CHAPTER 4: RESEARCH METHODOLOGY

4.0 Introduction

There are three basic types of research designs, namely exploratory, descriptive, and causal. They are used to collect primary data and create data structures and information (Hair et al., 2003). The research methodology and methods for this research were chosen to successfully achieve the research objectives. The justification for choices and uses has been presented in this chapter. The rationale for the study has also been discussed and explained in terms of research process, design, development of the instrument, pilot study, sample and data collection, and data analysis. The developments of the relevant research instrument along with outline of problems encountered in the survey too have been discussed.

4.1 Research Objectives

The study had two broad objectives. The first was to review literature on customer orientation of front end employees of service firms. The second was to propose and validate both the customer perspective and employee perspective models of customer orientation of front end employees (COSE) of service firms with special emphasis on telecom service provider firms. Both theoretical concepts and measures need to be well founded. Thus, theoretical review was used to secure sufficient validity of theoretical concepts. In addition, the measures of the model were validated empirically.

A thorough understanding of the model may help practitioners to analyse the effect of COSE on various dimensions of COSE and customer satisfaction, perceived service quality, customer commitment and retention with special reference to the telecom service provider firms. They would also be of help in taking effective steps to improve upon customer satisfaction, perceived service quality, customer
commitment and retention thus ultimately revenue and profitability, by fine tuning various determinants discovered during the study of employee perspective.

According to Davis (1989), practitioners evaluate systems for two purposes, one is to predict acceptability and the other is to diagnose the reasons resulting in lack of acceptance to take proper measures to improve user acceptance.

Keeping the above in mind, the specific research objectives of the study were:

➢ To investigate various dimensions of COSE and effect of COSE on customer satisfaction, perceived service quality, customer commitment and retention from customer perspective.

➢ To investigate various determinants of COSE from employee perspective.

➢ To propose and test model of COSE in National Capital Region of India for both public and private telecom service providers from employee and customer perspectives.

➢ To investigate differences between employees of public and private sector telecom service providers with respect to various dimensions of COSE.

➢ To investigate differences between customers of public and private sector telecom service providers with respect to customer satisfaction, emotional commitment and retention and dimensions of COSE.

➢ To explore relationship between age and education of the customer and preference for service provider.

4.2 Research Process

The present research was conducted as per following steps:

1) Information collected through extensive literature survey on COSE (customer orientation of service employees) related to the field of relationship marketing with special reference to service organisations.

2) Developing models incorporating the relevant determinants and dimensions of customer orientation of service employees from both customer and employee perspectives and its impact on key marketing constructs i.e. customer satisfaction, commitment and customer retention.
3) Generating various hypotheses to explore whether the model formulated was valid or not.

4) Developing questionnaires for measuring employee and customer perspectives, as a survey tool, to generate data.

5) Analyzing data obtained through the questionnaires, to explore relationship between dimensions of COSE, its determinants, customer satisfaction, commitment and customer retention.

6) Interpreting the results of the data analyzed and arriving at conclusions.

Fig. 4.1: Schematic Diagram for Research Process

4.3 Research Design

The research design is the step aimed at designing the research study in such a way that the essential data can be gathered and analysed to arrive at a solution. The following are the design considerations for this research in accordance with the guidelines suggested by Sekaran (2003).

4.3.1 The Purpose of the Study: The purpose was hypothesis testing in nature because usually studies relating to hypothesis testing explain the nature of certain relationships; establish the differences among groups or the independence of two or more factors in a situation. In other words, hypothesis testing is undertaken to explain the variance in the dependent variable Sekaran (2003). Hypothesis testing
4.3.2 The Type of Study: It is a descriptive correlational study since it is interested in developing models incorporating the relevant determinants and dimensions of customer orientation of service employees from both customer and employee perspectives and its impact on key marketing constructs i.e. customer satisfaction, commitment and customer retention. It is also a causal study since it attempts to establish cause-and-effect relationships through certain types of correlational or regression analyses such as path analysis.

4.3.3 The Study Setting: As this research is a correlational study it was conducted in non-contrived settings, whereas rigorous causal studies are done in contrived lab settings.
4.3.4 **Unit of Analysis:** Samples from telecom front end employees dealing directly with customers and telecom service's customers have been used to understand relationships between constructs (Thurau et al., 2003, Thurau, 2004), so the unit of analysis were individual employees and customers of both public and private sector telecom companies providing services in the National Capital Region\(^{81}\) (NCR) in India (Fig. 4.2 & 4.3).

4.3.5 **Time Horizon of the Study:** This research study is a cross-sectional study because it aimed to collect data just once, over a period of over June 2010 to March 2011 in order to address the research objectives.

4.3.6 **Data Collection:** It refers to the process of collecting data associated with variables in the hypotheses being considered for the study. In the present study, two structured closed-ended questionnaires were designed specifically for the study and were personally administered by the researcher on the telecom front end employees dealing directly with customers and subscribers (customers) of selected telecom companies in the NCR.

4.3.7 **Data Analysis:** The step where data is analysed statistically to see if the hypotheses can be substantiated (For details please see Chapter 5).

4.4 Methodology Adopted in Present Study

Methodology is the strategy, plan of action, process, or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes (Crotty, 1998). Hussey et al., (1997) also define methodology as the overall approach to the research process, from the theoretical underpinning to the collection and analysis of data, and also suggest that methodology is concerned with the following main issues: why you collected certain data, what data you collected, from where you collected it, when you collected it, how you collected it, and how you will analyse it.

4.5 Methodology Strategy

Among several methodologies viz. experimental research, survey research, ethnography, etc., the survey research methodology was considered to be the most appropriate for this research. It is concerned with drawing a sample of subjects from a population and studying this in order to make inferences about the population. In

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\(^{81}\) The National Capital Region (NCR) in India comprises an area of 33,578 sq. km covering the States of Delhi, Haryana, Rajasthan and Uttar Pradesh. It is the world's second largest urban agglomeration by population and the largest by area. There has been a conscious effort on the part of government towards planned decentralization to outer areas with a view to ease the burden on infrastructure of national capital Delhi.
the case of a large population, only a sample of the whole population is used (Hussey et al., 1997). This was the case for this study. In particular, this study was classified as an analytical survey where the main intention was to determine whether there exists any relationship between different variables? Because methodology is the process or design lying behind the choice and use of particular methods and linking to the desired outcomes (Crotty, 1998), it was therefore necessary to identify which methods should be used in the research. Methods are the various means or techniques or procedures used to gather and analyse data related to some research question or hypothesis (Hussey et al., 1997, Crotty, 1998).

Methods used in this research were categorised into two groups (1) questionnaire method which is the most important method used to collect primary data in the survey, and (2) several statistical methods were used to analyse data such as descriptive statistics, T-test, ANOVA and Structural Equation Modelling (For details please see Chapter 5).

4.6 Questionnaire Method

Administering questionnaire is one of the main data collection methods in survey research (Gay et al., 1992; Sekaran 2003; Veal, 2005). A questionnaire is a pre-formulated written set of questions to which respondents record their responses, usually within rather closely defined alternatives (Sekaran, 2003). The rationales behind the use of questionnaire method as a major survey tool in this research are:

1) It was used because it is an efficient data collection mechanism when the researcher knows exactly what is required and how to measure the variables of interest. Field studies, comparative surveys and experimental designs often use questionnaires to measure the variables of interest (Sekaran, 2003).

2) It was used because quantified information is required concerning a specific population and telecom front end employee’s and telecom services customer’s behaviour and attitudes are acceptable as a source of information (Ticehurst et al., 2000).

Sekaran (2003) suggests that the advantage of the questionnaire method is that administering questionnaires to large numbers of individuals simultaneously is less
expensive and less time consuming than other methods. It also does not require much skill to administer a questionnaire.

The questionnaires were personally administered, because it is one of the best ways to collect data when the survey is confined to a local area (Sekaran, 2003) as was the case in the present study, with respondents being both telecom front end employees and subscribers (customers) of selected telecom companies in the NCR.

As already mentioned, questionnaire technique was used as the main technique to collect data for this study. It is to be noted that survey research methodology has been employed by previous researchers also in studies focusing on customer orientation service employees and its dimensions (Boshoff et al., 1996, Caruana et al., 1998, Allred, 2001, Thurau et al., 2003, Yavas et al., 2003, Malhotra et al., 2004, Thurao et al., 2004, Huang et al., 2006 and Lee et al., 2006, Chathoth, 2007.)

4.7 Development of the Questionnaire

Before going into the stage of questionnaire design, an extensive review of literature was carried out to develop a questionnaire for the present study. Prior to developing measurement instrument for conceptual constructs proposed in this study, an exhaustive search for existing developed scales in the literature was made.

4.8 Questionnaire Design

This study employed a structured closed ended questionnaire designed to collect primary data to measure customer orientation of service employees (COSE) and related dimensions and determinants from customer and employee perspectives. Keeping in mind the profile of the respondents, we used a paper and pencil questionnaire instead of an online questionnaire to reduce the problems and limitations placed by an Internet-based questionnaire survey (Thompson et al., 2003).

For measuring the model constructs, from the customer perspective, validated scales were used where available. Specifically for emotional commitment, customer retention, and customer satisfaction, scales from Morgan et al., (1994), Zeithaml et al. (1996), and Thurau et al. (2002), respectively were taken, and
based on insights from the pilot survey and discussions with subject experts, were slightly reworded to suit objectives of the study. Each of these three constructs was measured using four items. As no validated scales were available in the context of telecom industry for measuring various dimensions of COSE, initially 3-item scales, based on those suggested by Thurao et al. (2004) were employed in the present study.

Measurement items used in case of employee perspective, have been adapted from previous studies by Boshoff et al. (1996), Caruana et al. (1998), Thurau et al. (2003) Allred (2001), Yayas et al. (2003), Thurau (2003), Malhotra et al. (2004), Thurao et al. (2004), Huang et al. (2006), Lee et al. (2006), Chathoth (2007). However, keeping in mind objectives of the present study, some additional items were also added by the researcher.

With necessary inputs from the researches referred above, two questionnaires were developed in accordance with the suggestions of Tull et al. (1990), in that the overall questionnaires should reflect the research objectives by logically moving from one topic to another. A total of 88 statements comprised the item pool for measuring employee perspective while 24 items were considered for the customer perspective. The researcher used a 7-point Likert scale in the questionnaire because it is extremely popular for measuring attitudes and is simple to administer (Malhotra, 2005). With the Likert scale, respondents indicate their attitudes by writing, how strongly they agree or disagree with the statement. The scale ranges from '1' for Strongly Agree, '2' for Moderately Agree, '3' for Agree a Little, '4' for Neither Agree Nor Disagree, '5' Disagree a Little, '6' for Moderately Disagree, '7' for Strongly Disagree. But based upon feedback during pre-testing and discussion with subject experts some of the items had to be reworded and refined. Items which did not fare well during subsequent waves of pilot testing and as also those with unsatisfactory factor loadings were dropped.

It is to be noted that each multi-item scale considered for the study was factor-analyzed, to evaluate dimensionality; and reliability analysis was performed to determine if each item contributed to scale reliability. Besides, correlational

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* Research instrument used in the study is given in Appendix I
analysis was applied to confirm the validity of the construct. The procedure followed has been explained in detail in Chapter 5.

As it was essential to introduce respondents to the study and explain the survey objectives, so to establish credentials and legitimacy, a statement was written in the beginning of the questionnaires that “Please note that all your responses will be kept strictly confidential and used for academic purposes. At no point you will be asked to reveal your identity.” Keeping in mind the demographic profile of the respondents as also the fact that the researcher personally administered the questionnaire, English version of the questionnaires (Please see Appendix I) were used.

4.9 Pre-testing of the Questionnaire

Pre-testing is a trial run with a group of respondents for the purpose of detecting problems in the questionnaire statements or design, whether the respondents have any difficulty understanding the questionnaire or whether there are any ambiguous or biased questions (Sekaran, 2003). The aim of pre-testing the questionnaire was to ensure that the content as well as the mechanics of compiling the questionnaire had been satisfactory. It establishes a content validity of the scales. Hair et al. (2003) pointed out that to establish a scale’s content validity is to ensure its ability to measure what it is designed to measure. This was fulfilled by asking respondents first to complete the questionnaire and then to comment on its length, scale, formats, wording, and statements. Based on respondents’ feedback, slight modifications were made in the items to correct ambiguity. In certain cases, some of the items were also dropped.

The objective of pre-testing is to evaluate the items used in the design questionnaire (Hair et al., 2006). Sekaran (2003) suggests that it is important to pre-test the questionnaire used in the survey to ensure that the respondents understood the questions posed and that there is no ambiguity and no problems associated with wording or measurement. The size of the pre-testing group may be 25 - 50 subjects (Zikmund, 2003). In this study, the first pre-testing was conducted on telecom front end employees and telecom services customers in the NCR. Around 50 questionnaires each were distributed to telecom front end employees and telecom services customers to ensure accuracy and consistency of the responses.
The suggestions highlighted some potential problems with wording, repetitive statements and other ambiguities. It is important to give careful consideration to wordings because question wording substantially influences accuracy (Zikmund, 2003). So, some of the items were refined, re-worded, dropped or changed to be more representative of the intended constructs thus enhancing the scale’s content validity. After the first pre-test, the questionnaires were significantly revised because the respondents had also suggested some changes with wordings and the inappropriate sequencing of the questionnaire. Then a second wave of pre-testing was conducted on another group of 50 telecom front end employees and 50 telecom services customers. After the second pre-testing, the statements were fine tuned and the questionnaire was again revised to incorporate suggestions regarding wording and inappropriate sequencing.

4.10 Pilot Survey

A pilot survey is a small-scale version of the larger survey; it relates particularly to questionnaire survey but can relate to any type of research procedure. It is always advisable to carry out one or more pilot surveys before starting the main data collection exercise (Sekaran, 2003; Malhotra, 2005). It should draw subjects from the target population and simulate the procedures and protocols that have been designed for data collection. It helps detect weaknesses in design and instrumentation. In fact, pilot survey can be used to test out all aspects of the survey and not just question wording (Ticehurst et al., 2000). The size of the pilot group may range from 25 to 100 subjects (Cooper et al., 1998). In the present study, the pilot survey was initially conducted on 50 telecom front end employees and 50 telecom services customers in the NCR.

The various constructs were tested for validity using principal component analysis (PCA) with varimax rotation. PCA was carried out on each scale separately to check if items of a scale load on one single factor. As each item deleted affects all other values, a very cautious approach was taken, deleting only one item per run, which resulted in a higher number of analysis runs. Thus, several items were dropped due to cross loadings and remaining items loaded on a single factor. Each multi-item scale was factor-analyzed to evaluate dimensionality, and reliability analysis was
performed to determine if each item contributed to scale reliability. Besides, correlational analysis was applied to confirm the validity of the construct. We omitted items if they did not load with the majority of the other scale items or if they failed to improve internal consistency. A final Principal Component Analysis confirmed the unidimensionality of each scale. Mentzer, et al., (1999) suggested that a final scale may contain lesser, even one-fourth or one-fifth of the original items. The results of PCA further prove that the constructs possess moderate levels of convergent validity as items within a construct were found to have satisfactory loadings. Following the procedure, 29 and 24 items were retained in the employee and customer questionnaire, respectively (for details see chapter-5).

4.11 Sample and Data Collection

The sample comprised the telecom front end employees dealing directly with customers and telecom service's customers in NCR. Keeping in mind practical difficulties associated with probability sampling in this type of study including absence of reliable sample frame, customers visiting Customer Care Centres of Telecom Service Providers, Malls and other such locations in the NCR were approached for responses. As already pointed out, keeping in mind the peculiar nature of the study and absence of any reliable sample frame, it was thought appropriate to adopt convenience sampling procedure for generating data. Although such samples are not strictly representative, they are less likely to create any systematic bias (Douglas et al., 1983).

However, to bring in some semblance of randomness, the researcher made it a point to contact customers at referred locations decided randomly within the NCR, on separate weekdays, during the period of data collection to get a representative feedback among all the SSAs (secondary switching areas).

For getting feedback from employees, personal contacts within BSNL as well as other private operators were put to use. Data was collected from two types of frontline employees—executive and non-executive. Here too, due to absence of reliable sample frame, data was collected following convenience sampling by visiting offices of the various telecom service operators and collecting responses from the employees from the NCR.
The sample of this study comprised voluntary participants consisting of roughly 350 front end employees of telecom service companies and 350 telecom service customers. Questionnaires with missing responses were excluded from final analysis. Final sample size was 297 for front end employees and 293 for telecom service customers. It is to be noted that according to Wimmer et al. (2000), for multivariate studies, a sample size about 300 is considered to be good.

4.12 Data Editing and Coding

Using SPSS software version 15.0, data was edited by checking and adjusting for errors, omissions, legibility and consistency in order to ensure completeness, consistency, and reliability of the data. This was achieved by using “frequency distribution” feature in SPSS. Data was coded by assigning character symbols, and edited before it was entered into SPSS. Each item in the questionnaire had a unique variable name. A coding sheet was used to maintain information about how each variable was coded. It comprised a list of all variables in the questionnaire, the abbreviated variable names that were used in SPSS and the way in which the responses were coded. In relation to data input into SPSS, screening and cleaning of data before furthering the data analysis stage was necessary to make sure that there were no errors at the stage of keying data. By using descriptive statistics in SPSS such as frequency analysis, the data was screened by checking each variable to see if the score was out of range for this category (checking frequencies), or for continuous variables (checking minimum, maximum, mean and standard deviation). After finding errors, it was necessary to go back to the questionnaires to confirm the data before correcting the error in the data file. Thus, after taking due care, researcher proceeded to the data analysis stage.

4.13 Missing Data and Outliers

Data cleaning procedure was performed before proceeding with the analysis. Outliers were detected by the help of box plots (also called box-whisker diagrams) in SPSS. Moreover, the missing values were replaced with the mean values in the database (Field, 2006).
4.14 Data Analysis

During initial stages, descriptive statistics such as minimum, maximum, frequency, percent, mean, standard deviation, skewness, kurtosis, Pearson correlation, T-tests and ANOVA was obtained by using SPSS. Data analysis involved testing the reliability (inter-item consistency) and validity of the scales (convergent validity). The second stage comprised testing the proposed research models through Structural Equation Modelling using LISREL 8.5.

Statistical techniques used in this research were categorised into two groups. The first set of techniques was used to explore differences between groups by using T-tests and ANOVA (Pallant, 2003; Sekaran, 2003) and second, Structural Equation Modelling (SEM) was used to estimate interrelated dependence relationships (Hair et al., 2006). This technique is helpful in generating a model of relationships among variables (Hayduk, 1987). Before analysing data by using these statistical techniques, it was considered important to test the reliability and validity of the research instrument.

4.15 Reliability

Reliability is defined as the degree to which measures are free from random error and therefore yield consistent results. However, it is to be noted that unidimensionality is a necessary condition for reliability analysis and construct validation (Anderson et al., 1991). Hence, in the present study, reliability was assessed only after scale unidimensionality was established in case of each construct.

4.16 Validity Analysis

Correlational or convergent analysis is one way of establishing construct validity (Malhotra, 2005). Correlational analysis assesses the degree to which two measures of the same concept are correlated. High correlations indicate that the scale is measuring its intended concept (Hair et al., 2006). It is recommended that the inter-item correlation exceed 0.30 (Robinson, et al., 1991). In fact, reliability and validity are separate but closely related conditions (Bollen, 1989). More importantly, reliability does not guarantee validity and validity does not guarantee reliability. A
measure may be consistent (reliable) but not accurate (valid). On the other hand, a measure may be accurate but not consistent (Holmes et al., 2006).

4.17 Principal Component Analysis

Principal Component Analysis (PCA) was performed to check whether the items of each construct load on a single construct. Kaiser-Meyer-Olkin (KMO) and Bartlett’s Tests were performed to determine if the data are likely to factor well (Malhotra, 2005). KMO measure quantifies the degree of inter correlations among the variables and hence the appropriateness of factor analysis. Another measure is Bartlett’s test of sphericity which measures the presence of correlations among the variables. It provides the statistical probability that the correlation matrix has significant correlations among at least some of variables. Thus, a significant Bartlett’s test of sphericity is required (Malhotra, 2005).

4.18 Chi-Square Test

A cross tabulation describes two or more variables simultaneously. It is the merging of frequency distribution of two or more variables in single table (Malhotra, 2005). Here the purpose of the cross tabulation is to show relationship between age group of customer and preferred service provider and education of the customer and preferred service provider. Chi-square test was performed in order to establish association, if any, between age of the customer and preferred telecom service provider and between education of the customer and preferred telecom service provider.

4.19 T-test

Independent sample t-tests (Sekaran, 2003) were used to explore the differences between two groups. We deployed t-tests to compare the mean scores of responses from public and private telecom companies with reference to customers, employees on various dimensions, determinants and constructs of model and find out whether significant differences existed between them (Malhotra, 2005).
4.20 ANOVA

The one-way ANOVA provides us with linearity tests and association measures to help us understand the structure and strength of the relationship between the groups and their means (Malhotra, 2005).

4.21 Structural Equation Model (SEM)

Structural Equation Modeling (SEM) is an advanced multivariate statistical process with which a researcher can hypothesize and test a theoretical model and the associated relationships. It also takes into account measurement errors, and considers both direct and indirect effects of variables on one another. Latent variables are theoretical constructs that unite phenomena under a single term (Bollen, 1989).

SEM analysis has been used to investigate which and how much some of the factors affect the intention for adoption of mobile marketing. By using SEM, the hypothesized model can be tested statistically in a simultaneous analysis of the entire system of variables to determine the extent to which it is consistent with the data. If the goodness of fit is adequate, the model argues for the plausibility of the postulated relations among variables; if it is inadequate, the tenability of such relations is rejected. However, despite the fact that a model is tested in each round, the whole approach is model generation rather than model testing (Byrne, 2001, 2006). SPSS was used to conduct preliminary analyses of data together with SEM software package LISREL 8.50 which was used to test the proposed models.

4.22 Limitations of the Study

The study makes a modest attempt at exploring effects of COSE on various dimensions of COSE and customer satisfaction, perceived service quality, customer commitment and retention in telecom service provider firms operating in NCR in India. But still, like any other empirical study, present research too suffers from certain limitations which are listed below:
As already mentioned, questionnaire was personally administered to collect data for this study. The methodology adopted in questionnaire administration is in line with suggestions of Sekaran (2003) according to whom it is one of the best ways to collect data when the survey is confined to a local area. However, the very fact that data was collected from a small geographic area limits the generalizability of the findings.

With regard to the general applicability of the findings, restrictions result from the sample characteristics. It must also be mentioned that the findings are not based on a random sample. Thus, the very fact that convenience sampling procedure was relied upon in generating the data for the study, findings of the study need to be generalized with caution.

Although such samples are not strictly representative, they are less likely to create any systematic bias (Douglas & Craig, 1983). However, to bring in some semblance of randomness, the researcher made it a point to contact customers at referred locations decided randomly within the NCR, on separate weekdays, during the period of data collection to get a representative feedback among all the SSAs (secondary switching areas) within the NCR.

For getting feedback from employees, personal contacts within BSNL as well as other private operators were put to use. Data was collected from two types of frontline employees—executive and non-executive restricting generalizability.

As only English version of the questionnaire was used on the respondents, the study can be said to be having an upmarket bias again limiting generalizability of findings.

The data for the study was collected from respondents (both customers and employees) in the NCR region only which is relatively more affluent in terms of socio-economic development. This too raises concerns over transferability of findings onto other regions and markets of India as also other parts of the world.

This study covers limited number of socio-demographic variables i.e. age and education. Other variables such as urban-rural, income profile, etc. have not been included which could have enriched our findings and helped
in predicting customer preferences in the context of telecom service providers.

The study is also biased in the sense that it does not include perceptions of customers using wire line as they may be different from users of mobile.

4.23 Summary

This chapter presents the methodology used in this research including information gathering, the instrument development, pre-tests, pilot study, data collection and data analysis process. The research instrument was pre-tested in two waves and the pilot as also the actual study was conducted in NCR. In the data analysis section, the statistical techniques used in data analysis have been explained. The results of the data analysis arrived at using these statistical techniques has been discussed in the next chapter.