CHAPTER -I

INTRODUCTION AND DESIGN
OF THE STUDY
1.1 Introduction

The globalization of markets has been one of the major business developments. The pressure of global competition impacts every domestic market as well as international markets. Market places are transitioning to demand-side approaches with a focus on customer needs and wants. Customer Relationship Management (CRM) thus should assume a central role in the marketing management of global products and services.

The market of today is not the same as in the middle of nineteenth century. It has been a long process of development with different ways of selling. In the 1850s many companies were able to sell everything produced and the strategy was production orientated. About 50 years later, the market opened for competition and companies needed to change their strategies. When the customers suddenly needed reasons to buy the products, companies became sales orientated. Later, in the 1950s the focus for business was to find a marketing orientation where the produced products could satisfy the consumer needs. This strategy later on changed its focus over to customer-centric orientation. With this strategy a company may focus on treating all of their customers individually shifting from managing a market to managing a unique customer (Bose, 2002). The development that refers to relationship creation has been ongoing during many years but the term "Relationship Marketing" was not stated until late 1980s (Gronroos, 2004).

In the mid-1990s many industries experienced customers’ beginning to require more and better services. To reach these increased demands the corporation thought of new ways to provide service with higher quality. This became the beginning of “Customer Relationship Management” (CRM) (Smith 2006).

In the end of the 1990s the concept of CRM grew for a number of reasons. One of the reasons was Information Technology (IT), a foundation for CRM which continues to become more and more sophisticated. The increased number of international customers as a result of extensive globalization was another (Bull
With a larger amount of customers across the world, as well as better ways to keep track of their interests, CRM became strategically possible (Light, 2003). One major cause was also the software companies that saw a market for CRM systems and therefore started to promote them (Peelen 200).^\textsuperscript{4}\!

Customer Relationship Management is "an enterprise wide business strategy for achieving customer - specific objectives by taking customer specific actions". (Peppers and Rogers 2004)^\textsuperscript{5}\!

CRM is a integration of technologies and business processes used to satisfy the needs of customer during any interaction (Bose 2002)^\textsuperscript{6}.

CRM is defined as "attracting, maintaining and enhancing customer relationship". It focuses on the lifetime value of the customer instead of the individual translation. It contracts on retaining and improving current customers, more than acquiring new ones. Customers have become more individualistic, quality conscious and impulsive in their buying behavior. The service organization which wants more than one-off sales has to nurture the relationship with the existing customers. Various international studies have proved that retaining existing customers, and building loyal repeat buyers, costs only one-fifth as much as acquiring new ones.

In today's hyper competitive scenario more than three quarters of the money and time spent by companies go towards acquiring and retaining customers. Customer - centricity has become the buzzword and the ones with clear and relentless focus on customers, enjoy a better competitive position.

The service sector has become a key player in many economies. When one examines the structure of the developed and developing economies over the past 20 years, the most striking features is the growth of the service sector and the relative decline of the manufacturing sector (Appendix, A (1)) since the services sector forms a very substantial portion of the GDP of developed and developing economies, increased attention to the application of marketing in the services sector has emerged. Because of the inherent nature of the services sector which is characterized by intangibility, heterogeneity, inseparability and variability, the most
appropriate approach to market the services would be by building genuine relationship with the customers. Since customer relationship management ideally suits the salient characteristics of services, it has become the forerunner in marketing practices at present. Among the service organizations, Life Insurance Corporation of India can be considered as the largest one that caters to the needs of the people belonging to all sections of society.

Insurance is basically defined as a financial agreement that redistributes the cost of unexpected losses. Today, it stands both as a service and industry in its own right.

Insurance in any economy is regarded as a pillar of growth and works as a catalyst in the overall development of the economy. The industry always remains the source of long-term funds, which are vital for the development of basic infrastructure of a country. The insurance industry helps in giving to the debt and capital market and also vitalizes the market for government bonds.

According to report from Indian Infoline (January 2004), India has the highest number of life insurance policies in force in the world. The industry is pegged at Rs. 400 billion in India. Gross premium collections stand at 2 percent of the GDP and this has been growing by 15 to 20 per cent per year from the life insurance corporation of India (LIC) and government-owned insurers.

History of Insurance Sector

The business of life insurance in India in its existing form started in India in the year 1818 with the establishment of the Oriental Life Insurance Company in Calcutta. This was followed by the establishment of the Bombay Life Assurance Company in 1823 at Bombay, the Madras Equitable Life Insurance Society in 1829. All of these companies operated in India but did not insure the lives of Indians. They were insuring the lives of Europeans living in India. Bombay Mutual Life Assurance Society indicated the birth of first Indian life insurance company in the year 1870, and covered Indian lives at normal rates. There were no specific regulations for insurance business in India. They were subject to Indian companies Act (1866). Two sets of legislations were passed; the Indian Life Assurance Companies Act and the
Provident Insurance Societies Act in 1912. In 1928 the Indian Insurance Companies Act enacted to enable the government to collect statistical information about both life and non-life insurance businesses. 1938 Insurance Act covered deposits, supervision of insurance companies, investments, commissions of agents, directors appointed by the policy holders among others. This piece of legislation lost significance after nationalization. On 19.01.1956 the management of life insurance business of 245 Indian and foreign insurers and provident fund societies operating in India were taken over by the Central Government and then nationalized on 01.09.1956. LIC was formed in 1956 by “The Life Insurance Corporation Act 1956” in the parliament.

The General insurance business in India, on the other hand, can trace its roots to the Triton Insurance Company Ltd., the first general insurance company established in the year 1850 in Calcutta by the British.

The Insurance sector in India governed by Insurance Act 1938, the Life Insurance Corporation Act, 1956 and General Insurance business (Nationalisation) Act, 1972, Insurance Regulatory and Development Authority (IRDA) Act, 1999 and related Acts. With such a large population and the untapped market area of this population insurance happens to be a very big opportunity in India. Today it stands as a business growing at the rate of 15-20 per cent annually. Together with banking services, it adds about 7 per cent to the Country’s GDP. In spite of all this growth, the statistics of the penetration of the insurance in the country is very poor. Nearly 80% of Indian populations are without life insurance cover and the Health insurance. This is an indicator that growth potential for the insurance sector is immense in India.

The Central Government (1991-1996) unleashed liberal changes in India's rigid economic structure, with a view to examine the role of insurance sector in the light of the ongoing reforms. The Central Government appointed a committee on performs in the insurance sector in April 1993, under the chairmanship of R.N. Malhotra to go into depth in the issues. The committee recommended the liberalization of the insurance sector. The committee also recommended for setting up Insurance Regulatory Authority (IRA) before opening of the insurance sector.
The IRA had to be the statutory body, similar to the securities and Exchange Board of India. The Insurance Regulatory and Development Authority was constituted as an autonomous body to regulate and develop the business of insurance and re-insurance in the country in terms of the insurance Regulatory & Development Authority Act 1999. The authority was constituted on 19th April 2000 vide Government of India's notification number 277. The key objective of the authority is to promote market efficiency and insure consumer protection.

The nature of LIC has altered and progressed as a result of a combination of changes in the market place relating to the legislative, economic, technological and social environments, which effect both personal and corporate customers. As a result, the customer relationship management concept has increasingly become relevant and important for the life insurance corporation of India. A challenge to the LIC is to own a relationship with the customer and use this as a competitive advantage.

Since the liberalization of the industry, the Insurance industry has never looked back and today stand as the one of the most competitive and exploring industry in India. The entry of the private players and the increased use of the new distribution are in the limelight today. The use of new distribution techniques and the IT tools has increased the scope of the industry in the longer run.

All around the world, one of the major issues exercising senior managers of insurance companies and banks is the convergence of banking, insurance and other financial services. The convergence and blending of the different elements of the retail financial services industry has enabled by many recent technological developments, not the least of which is the internet.

After telecom and banking, it is the turn of insurance companies to deploy customer relationship management solutions. As competition intensifies, insurers are trying every trick in the book to retain existing customers, with a wide range of services driving the market for CRM applications in the process, says Akhtar Pasha.

Today the focus is on selling more products to existing customers to improve profitability. Customer-focused strategies require CRM (customer relationship...
management) to help require customers thorough various touch points and translate operational data into actionable insights or proactively serving customers.

The insurance companies today must adopt personalized approach for handling the customer. Today, in the very competitive environment managing the customer intelligently is very critical for the insurer. Companies need to apply different set of rules and treatment strategies to different customer segments. However, to personalize interactions, insurers are required to capture customer information in an integrated system.

**Application of Information Technology in Insurance Sector**

There is an evolutionary change in the technology that has revolutionized the entire insurance sector. Insurance industry is a data-rich industry, and thus, there is a need to use the data for trend analysis and personalization.

With increased competition among insurers, service has become a key issue. Moreover, customers are getting increasingly sophisticated and tech-savvy. People today don’t want to accept the current value propositions, they want personalized interactions and they look for more and more features and add ones and better service.

The insurance companies today must meet the need of the hour for more and more personalized approach for handling the customer. Today managing the customer intelligently is very critical for the insurer especially in the very competitive environment. Companies need to apply different set of rules and treatment strategies to different customer segments. However, to personalize interactions, insurers are required to capture customer information in an integrated system.

With the explosion of Website and greater access to direct product or policy information, there is a need to developing better techniques to give customers a truly personalized experience. Personalization helps organizations to reach their customers with more impact and to generate new revenue through cross selling and up selling activities. To ensure that the customers are receiving personalized information, many organizations are incorporating knowledge
database-repositories of content that typically include a search engine and lets the customers locate the all document and information related to their queries of request for services. Customers can hereby use the knowledge database to manage their products or the company information and invoices, claim records, and histories of the service inquiry. These products also may be able to learn from the customer’s previous knowledge database and to use their information when determining the relevance to the customers search request.

**Customers Grievance Redressal**

The corporation has established grievance redressal machinery at branch/divisional/zonal central office to redress the grievances of the policy holders promptly. The concept of customer relations management (CRM) has been integrated in our grievance redressal mechanism by evolving a customer centric and productive approach to the complaints of the policy holders. All operating officers have a complaint cell which deals with complaints received by them directly from the policy holders, agents etc, besides attending to complaints formulated to them by other officers and government agencies. These cells are manual by officially trained personal, i.e., customer relationship executives (CRE) in the branch offices and customers relationship management (CRM) in the divisional level. The positions and roles of the CRM of the divisional level and the CRE at the branch level have been created to champion the cause of the customer inside the organization as customer representatives.

**1.2 Statement of the Problem**

The structure of the Indian Financial Sector has changed markedly over the last decade. Prior to this, the market was characterized by functional demarcation and regulatory restrictions, which resulted in limited competition both domestically and internationally. The forces of deregulation, advancing technology and a worldwide trend towards globalization have vastly increased the competitive pressure within the financial services market. This has affected both the structure and operation of the firms within the industry and has set the scene for the development of marketing activity to be approached in a new way.
Customer has always been at the centre stage of any financial service. But of late, as an aftermath of opening up of the economy and liberalization, the customer has become the king now, in the true sense. By their very nature, financial services tend not to be one-off purchases but ones, which are required on a recurring basis. Hence, there is a definite need for the financial services suppliers to establish initial relationship with their prospects while at the same time maintain and develop a long-term relationship with existing customers. Further, financial services are based on consumer trust and confidence not only in the organization supplying their services but also particularly in the customer contact employees themselves. (Christopher, Bayne and Ballantyne, 1991).

Since CRM focuses on acquiring, keeping and improving (attracting, maintaining and enhancing) customer relationship, slowly the financial services suppliers have turned to adopt the strategies of CRM to strengthen their customer base.

The concept of CRM with special reference to the Insurance Industry has already emerged and is being practiced in various forms in the developed countries. In India, it is still in a nascent stage. Though the system of building a Customer Relationship Bond, is being practiced and followed in the Insurance Industry, the concept has not been concretized, canalized and streamlined. At every level in the Insurance Industry, even today, there exists a Customer Relationship, but always a doubt exists, as to whether it is a genuine relationship. The performance levels depend mostly upon individualistic thoughts and practices.

The customers and employees are the main pillars on which any Service Industry, especially Insurance Industry develops upon. Hence to grow, LIC needs to have a sustaining customer relationship. The bond between the customer and the insurance strengthens when the perceptions of the customers on their relationship with LIC are best understood by the Insurance Industry. Also, the expectations of the customers can be best fulfilled by the insurance only through the role played by its employees, who have their own perceptions about the customers’ relationship with the insurance companies.

Hence, this study has been primarily undertaken to conceptualize the existing relationship dimensions and to identify such of those dimensions which would help in developing a genuine relationship between the customers and the LIC employees in the Indian context.
1.3 OBJECTIVES

1. To study the profile of the Life Insurance Corporation of India, Pre and Post nationalization with specific reference to Customer Service.

2. To identify the dimensions which influence the relationship between Customers and Employees of LIC.

3. To measure the Customers' perception on the dimensions influencing Customer Relationship in LIC with specific reference to Chittor district.

4. To ascertain the Employees' perception on the dimensions influencing Customer Relationship in LIC with specific reference to Chittor district.

5. To compare the Customers' and Employees' perceptions and study the differences, if any and

6. To determine the benefits and major problems faced by the customers and employees in their relationship with LIC.

METHODOLOGY

1.4. Collection of Data

The study is of descriptive research type. Taking the current trend into consideration and adaptation of the LIC sector to the growing demand, the researcher identified the dimensions of relationship between customers and Employees of LIC - Chittor district, Nellore Division.

For the present study, data have been collected on the Customer Relationship Management practices adopted in Insurance Industry. Besides data relating to the perceptions of the LIC customers on their relationship with the employees of LIC, the perceptions of the employees of LIC, Nellore Division on their relationship with the customers, major benefits enjoyed by the customers and employees of LIC and major problems faced by both in their relationships have also been collected. This investigation has made use of both primary and secondary data.
1.4.1 Primary Data

The primary data on the perceptions of the customers and employees on customer relationship and major benefits and problems faced by them in their relationships have been collected through the sample survey method. Stratified random sampling technique has been adopted.

Non-disguised pre-tested structured questionnaires have been framed for primary data collection. Precaution had been taken to eliminate all kinds of bias and errors in the collection of data.

1.4.2 Secondary Data

Secondary data on Customer Relationship Management practices in insurance sector and the present state of Insurance Industry have been collected from:

Publications made in magazines - various issues, the libraries of various institutions, online database like Emerald, various published sources like books, journals and research dissertations. Review of literature through internet.

Apart from references made to the published documents and reports, some data were collected through personal discussions with the Branch Managers and in-charge of customer relationship of LIC (Customer Relationship Manager).

1.5 Construction of Questionnaires and Pretest

The present study being an attempt to analyze the dimensions influencing the customer, employee relationship in LIC, the researcher has held in-depth interviews with the LIC branch managers and employees and recorded their opinions and responses. Discussions and interviews have been held with various groups of customers to identify the various dimensions that influence their relationship with the employees of LIC and to identify the major problems and benefits they face in their relationship. Further, a thorough study of the literature in this area has also been made.
Based on the interviews, discussions and the literature review, a Questionnaire was developed and a pilot study was conducted with 30 customers and 25 employees of LIC in Chittoor district. In the light of the pre-test, every aspect of the questionnaire was examined and revised to the necessary extent to ensure greater accuracy of the final questionnaire. After making modifications, the questionnaire was analyzed and reviewed by an Insurance Sector expert to avoid any error.

The questionnaires are tailored to procure adequate and relevant information for a systematic and scientific study of the objectives of this research. The first section of the Customers' questionnaire deals with the profile of the customers and it covers various demographic aspects like 'Age', 'Gender', 'Marital Status', 'Occupation' 'Annual Income' and 'Longevity' of customers. The first section of the Employees' questionnaire deals with the profile of the employees and it covers various demographic aspects like 'Designation', 'Gender', 'Service Experience' and 'Family Size'.

The second sections of both the questionnaires focus on the perception of the customers and employees on the ten relationship dimensions namely 'Trust', 'Commitment', 'Empathy', 'Reciprocity', 'Interaction', 'Quality', 'Attraction', 'Emotional Element', 'Customization' and 'Social Responsibility', 'Customer Satisfaction' and 'Customer Loyalty', which are the Relationship outcomes have also been included. The questionnaires contained 63 statements each and had to be responded on a Five-Point Likert scale indicating the degree of perception of each statement.

In the third section of the customers questionnaire, customers were asked to prioritize the benefits enjoyed and the problems faced by them with their LIC branch offices. Likewise, in the third section of the employees' questionnaire, the employees were asked to list out the problems faced by them with the customers in particular and those faced by them in their working environment.

A Five Point Likert scale has been used in the study, as it was found, in the pilot study, that customers and employees could answer with ease on this scale.
1.6 Sampling Design

The head office of the LIC is at Mumbai and there are seven zones with their zonal offices at Mumbai, Calcutta, Chennai, Delhi, Bhopal, Hyderabad Kanpur and Patna. Their divisional offices work like head offices of the erstwhile life insurance companies. There are Zonal Advisory Committee, Employee and Agent Relations Committee to help the LIC management at different levels.

Nellore division comes under the South Central Zone. Nellore Division was bifurcated from Cuddapah division and formed on 5-9-1992. It covers three districts i.e., Prakasham, Chittoor and Nellore districts. The total number of policy holders and employees in (Chittoor district) Nellore Division during 2009-2010 stood at 79495 and 360 respectively. The Chittoor district is stratified into eight branches. A sample of 300 respondent customers and 200 employees of LIC in Chittoor district have been selected for the study. Stratified random sampling method has been applied for selecting the respondents and the sample selection was made at the district level (Chittoor). (Appendix B).

1.7 Method of Data Collection

Data were collected using the "Personal Contact" approach after explaining in detail the purpose of the study and what was expected from the respondents. The questionnaires were directly administered by the researcher to the customers and employees. Since this research aims at studying the perceptions of customers and employees on customer relationship, an in-depth personal interview with the respondents was considered to be the most effective way of acquiring information from them. The personal interview helped, in the researcher clarifying to the respondents, on doubts relating to questions posed.

1.8 Description of the study Area

The study was conducted among sample customers and employees in Chittoor district, Nellore Division. Usefulness of any research can be fully appreciated only when the results are studied with the demographic features, such as location, geographical features and climate and rainfall. Hence an attempt is being made to present a brief profile of the study area.
Chittoor district was formed on 1st April 1911 and major change in jurisdiction of the district took place on 1st April 1960 as a result of pataskar award. Chittoor district lies in the Poini river valley. The States of Tamil Nadu and Karnataka form its boundaries. Chittoor, a district administrative center, remained a British military post until 1884, situated 154 km from Chennai and 183 km from Bangalore. Chittoor town is the headquarters of Chittoor district and is a major railway station on the Renigunta - Katpadi line of the Southern railway. Sri Venkateswara temple at Tirupati is one of the most ancient shrines in India.

Horsely Hills, a charming little hill station; Madanapalle, a famous health resort; Sri kalahasti, a religious centre sacred to Lord Shiva; Kailasnath Konda, a perpetual waterfall in Nagari valley; Chandragiri, the last capital of the Vijayanagar Empire; Thalakona and Nagari are important tourist spots. Puttur is famous for its bone setters, who are skilled at setting right any kind of fracture with the aid of local herbs and plaster. Places of historical interest include Gurram Konda which is in the western part of Chittoor district, and Rangini Mahal which is a Sultanese Palace.

Location

Chittoor district is situated “Between” 12-37 “to 14-8” of Northern latitude and 78-33" to 79-55" of Eastern longitude. The district is divided into three revenue divisions i.e. Chittoor, Madanapalle and Tirupati with 20 erstwhile blocks covering 1540 revenue villages in 1394 gram panchayats. On the east of the district is Nellore and Chengalpet. On the west is Kolar. On the North are Kadapa and Anantapur districts and on the south are North Arcot Dharmapuri districts of Tamilnadu. The total area of Chittoor is 15,152 sq.Kms. This is 15.5% of the area in Andhra Pradesh.

Geography

The district is bounded by Anantapur district to the northwest, Cuddapah district to the north, Nellore district to the northeast, Krishnagiri district, Vellore district and Tiruvallur district of Tamil Nadu state to the south, and Kolar district of Karnataka state to the west. 30% of the total land area is covered by forests in the district. The district has an area of 15,359 km and population of 37,45,875 of which 21.65% were urban as of 2001. Mango and tamarind groves surround the city of
Chittoor, and cattle are raised in the district. The soils in the district constitute red loamy 57%, red sandy 34% and the remaining 9% is covered by black clay black loamy, black sandy and red clay. The important rivers in the district are Ponnai and Swarnamukhi rivers which originate in eastern ghats. Other rivers include Kusasthali, Bema, Bahuda, Pincha, Kalyani, Araniyar and Pedderu. None of the rivers are perennial.

Temperature and Rainfall

The temperature in the western parts of the district like Madanapalle, Horsley Hills, Chembakur are relatively lower than the eastern parts of the Chittoor district. This is because of the higher altitude of the western parts compared to the eastern parts. The summer temperatures touch 46°C in the western parts whereas in the eastern parts it ranges around 36°C to 38°C. Similarly the winter temperatures of the western parts are relatively low ranging around 12°C to 14°C and in eastern parts it is 16°C to 18°C.

Chittoor district receives an annual rainfall of 918.1 mm. The South West Monsoon and North East Monsoon are the major sources of rainfall for the district. On average the district receives 438.0 mm of rainfall through the South West Monsoon (From June to September) and 396.0 mm from North East Monsoon (From October to December). The rainfall received by the district in the years 2002 and 2003 are 984.2 mm and 934 mm respectively.

Chittoor has a good network of banks and bank branches. Chittoor district is provided with good infrastructure facilities in respect of transport, communications and power supply.
1.9 Statistical Tools Employed for Analysis

Data collected through the structured questionnaire and other sources have been scrutinized so as to appraise the quantitative and qualitative aspects of the data before these are posed for tabulation. After tabulating the data, data have been analyzed and interpreted with the help of statistical tools to draw meaningful inferences there from for the purpose of studying the dimensions influencing relationship between customers and employees of various LIC branches in Chittoor district. The following analytical tools were used.

1. Factor Analysis
2. Internal Consistency Method
3. Analysis of Variance (ANOVA)
4. ‘t’ - test for difference between two means
5. Karl Pearson’s Coefficient of Correlation
6. Multiple Linear Regression,
7. Kendall’s Coefficient of Concordance

1.9.1 Factor Analysis

Factor analysis has provoked rather turbulent controversy throughout its history. Its modern beginning lies in the early twentieth-century attempts of Karl Pearson, Charles Spearman and others to define and measure “intelligence”. Because of this early association with constructs such as intelligence, factor analysis was natured and developed primarily by scientists interested in psychometric measurement.

Arguments over the psychological interpretations of several early studies and the lack of powerful computing facilities impeded its initial development as a statistical method. The advent of high-speed computers has generated a renewed interest in the theoretical and computational aspects of factor analysis. It is true that each application of the technique must be examined on its own merits to determine its success.
Factor Analysis is called the queen of the analytical methods. Factor analysis is by far the most often used multivariate technique of research studies, specially pertaining to social and behavioral sciences. By 'Factor Analysis' we mean a study of interrelationships among p-variables (p>1) in an effort to find a new set of ‘m’ (m< or = P) variables, fewer in number than the original set of p-variables. Thus whenever we use term “Factor Analysis” we are restricting our attention to only those methods that distinguish different types of variance.

Factor analysis attempts to simplify complex relationships that exist among a set of observed variables by uncovering common factors, and consequently provides insight into the underlying structure of the data. For example, the common underlying factor of social class may account for the strong positive correlations found between income, education and occupation.

Factor analysis is based on the fundamental assumptions that some underline or latent factors which are smaller in number than the number of observed variables, are responsible for the co-variation among the observed variables. Thus a certain correspondence exists between the underlined factors and observed variables. The mathematical properties of the correspondence are such that one casual system of factors leads to a unique correlation system of observed variables, but not vice versa. The correlation sufficient is used as a measure of interrelationship (association) among the variables and those between the subsets. A factor analytical approach is used to address whether these observed correlations could be explained to the existence of a small number of hypothetical variables. Simply, it is a method for extracting common factor variances from sets of measures.

Before we describe these different methods of factor analysis, it seems to appropriate that some basic terms relating to factor analysis be well understood.

(i) Factor: A factor is underlying dimension that account for several observed variables. There can be one or more factors, depending upon the nature of the study and number of variables involved in it.

(ii) Factor loadings: Factor loadings are those values which explain how closely the variables are related to each one of the factors discovered.
Communality: Communality, symbolized as $h^2$, shows how much of each variable is accounted for by the underlying factor taken together. A high value of communality means that not much of the variable is left over.

Eigen value: When we take the sum of squared values of factor loadings relating to a factor, then such sum is referred to as eigen value or latent root. It indicates the relative importance of each factor in accounting for the particular set of variables being analyzed.

Total sum of scores: When eigen values of all factors are totaled, the resulting value is termed as the total sum of scores.

Rotation: Rotation, in the context of factor analysis, is something like staining a microscope slide. Just as different stains on it reveal different structures in the tissue, different rotations reveal different structures in the data. Communality for each variable will remain undisturbed regardless of rotation but the eigen values will change as a result of rotation.

Factor scores: Factor scores represents the degree to which each respondent gets high score on the group of items that load high on each factor. Factor scores can help explain what the factors mean.

Important Methods of Factor Analysis

There are several methods of factor analysis, but they do not necessarily give same results. As such factor analysis is not a single unique method but a set of techniques. Important methods of factor analysis are:

1. The Centroid Method
2. The Principal Components Method
3. The maximum likelihood Method

Principal components method of factor analysis, developed by Hotelling, seeks to maximize the sum of squared loadings of each factor extracted in turn.

Principal component analysis method with Varimax Rotation had been selected since it is an approach to factor analysis that considers the total variance in the data and also enhances the interpretability. Principal component analysis is recommended when the primary concern is to determine the minimum number of
factors that will account for maximum variance in the data for using subsequent multivariate analysis. Varimax procedure is an orthogonal method of factor rotation that minimizes the number of variables with high loadings on a factor there by enhancing the interpretability of the factors.

The aim of the Principal components method is the construction out of a given set of variables are called loadings and are worked out in such a way that the extracted principal components satisfy two conditions (i) Principal components are uncorrelated (orthogonal) and (ii) the first principal component (p1) has the maximum variance, the second principal component (p2) has the next maximum variance and so on.

\[ X_j \text{'s (j=1,2,...,k)} \text{of new variables (p)} \text{, called principal components which are linear combinations of that } X_k \]

\[ p_1 = a_{11}X_1 + a_{12}X_2 + \ldots + a_{1k}X_k \]
\[ p_2 = a_{21}X_1 + a_{22}X_2 + \ldots + a_{2k}X_k \]
\[ \vdots \]
\[ p_k = a_{k1}X_1 + a_{k2}X_2 + \ldots + a_{kk}X_k \]

The method is being applied mostly by using the standardized variables, i.e.,

\[ z_j = \frac{(X_j - \bar{X}_j)^2}{\sigma_j} \]

The \( a_{ij} \)’s are called loading and are worked out in such a way that the extracted principal components satisfy two conditions: (i) principal components are uncorrelated (orthogonal) and (ii) the first principal component (p1) has the maximum variance, the second principal component (p2) has the next maximum variance and so on.

Following steps are usually involved in principal components method.

(i) Estimated of a \( Q_{ij} \)'s are obtained with which X’s are transformed into orthogonal variable i.e., the principal components. A decision is also taken with regard to the question. How many of the components to retain into the analysis?
(ii) We then proceed with the regression of $Y$ on these principal components i.e., $Y = y_1p_1 + y_2p_2 + \ldots + y_mp_m (m<k)$

(iii) From the $a_{ij}$ and $y_{ij}$, we may find $b_{ij}$ of the original model, transferring back form the $p$'s in to the standardized $X$'s.

In this research, factor analysis has been used to identify the structures and to minimize the items with in each dimension. For each dimension factor analysis was done separately with the items of that particular dimension. The items, with high factor loadings in the first factor—the first factor is the one with high eigen value and explains maximum proportion of the total variance, have been selected as they are supposed to represent one common construct of that particular group.

1.9.2 Internal Consistency Method

The basic form of this method is split-half reliability, in which items are divided into equivalent groups and item responses are correlated. A potential problem arises for split-half in that results may vary depending on how items are split in half. “A way of overcoming this is to use co-efficient alpha, which is a type of mean relativity co-efficient for all possible ways for splitting an item in half”11.

For the purpose of this research, the internal consistency method is applied whereby the Cronbach Alpha co-efficient is calculated separately for each dimension to assess the reliability of the scale adopted for dimension and for the total scale where all the dimensions are taken together.

1.9.3 Analysis of Variance

ANOVA technique is a powerful statistical method for tests of significance which was introduced by Prof. R.A Fisher in year 1920. When one considers three or more samples at a time, ANOVA technique can be used to test the homogeneity of several sample means. This technique is based on a sampling distribution namely “Variance Ratio Distribution” or “$F$-Distribution.”
ANOVA technique can be applied only under following assumptions:

i) The treatment effects are additive in nature or the model to be considered for ANOVA technique is linear model.

ii) The observations in the data are independent to each other.

iii) The observations are having constant or same variance.

iv) The population from which sample observations drawn is normal population.

With a rejection of null hypothesis, ANOVA does not give one, information concerning which means differ from each other. If it is needed to examine the means for each treatment to see which ones differ significantly from which ones, additional analysis are required to explore the nature of the differences among more than two means. The methods used for exploring the difference among the means are referred to as Multiple Comparison Procedures. Some of the more widely used procedures are Duncan's new multiple range test, Tukey's W procedure, and Scheffe's S Method.

The researcher has adopted ANOVA to check for the differences among the groups based on demographic variables of customers like various age groups, gender, marital status, occupational status, income groups and longevity groups with respect to the ten relationships dimensions and Relationship outcomes namely Customer Satisfaction and Customer Loyalty. Similarly, differences have been checked among the groups based on demographic variables of employees namely various designation groups, gender, service experience and family size with respect to the estimated ten relationships dimensions and Relationship outcomes namely Customer Satisfaction and Customer Loyalty. The Scheffe S methods has been adopted to further determine apparently which means differ from each other by comparing the corresponding differences between the sample means.
ANOVA technique for one way classified data

<table>
<thead>
<tr>
<th>Sub Classes or Samples</th>
<th>1</th>
<th>2</th>
<th>...............</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y_{11} )</td>
<td>( y_{12} )</td>
<td>( ... )</td>
<td>( y_{1k} )</td>
<td>( ... )</td>
</tr>
<tr>
<td>( y_{21} )</td>
<td>( y_{22} )</td>
<td>( ... )</td>
<td>( y_{2k} )</td>
<td>( ... )</td>
</tr>
<tr>
<td>( ... )</td>
<td>( ... )</td>
<td>( ... )</td>
<td>( ... )</td>
<td>( ... )</td>
</tr>
<tr>
<td>( y_1 n_1 )</td>
<td>( y_2 n_2 )</td>
<td>( ... )</td>
<td>( y_{kn} )</td>
<td>( ... )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>( T_1 )</th>
<th>( T_2 )</th>
<th>...............</th>
<th>( T_k )</th>
<th>( G )</th>
</tr>
</thead>
</table>

\[
\frac{(\text{Total})^2}{\text{Sample size}} = \left[ \frac{T_1^2}{n_1} \right] + \left[ \frac{T_2^2}{n_2} \right] + ... + \left[ \frac{T_k^2}{n_k} \right] = \sum \left[ \frac{T_i^2}{n_i} \right]
\]

Where \( y_{11}, y_{12}, ..., y_{kn} \) are observations in the data

\( K \) is the number of the subclasses or the samples

\( T_1, T_2, ..., T_k \) are the sample totals

\( G \) is the grand total.

\( n_1, n_2, ..., n_k \) are the sizes of the \( K \) samples respectively.

Or

All the sub classes have same means effects and are not significant. To test the null hypothesis, ANOVA technique can be used and it consists of the following steps for computations:

**Step (1):** Correction factor (c.f.) = \( G^2/n \). Where \( n = n_1 + n_2 + ... + n_k = \text{Total sample size.} \) \( G = \text{Grand total.} \)
Step (2) : Between subclasses (samples) sum of squares (BSS)

\[ \sum \left( \frac{T^2}{n_i} - c.f. \right) = \sum \left( \frac{T^2}{n_j} \right) \]

Step (3) : Total sum of squares (TSS) [\( \Sigma y^2 \) - c.f.]

Where \( \Sigma y^2 = y_{11}^2 + y_{12}^2 + \ldots + y^2 \) kn = Sum of squares of all individual observations in the data

Step (4) : Error sum of squares or within subclasses sum of squares (ESS) = [TSS-BSS]

Step (5) : Construct ANOVA table as follows:

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Degrees of freedom (d.f)</th>
<th>Sum of squares (SS)</th>
<th>Mean sum of squares (MSS)</th>
<th>F - Test statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between subclasses (Samples)</td>
<td>K-1</td>
<td>BSS</td>
<td>( \frac{BSS}{K-1} )</td>
<td>( F_{cal} = M/E )</td>
</tr>
<tr>
<td>Error</td>
<td>n-K</td>
<td>ESS</td>
<td>( \frac{ESS}{n-K} )</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>n-1</td>
<td>TSS</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Where \( \sum \left( \frac{T^2}{n_i} \right) = \frac{T_1^2}{n_1} + \frac{T_2^2}{n_2} + \ldots + \frac{T_k^2}{n_k} \)

Where \( F_{(K-1), (n-K)} \) can be obtained from statistical table of F-distribution for [(K-1), (n-K)] degrees of freedom at either 5% or 1% of 1 o.s.

Step (6) : Compare the calculated value of F-Statistic with its critical value and draw the inference accordingly

Remark : In the application of the F-statistic, the greater mean sum of squares (variance) may be taken in the numerator and the smaller mean sum of squares may
be taken in the denominator. If $E>M$, then $F_{cal}$ may be computed as $F_{cal} = E/M$ and thus critical value may be obtained as $F_{(K-1),(n-K)}$.

1.9.4 t- Test for the Differences of Two Means

Remark : In the application of the F-statistic, the greater mean sum of squares (variance) may be taken in the numerator and the smaller mean sum of squares may be taken in the denominator. If $E>M$, then $F_{cal}$ may be computed as $F_{cal} = E/M$ and thus critical value may be obtained as $F_{(K-1),(n-K)}$.

$t$-Test for the difference of two independent sample means:

Null hypothesis: $H_0$ There is no significant difference between the means of given two sample.

Test statistic : $t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$

Where, \( \bar{x}_1 = \frac{\sum x_1}{n_1} \) = First sample mean

\( \bar{x}_2 = \frac{\sum x_2}{n_2} \) = Second sample mean

\[ s^2 = \left(\frac{n_1s_1^2 + n_2s_2^2}{n_1 + n_2 - 2}\right) \]

Here, $s_1^2 \left[ \frac{\sum x_1^2}{n_1} - \left(\bar{x}_1\right)^2 \right] = $ First sample variance

$s_2^2 = \left[ \frac{\sum x_2^2}{n_2} - \left(\bar{x}_2\right)^2 \right] = $ second sample variance

$n_1$ and $n_2$ the sizes of two independent samples respectively such that $(n_1+n_2) \leq 30$. Degree of freedom:$(n_1+n_2-2)$
Inference: Compare the calculated value $|t_{cal}|$ with its critical value $t_{crit}$ and draw the inference accordingly.

1.9.5 Karl Pearson’s Coefficient of Correlation

Karl Pearson’s Coefficient of Correlation is the most widely used method of measuring the degree of relationship between two variables. This coefficient assumes the following:

(i) That there is linear relationship between the two variables.

(ii) That the two variables are casually related which means that one of the variables is dependent and the other one is dependent; and

(iii) A large number of independent causes are operating in both variables so as to produce a normal distribution.

Karl Pearson’s coefficient of correlation (or $r$) = m.p.l

Karl Pearson’s Co-efficient of Correlation $R$:

It measures the linear relationship between any two variables $x$ and $y$.

$$r = \frac{\sum xy - (\sum x) (\sum y)}{\sqrt{\left(\sum x^2 - (\frac{\sum x}{m})^2\right) \left(\sum y^2 - (\frac{\sum y}{m})^2\right)}}$$

Where $\Sigma xy = x_1 y_1 + x_2 y_2 + \ldots + x_n y_n$ = Sum of products of $x$ and $y$ values

$\Sigma x^2 = $ Sum of squares of $x$ – series

$\Sigma y^2 = $ Sum of squares of $y$ – series

$N = $ No. of pairs of observations in the data.

1.9.6 Multiple Linear Regression Analysis

Multiple regression analysis is a powerful and flexible procedure to analyze associative relationships between a dependent variable and or more independent
variables. It is concerned with the nature and the degree of association between variables. Multiple Regression involves a single dependent variable and two or more independent variables.

Multiple regression analysis identifies the relationship between the variables in the form of an equation in which one can predict the values of one variable (dependent) on the basis of the values of another (independent).

Suppose there exists a linear relationship between a dependent variable (y) and a set of K independent variables X_1, X_2, ..., X_k.

The general form of multiple linear regression model can be written as

\[ Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_k X_{ki} + \epsilon_i \]

Where, \( y \): dependent variable; \( X_1, X_2, \ldots, X_k \) are independent variables;

\( \beta_1, \beta_2, \ldots, \beta_k \) are the partial regression coefficients, which gives the influences or effects of \( X_1, X_2, \ldots, X_k \) on \( Y \) respectively. Here, \( \beta_0, \beta_1, \beta_2, \ldots, \beta_k \) are unknown constants which are called parameters of multiple linear regression model.

These parameters can be estimated by using the ordinary least squares estimation method.

\( \epsilon \): Error random variable

\( n \): No. of observations on each variable.

The fitted or estimated multiple linear regression model can be written as

\[ \hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 + \ldots + \hat{\beta}_k x_k \]

This equation is useful to estimate the value of \( Y \) for given values of \( X_1, X_2, \ldots, X_k \)

F-Test for the Significance of \( R^2 \)
To test for the significance of $R^2$, we state the null hypothesis as $H_0$. The given $a_2$ is not significant (or) There is no significant effect of given $K$-independent variables on dependent variable.

Or

The fitting of the multiple linear regression model is not best fit or not valid to the given data.

$$F= \frac{R^2/(k-1)}{(1-R^2)/(n-k)}$$

Where $R^2$: Square of multiple correlation coefficient

$K$ : No. of variables including dependent variable

or

No. of parameters including interest parameter

Choose level of significance as 5% or 1% level i.e., $p = 0.005$ or $0.01$

Degrees of Fractions : $[(k-1), (n-k)]$

If $p$-value is less than 0.05 and more than 0.01 then we say that $R^2$ is significant at 5% level of significance.

If $p$-value is less than 0.01 then we say that $R^2$ is highly significant at 1% level of significance.

If $p$-value is greater than 0.05 then we accept null hypothesis and we say that $R^2$ is not significant.

Remark

The $p$-value gives the probability of rejecting the null hypothesis under the assumption that the null hypothesis is true.

1.9.7 Kendall's Coefficient of Concordance for Ranking

If an analysis wants to measure relationship between three or more ranks of $N$ things, the non-parametric Kendall's coefficient of concordance can be used. This measure is useful in looking at the extent of agreement or simply the association
among many variables, which are at best ordinally scaled. If the non metric variables are ordinal (numbers indicate the relative positions of the objects but not the magnitude of differences between them) and numeric, Spearman’s Rho $P$ and Kendall’s tau $T$, are two measures of non-metric correlation that can be used to examine the correlation between them. Both these measures use rankings rather than the absolute values of the variables. When the data contain a large number of tied ranks, Kendall’s $T$ seems more appropriate. The Friedman Analysis of Variance (ANOVA) test is appropriate when there are more than two related samples. It is an extension of Wilcoxon test for situations involving more than two sets of data.

In this study, Friedman Analysis of Variance and Kendall’s Co-efficient of Concordance have been applied in order to assess the agreement in ranking between customers and employees, to rank the problems faced by the customers and employees and also to rank the benefits gained by the customers in their relationship with the Life Insurance Corporation of India.

**Limitations of Kendall’s Coefficient of Concordance for Ranking**

It is assumed that the two population distributions are continuous and that the observations $x_i$ and $y_i$ have been obtained in pairs.

**Method**

The $x_i$ observations are assigned the rank numbers $1, 2, \ldots, n$ in order of increasing magnitude. A similar procedure is carried out for all the $y_i$ observations. Each of the possible pairs of rank numbers (three will be $\frac{1}{2}(n-1)$ of these) is now examined. Each pair ($x_i, y_i$) will be compared successively and systematically with each other pair ($x_j, y_j$), when $x_i - y_j$ and $y_i - y_j$ have the same sign score of +1 is obtained. When there is a difference of zero, no score is obtained. The scores are summed together and this sum is denoted $S$. In this manner we can work with observational results without having determined the rank numbers.

For large $n$ ($n>10$), $Z$ follows a Norman distribution and hence the test statistic

$$Z = \frac{S}{\sqrt{\frac{n(n-1)(2n+5)}{18}}}$$

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May be compared with tables of the standard normal distribution. For small samples, critical values of S may be obtained from Table 27.

In both cases, if the experimental value lies in the critical region one has to reject the null hypothesis of no correlation between the two series.

1.10 Scope of the Study

The customers and employees are main pillars on which any service industry, especially insurance industry develops. Hence, to grow, LIC needs to have a sustaining customer relationship. The present study is designed to make an attempt to understand the perceptions of customers and employees on the dimensions influencing customer relationship and relationship outcomes namely Customer Satisfaction and Customer Loyalty in LIC- Nellore Division, Chittoor district.

Nellore Division covers 3 districts; those are Nellore, Chittoor and Prakasham. So the researcher could not cover entire division for the primary data. Therefore, the researcher has chosen Chittoor district only. It has about 79495 policy holders and 360 employees with 8 branch offices.

1.11 Limitations

The study aims to be broad-based and scientific, still it has certain limitations. The limitations are.

1. The study represents a new attempt to identify and relate the dimensions of customer relationship with customer satisfaction and customer loyalty. The present findings are therefore indicative rather than conclusive.

2. Although the instruments that have been used to measure the dimensions of customer relationship are generic to the service sector as a whole and they have been designed to suit the Insurance Industry in particular, their applicability to the other industries in service sector needs to be probed.

3. The research has been carried out in India, which is a developing economy. There is a possibility of cultural bias playing a role in the results of the study since quality of management in developing economies vary significantly from those of developed economies.

4. One of the general drawbacks could be the tendencies of the respondents to filter, amplify or hide the information.
5. Results pertain only to the respondents of the study namely customers and employees of LIC (Nellore Division) Chittoor district. Generalization to a wider population or industry cannot be ascertained without proper validation.

1.12 Chapterization

This dissertation is presented in seven chapters as detailed below:

The first chapter deals with the introduction and design of the study. It covers Introduction, Statement of the Problem, Objectives and Methodology adopted, the Sample Design, Method of Collecting Data, the Tools of Analysis, Scope and Limitations of the study.

The second chapter describes the Review of Literature, reviews the concept of Customer Relationship Management as explained in the past studies.

The third chapter presents the conceptual framework of Customer Relationship Management in general and describes its applicability to the Insurance Industry.

The fourth chapter discusses the Life Insurance Corporation of India, Pre and Post nationalization with specific reference to Customer Services and highlights the recent trends in the Indian Insurance Industry.

The fifth chapter identifies the dimensions that influence relationship between Employees of LIC and Customers.

The sixth chapter makes an analysis of the customers' perception and the employees' perception on the factors influencing customer relationship in LIC of India - Nellore Division Chittoor district. It further makes a comparison between the perception of the customers and the perception of the employees on the various relationship dimensions and on relationship outcomes namely Customer Satisfaction and Customer Loyalty, and evaluates the benefits and the major problems in relationship faced by customers and employees in their relationship.

The seventh chapter presents a summary of findings of the research study, conclusions and suggestions based on the findings of the study.