data less by identifying a small set of factors.

That is, correlations among variables are explained by underlying factors (Garson, 2005; Field, 2009).

In other words, it could be utilised for examining the relationships or interrelationships among variables (Coakes and Steed, 2001).

Furthermore, it is also used for the purpose of developing and evaluating of scales (Pallant, 2007; Field, 2009).

There are two techniques of factor analysis. The first one is exploratory factor analysis and the second is confirmatory factor analysis. When we use exploratory factor analysis, the underlying structure of a relatively large set of variables will be uncovered and identified.

Confirmatory factor analysis is all about the number of dimensions with a specific loading (Kinnear and Gray 2010).

Exploratory factor analysis: This factor takes into account the fact that any or variable could be related to any factor. This is one of the most important analysis in factor method used by people in research and it is based on analysis and experiments done.
Confirmatory factor analysis (CFA): This is used for analyse and understand the dimension and loading of the different variables in those dimensions to conclude what was already proved by the theory. This method is based on assumption that each factor is related to a fixed subset of different variables.

There are lot of ways to get these dimensions from the data the data:

**Principal Component Analysis (PCA)** is used most commonly. This method works on getting the maximum variance and fixes them into the first factor. After that, it removes that variance which was given by the first dimension and then starts getting maximum variance for the second factor. This process goes to the last factor. Rotation method helps in understanding the output. Eigen values have no effect on the rotation, but the method of rotation really affect the Eigen values or variance percentage.

There are lot of types of rotations like No rotation, Rotation called as Varimax Quartimax rotation Direct oblimin rotation method and Promax rotation method. Each of these can be easily selected in statistical method of social sciences SPSS, and one can compare variance explained by those particular methods.

However, before performing factor analysis, the suitability of data must be tested. This can be done by running two measures; Kaiser-Meyer-Olkin (KMO) method of finding the adequacy of sample and Bartlett”s test (Pallant, 2007).

Why exploratory factor analysis?
Exploratory factor analysis in the way of Principal Component Analysis is used in this research to arrive at the examination of the suitability and validity of dimensions and items of the Banking Service Quality questionnaire for the effective analysis of quality of service within the Libyan banking scenario in order to obtain clear structure of these scale dimensions and items. Furthermore, Principal Component Analysis is also used to identify the maximum variance extracted from the variables and thus the most important factors based on the total variance can be identified (Garson, 2005).
4. Cluster analysis is done to segment the customers. Cluster analysis helps classifying customers into segments based on the responses given to the set of questions. 2 methods of clustering is generally done. One is hierarchical clustering which gives the number of clusters and K-means clustering which gives cluster properties. K means will also give the properties of clusters and number of respondents in each cluster.

1. Non-Parametric tests-No parametric tests do not assume normality of distribution. It is used here to test the hypothesis of difference between the banks. Other techniques of multivariate analysis will also be used. The study used independent sample non parametric tests like Kruskal Wallis test and Mann-Whitney U test which are basically used for multiple independent samples and two independent samples respectively.

2. Multidimensional Scaling-The most useful applications is in product or brand positioning. This means that this method helps in mapping the mind of consumer. It is a non-attribute based mapping which means that it forces consumers to derive attributes or dimensions which defines positions given by them to various brands. The most useful methods are based on attributes as well as on similarity.

In this example similarity based method(ALSCAL) is used. Here customers write a number between 1 to 5 indicating the similarity between the brands, 1 being most similar and 5, being most dissimilar. The number of dimensions are decided by the measure known as stress which is a measure of lack of fit.
6.3 DATA COLLECTION FOR THE STUDY

The study had gone through 2 stages. Stage one was to find secondary data relevant to the area of service quality. The second stage was to find the suitable method for data collection. Questionnaire was found to be the most suitable method for data collection. Here Banking service Quality scale is used with some modifications and pilot testing helped the questionnaire to be finalized in suitable way for data collection.

Banking service quality scale questionnaire had different parameters like price, access etc along with normal service quality questions and the pilot testing using 66 bank customers helped the data to be reduced to make final questionnaire of 37 questions. Also an employee questionnaire was made with 30 questions.

The objective of employee questionnaire was to find out whether top management is giving the support to the employees to have teamwork in the organization so that service focus can be maintained by them. The study did not try to find the gap between employee perception and customer expectations.

The questionnaire filling process was carried out personally by the researcher. The survey was pre-scheduled as per the convenience of the respondents. This scheduling was done in collaboration.
The study is limited to the city of Mumbai. The samples have been collected mostly from Navi Mumbai as this was more convenient for the researcher and it was impossible to get more data from other parts of Mumbai due to the lack of support from the banks.

ICICI bank is one bank where the researcher could not collect samples as required. The reason was that there was no support to collect the data. It is more of a cross-sectional study in terms of the customer demographics (based on gender, income, occupation etc) and is not necessarily a longitudinal one. The study did not study demographic factors in detail with respect to the analysis.

Also the study is limited to a small number of banks. The thesis studies only 2 gaps: A) Gap between perceptions and expectations of employees in overall service and B) Understanding of customer expectations by the employees. Also the main parameters of employee perception & Client Perception of quality of service are found out.

Banks which are selected are major banks like SBI, IDBI and Corporation Bank from public sector, and HDFC from private sector. Along with the banks mentioned above Saraswat Co-operative bank is also taken for the study. The researcher also took 70 samples from other banks which are not mentioned above to validate the results.

The final sample size is 458 in total for customer survey. (maximum 80 from each bank). Bank branches will be selected on the basis of convenience of researcher. Also 70 extra samples were collected from other public, private and cooperative sector banks.
For each bank approximately 25-30 customers are taken and 2 or 3 branches are taken for each branch. 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 is 112 which is bifurcated to each bank. The samples were more from public sector as the employees were more cooperative and so the study can be skewed in the results. Still it will give an indication for the reader regarding the implications of service quality.

75 respondents were also taken from the general public to find out the relative positions of the different banks with respect to each other using the multivariate analysis called as: Multi-dimensional scaling.
In the current research, no assumptions were made about the population. Also, it was found that the data was not complying with normal distribution. All the results were checked at 5% level of significance.

Non-parametric tests are generally done when the researchers are not completely ready to believe that their data comes from a normal distribution. Very reliable used non-parametric tests are based on ranking from low to high values, and then calculating the sum of ranks between groups to test the hypothesis.

Kruskal-Wallis (three or more unpaired groups) test is used for this. When implementing a non-parametric test, the researcher need not assume anything about the values and their corresponding distribution. This is why it is called as non-parametric (Lehmann, 1998).

Mann whitney test is the most popular and reasonably efficient test which is used if the outcome data is assumed to be continuous and not from a Normal distribution, for comparing two independent samples is the two-sample Mann-Whitney U test (also known as the Wilcoxon rank sum test) (Walters, 2004).
Kruskal-Wallis test

The Kruskal-Wallis test ($H$-test) is like an addition to the Wilcoxon test and is used to analyse the hypothesis that a samples which are independent come from the same population. It was developed by Kruskal and Wallis and so the name has come from them.

The Kruskal-Wallis test is a non-parametric (distribution free) test, which is done to relate three or more groups of data from the sample. We are not assuming anything about the distribution and so Kruskal-Wallis is a good test.

The assumption is that samples are taken from the population are random. Also the cases of each group are assumed to be unrelated to each other. The questions which are used for this analysis must be in ordinal scale. Kruskal-Wallis behaves like chi-square, with $k-1$ degree of freedom where number of samples should be higher than five.

If the calculated value in this case is less than the table value from chi-square table, then the null hypothesis is accepted. If the reverse happens, i.e., if calculated value is higher than the table value, then we need not accept the null hypothesis and reject the null hypothesis and we can decide that sample has come from a different population (Bagenda, 2011).

Sandhu and Kapoor in their research on Corporate Social Responsibility Initiatives examined the level of involvement of firms in Corporate Social Responsibility works and analysed them as high, medium and low performers. Literature review using 93 companies in India was checked by using annual reports and individual websites of the firms.
The amount of involvement socially of the firms was checked using the respective social scores. By using Kruskal-Wallis test and Mann-Whitney U-test the research found that there is a substantial difference between the average overall corporate social responsibility scores of the different categories mentioned above. The study was not assuming normal distribution and no assumptions were made on the population. The results gave an idea that some companies have high involvement whereas some are moderately involved and some others have low involvement (Sandhu and Kapoor, 2010).

Kruskal Wallis test is used in this report for comparing banks in different sectors in terms of parameters in the first factor of service quality (Effectiveness& Assurance which is found out by using factor analysis). Also this is used for comparing public, private and co-operative sector banks in terms of the main factors of service quality from the point of view of customers. The same analysis mentioned above was done for employees also, i.e., bank type was compared using the most important factor called as service. Also bank names and bank types were compared using factors of service quality perception from employee viewpoint.

Factor Analysis-The present research has done exploratory factor analysis by using a Principal Component Analysis method (PCA) using Varimax rotation until the time at which eigen value of each factor was equal to 1 or more. Loadings for the questions should be higher than 0.6 which clearly makes it sure that there is pertinent variance which is shared between each question and the factor.

Nasri in her study on “Factors which influence the use of web Banking in Tunisia” tries to find the dimensions that have significant impact on the adoption of internet banking services in Tunisia.

The study gave a model which conceptualized and linked lot of parameters which have impact on the adoption of web banking. A total of two hundred and fifty three respondents in Tunisia were taken for the study out of which ninety five people were web bank users and one hundred and fifty eight were internet bank non users.
Factor method and forecasting using regression were used to study the connection. The study finds that use of web banking in Tunisia is based on convenience factor, risk, security and prior web knowledge. The study concludes that demographic factors have strong influence on web banking factors especially occupation and instruction. They also used KMO and Bartlett’s Test for checking whether sample is enough for factor analysis or not (Nasr, 2011).

Kumar and Sundararaman conducted a study based on empirical method on client perception towards jewellery which is branded in India to determine the parameters that affects purchase of a particular brand by consumers. Data was taken from different consumers who bought jewellery which was branded from different shops in Tiruchirapalli district in Tamil Nadu. Using SPSS software)

Factor Analysis, Mean Scores, Reliability Test and relationship were found. This study was used to come out with some important findings that are significant for research in India. They also used KMO and Bartlett’s Test for sampling adequacy. Further, PCA was done to explain the total variance. (Kumar and Sundararaman, 2011).

Pandian and Jesurajan in their study on the different factors affecting the success of women entrepreneurs and hurdles faced by them in Tamil Nadu used Factor analysis, Multiple Regression and Rank Method to analyse the data. Reduced or lack of self confidence, less opportunities of education, discrimination based on gender, difficulty level in getting bank and work life problems were the major problems or hurdles in providing entrepreneurship. They also used Kaiser Meyer Olkin’s method and Bartlett’s Test for sampling adequacy. Further PCA was done to explain the total variance (Pandian and Jesurajan, 2011).

Factor analysis was used to find out main factors for customer study and employee study. It was also done as a data reduction method for customer questionnaire.
Crosstabs Procedures and Pearson’s Chi Square Statistic

Crosstabs procedures were for the purpose of testing for significant differences in the day-to-day ICT usage characteristics of stakeholders belonging to different specializations, stakeholders from different institutes, teacher or student stakeholder, male or female stakeholders.

**Crosstabs** relates two or more variables to find their relations using tables. Cross tabulation method find inter relationships. This makes a table that has an area for all combinations of categories in the two variables. The procedure is not useful for variables like continuous variables. Crosstabs is useful for variables in nominal or ordinal scale

SPSS Version 19.0 was used for all these tests.

Reliability

Reliability check is done to find the reasons for lack of consistency, if any, in the data

Researchers must demonstrate that tools are good since without reliability, results cannot be repeated without reliability and replicability is very important for any scientific method. Reliability is the relationship of any questionnaire with a hypothetical one and it means whether the instrument is actually measuring what it is supposed to measure.

Internal consistency: This is using relationship among the variables comprising the set. **Cronbach’s alpha** is one of the most popular methods to measure the reliability of a survey instrument. It is the most common form of internal consistency reliability coefficient.
Although a reliability of 0.7 is considered adequate for a survey instrument, it is
desirable for each subscale to be a 0.8 or higher, and for the entire questionnaire to
be 0.9 or higher. Alpha is 0 when the actual true score is not taken at all and there
is only a component of error. Alpha is one when all the questions find only the
actual value and there is no error.

Split-half reliability: It is the method of relationship between the two halves of the
questionnaire across all possible halves. It is typically understood by Spearman-
Brown value or Guttmann’s split-half reliability value.

**Spearman-Brown split-half reliability coefficient** is a method by which reliability is
measured for split-halves. A common rule of thumb is 0.80 or higher indicates
adequate reliability.

**Guttmann split-half reliability coefficient** is a better method than Spearman-
Brown value but this method is not requiring equal variances between the two split
question parts.

Test-retest reliability: Estimation using relationship between two (or more) repetitions
of the same questionnaire for different areas or populations, when the two do not
differ on other aspects.

Inter-rater reliability: Estimation using the correlation of scores between/among 2 or
more people who rates the questionnaire. *(Garson, 2011)*

The analysis used in this study is

1. Means: To identify the actual levels of the service quality provided to
customers and to identify the employee perceptions of service quality as described
by the scale items (questionnaire statements).
2. Independent-Samples Non Parametric Test: To find out the significance of means and through those differences of customer thinking between the private and public banking sectors as measured by the questions in the questionnaire.

3. Factor analysis: To identify the main components to understand consumer viewpoint and employee viewpoint and the statements which are bifurcated into each component.

4. Cronbach’s coefficient alpha test: This is used here to examine the scale reliability and internal consistency.

5. Chi-Square: To test the relationship between the demographic factors of customers with respect to type of banking sector.

6. Kruskal Wallis test- To find out significant difference between private banks and public sector banks in terms of employee perception factors and consumer expectation parameters

7. Multidimensional Scaling – This was used to find the relative positions of the banks with respect to each other using SPSS based ALSCAL method