Research on Customer Relation Management In Electric Distribution Utility - NPCL

Dissertation Report

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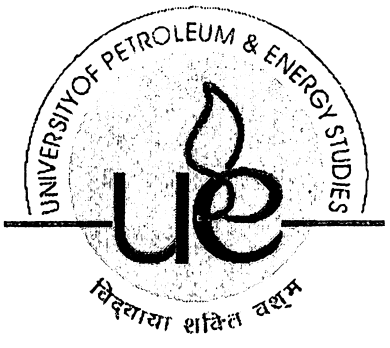

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Certificate

This is to certify that the dissertation report on "**Research on Customer Relationship Management in Electric Distribution Utility - NPCL**" submitted to the University of Petroleum and Energy Studies, Gurgaon by **Bibhuti Prakash (R100105014)** in partial fulfillment of the requirement for the award of the degree of MBA (Power Management) is a bonafide work carried out by him under my supervision and guidance.

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List of Symbols, Abbreviations, and Nomenclature

SERC – State Electricity Regulatory Commission

DISCOM – Distribution Companies

HT – High Tension

UPERC – Uttar Pradesh Electricity Regulatory Commission

NPCL – Noida Power Company Limited

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Abstract

Customer satisfaction is one of the major key functional area and on the critical success factor for any organization to achieve the organization's goal. Keeping this consideration I have devoted my sincere efforts to complete this dissertation for the company called "**Noida Power Company Limited**" in order to get the response from their customers regarding the services delivered by the company to its customer. In the preceding chapters of this dissertation report, the procedure is detailed.

Main objective is to identify the satisfaction level of HT consumers of NPCL and how they analyze the services of NPCL. The research is both qualitative as well as quantitative. Under qualitative methodology, data collection is done via questionnaire technique. In quantitative methodology, sampling procedure for HT consumers of NPCL is followed by selective testing technique under selective testing technique and accordingly their satisfaction grade is calculated to get the response out of total HT consumers.

These responses are collected on basis of various parameters that contributes in providing elite service to the customers like time, behavior; complain handling process, billing system and consequently their responses are graded under grading scheme.

1. Introduction

The Electricity Act 2003 was notified on June 10, 2003 the main feature of the EA '03 is to bring in competition into the electricity sector and consumer protection. To build an environment conducive for competition, the EA '03 have framed rules. Open Access is one such program that has been given due importance in the EA '03.

Consumer protection is another feature of EA '03 with the sector in its transition phase i.e. from monopoly to free-market the consumer will face the impact of this transition. The impact can be through increase in tariff, improper service, poor quality of supply. In order to protect the consumers the EA '03 has provisions were the utility have to follow for ensuring the protection of the consumers.

1.1. Concept of Research

Continuing from above; there is provision for multiple licensees to operate in an area. The introduction of open access in distribution allows any consumer to choose his her own power supply. This is a threat to the utilities that they will be loosing consumers if they don't provide proper

service to the consumers. As regulations are to be notified by the respective SERC for ensuring the protection of consumers, it is also important for the utilities to learn about how their services are provided to the consumers and how the consumers perceive the utility. This brings to the formulation of this research were a case of the utility Noida Power Corporation Limited is chosen to find the customer level satisfaction.

In NPCL they are 144 High Tension consumers, thereby is it obvious that most of their revenue is provided by this category of consumers hence, this research considers only the HT consumers to find the customer level satisfaction of NPCL. The methodology and the analysis is explained in the chapters of the report.

2. Introduction to Customer Satisfaction

The Electricity Act 2003 is a landmark legislation unveiling the contours of a power policy that is likely to change the face of the Indian power sector, with significant impact on all stakeholder groups. A critical element of the Act is the proposed introduction of Open Access system to transmission & distribution infrastructure, which would effectively bring about competition between private and public companies in the wholesale as well as retail markets.

The emerging scenario were consumers group (Large & Industrial) can choose their supplier, requires existing power distribution utilities to understand the changing equations and quickly adapt to the new business rules that a competitive environment demands. Customer Relationship Management (CRM) will no longer be just an acronym; it will be a business paradigm, a business process reengineering activity that will refocus the utilities objectives onto its customers. This would also signal a shift within power utilities from a 'connections' orientation to a 'customer' orientation.

The present Research deals with the determining the Customer Satisfaction Excellence (CRM) of power distribution utilities. The Open Access system, introduced by the Electricity Act 2003, will allow Independent Power Producers (generating stations) to sell electricity to Large & Industrial customers through non-mandatory access to the existing transmission and distribution system. The core of the electricity distribution business, the customer, becomes the center of attraction for all the players, and shall be wooed by attractive tariff packages and responsive services. Attracting and retaining profitable customers shall spell survival and success for the distribution utilities.

So in order to take the competition head-on, the power utilities need to strategize and put their house in order. They need Customers become contestable to restructure their organizations, redefine the processes and move towards a customer centric business model. The research is done to find out the various strategies to be followed by the Utilities to stay in the competition.

2.1. Customer Services in DISCOM

It involves ascertaining and attaining three key things

1) **Customer Analysis** Customers referred here include the present consumers availing the service of an organization also the prospective customers who are presently availing the service of competitors. This analysis involves an organization's determination of the requirements of consumers and markets (customer group).How are consumers and groups targeted? How are consumer listened to and what is learned from them in this "Listening" experience? How is the knowledge of consumers preferences expectation kept current?

2) **Quality Customers Relationship** This encompasses an organization's relation (dealings, associations, interactions, etc.) with consumers at every point of contact. Simply put, how are consumers acquired and time after time, satisfied? More importantly, how do consumers become "Loyal to organization" (repeat consumers, consumers who make positive referrals, etc.)?How are Consumers' complaints resolved and, in turn. How are these complaints (and

their various resolutions) used to improve an organization's performance? How are consumers relationship regularly maintained and improved?

3) **Determination of Customer Satisfaction** Customer Satisfaction is, rather should be, the primary aim of an organization, private or public, which provides services and / or products. Those organizations this essential and fundamental fact will inevitably not succeed. Determination of consumer satisfaction is multifaceted and should take on a number measurement approaches. These approaches consist of—a) Indicators of loyalty to an organizations and its services and / or products etc.

3. Analysis

3.1. Research Methodology

This research is Qualitative in nature. And the methodology is explained below.

3.1.1. Data Collection

The study conducted is exploratory cum diagnostic qualitative research study. It involves personal, face to face & in-depth interviewing technique. Among 144 High Tension customers of Noida Power Corporation Limited a sample of 15 HT consumers are selected on random basis. Interviews were taken of the consumer representatives of those selected HT consumers.

Interview is a very good method of interaction with people as one comes to know the real feedback from them, how they feel about the services of the NPCL, what they like & what they do not like about the services provided and also what new they are looking forward.

Firstly the survey was started by selecting a sample of 15 HT consumers & then prepared an interview questionnaire which mainly emphasized on the following variables:

a) Time:

b) Employee Behavior

c) Complaint Handling Procedure

d) Billing

These variables were chosen in order to find the level of customer satisfaction. And these variables are arranged according to their level of significance in customer satisfaction.

Description of importance of the variables according to their priorities:

a) Time

Time or punctuality plays vital role in any industry. With the growing rate of customers at the customer services centre, this will create problem for both the users and providers. The time variable considers all the operation of services provided by a utility, basically it can be explained that all process of services have a certain time limit or standard time within which the services should be provided by the utility in its best quality. Also, the

level of customer satisfaction should be the highest for the time of delivery.

In a utility, time variable can be noted on how quickly the utility employees respond to the processes such as, new connection, Query handling, fault handling.

The distribution sector is in its transition stage, and with open access to be introduced the utility should maintain punctuality and timely delivery of service in order not to loose their consumers.

b. Employee Behavior

When the consumers are being provided the services from the employees of the utility, it is important that the utility employees behave in the best possible manner and treat the employees with utmost respect and provide the best of services. The behavior of the employees will be tried and tested has many consumers come with various tempers, and in this situation the employees should maintain their composure. Hence, employee behavior is the next variable that has been chosen for a rating by the consumer.

C. Complaint Handling Procedure

The regulations notified on consumer grievances have its own importance, but compliant handling procedure is a step before the regulations comes into effect. Here this variable is chosen to learn how the consumer perceives the complaint handling procedure, i.e. whether the procedure is lengthy, cumbersome or it is a simple understandable procedure.

d. Billing

The billing system should be a transparent process, easy to understand by the customer, easy to interpret the modalities of a bill, these conditions if prevail then a customer will be satisfied. Hence this variable to learn how HT consumer perceives the billing of the utility.

Keeping in view on the above variables, a questionnaire is prepared. The format of the questionnaire is shown in table 1 Annexure. This questionnaire is supplied to every HT consumer selected in the sample size, replies are received and these replies are as tabulated and as shown in the Table 2 in the Annexure.

3.1.2. Data Analysis

In order to give authenticity to the research it is necessary to quantify it, means to give values to the variables. Unless qualitative impressions are duly quantified, research may not be clearly understood and may even be questioned by others as to their authenticity.

According to the priority, assigned values to the variables are:

a. Time = 2.5

b. Employee Behavior = 2.5

c. Complaint Handling Procedure = 2.5

d. Billing = 2.5

The total of these values is 10 which is assumed as 100% in terms of percentage. The following values have been assigned to the rating of Excellent, Good, and Satisfactory:-

a) Excellent = 5

b) Good = 3

c) Satisfactory = 2

The values have been assigned to the variables according to the priority means their importance what customers look for. Customer will

always like to want high quality service and for it the customer can pay any amount. In other words, customer can never trade off quality of service.

In order to calculate individual level of customer satisfaction of the sample, the values have been assigned, with a total of 10. Similarly, in the case of rating, the total assumed value is 10 which is divided among the three (Excellent, Good, Satisfactory) according to their priority.

Illustration:

The level of satisfaction is calculated in the following way.

Let us take the case of Customer 1, in this the individual variable value is multiplied by the value of rating as collected during interviews and then the sum total of all the values give the level of satisfaction. Refer Table A, shown below

Table A -Customer 1 Calculation

Variables – V	Rating - R	
1. Time	S	2*2.5=5.00
2. Employee Behavior	G	3*2.5=8.00
3. Complaint Handling	G	3*2.5=8.00
Procedure	G	3*2.5=8.00
4. Billing		
		Total=29.00

Now for calculating the percentage level of satisfaction the value is multiplied by 2(29.00*2=58%)

Hence, the level of satisfaction of Customer 1 is 58%.

Justification for Multiplying with 2

The answer to this question can be cleared by taking the ideal case when all the variables are rated excellent by the customers. In such condition all the variables are multiplied by 5 and the outcome will be 50.

Table B: Ideal case:

1. Time	2.5*5	=12.5
2. Employee Behavior	2.5*5	=12.5
3. Complaint Handling Procedure	2.5*5	=12.50
4. Billing	2.5*5	=12.50
	Total	=50

Here 50 represents the highest score i.e. 100% or, 50*2=100. Hence, the justification of multiplying the total value with 2

With these data calculations, the level of satisfaction of individual customer is known. In order to find out a particular level of satisfaction of all the 144 HT customers of NPCL services, it is necessary to calculate a mean value. But it is not possible to take the data from all the 144 consumers so, a sample of 15 NPCL HT consumers and the calculations are performed done on the basis of data collected.

To examine whether the services rendered by NPCL services are rated Satisfactory, Good or Excellent by all customers and what should be that particular level of satisfaction, it is important to do statistical analysis.

By statistical analysis, it is easy to find out in which area or variable the company is lacking and what will make the company to achieve its aim of Customer Excellence.

3.1.3. Statistical Analysis

Inferences on population characteristics (parameters) are often made on the basis of sample observations. In doing so, one has to take the help of certain assumptions (or hypothetical values) about the characteristics of the population if some such information is available. Such hypothesis about the population is termed as statistical hypothesis and the hypothesis is tested on the basis of sample values. The procedure enables to decide on a certain hypothesis and test its significance. "A claim or hypothesis about the population parameters or values is known as null hypothesis and is written as H_0." This hypothesis is then tested with available evidence is made and a decision is made whether to accept this hypothesis or reject it. If this hypothesis is rejected, then one accepts the alternate hypothesis.

This hypothesis is written as H_1.

For testing hypothesis or test of significance t-test is used as the sample size is less than 30 in number.

3.1.3.1. t - test :-

In case of small sample and in cases when sample variance is constructed as population, population variance, being not known, one uses t-test, based on t-distribution to judge the significance of sample mean or significance of difference between two samples means. Normally when sample size is less than 30 we use t-test.

Formula"

$\sigma s = \{(\sum (ai - \bar{a}) \text{ ^2}) / (n-1)\} \text{ ^ } 0.5$

$\bar{a} = \sum ai / n$

Where,

ai = sum of sample

$\bar{a}$ = sample mean

n = size of sample

σs = standard deviation

Test statistic (computed value) of 't' is obtained using following formula

$$t = (\bar{a} - \mu H0) / \{\sigma s / (n)\text{^}0.5\}$$

Now, the aim is to find out the level of customers satisfaction of the population. In this the assumption made is that the level of customer satisfaction should be 70%. If the percentage is less than 70% the satisfaction is low and vice versa.

Table C – Computation for Mean

S. No	Ai	(ai – ā)	(ai – ā)^2
1	58	-14.93	223.00
2	72	-0.93	0.87
3	63	-9.93	98.67
4	90	17.07	291.27
5	63	-9.93	98.67
6	67	-5.93	35.20
7	85	12.07	145.60
8	76	3.07	9.40
9	76	3.07	9.40
10	82	9.07	82.20
11	64	-8.93	79.80

12	82	9.07	82.20
13	82	9.07	82.20
14	58	-14.93	223.00
15	76	3.07	9.40
n = 15	**∑ai = 1094**		**∑(ai – ā)^2 = 1470.934**

The level of satisfaction is calculated at 5% significance level.

Based on the computations the following are the outcomes:

For the calculation of t-test the values are inserted in the formula as mentioned earlier, as observed for degree of freedom with 14 and at 5% significance level the value obtained on t-test is in the acceptance region, this implies that there is difference between the calculated value and assumed value, hence null hypothesis is accepted and can be conclude that mean level of customer satisfaction may be taken as 70%.

4. Results

For the following data:

- The sample size n = 15
- Average mean = 72.934%
- Assumed mean = 70%
- t - test value obtained at 5% level of significance and 14 degree of freedom, the value comes in the accepted region.

The result; 70% is the level of customer satisfaction for Noida Power Corporation Limited.

5. Conclusion

Through this research the level of customer satisfaction is computed. The result obtained is that the level of satisfaction of Noida Power Corporation Limited has achieved 70% level of satisfaction by the HT consumer.

In the similar manner the level of satisfaction can be found out for different categories of consumers and their level of satisfaction can be computed.

To conclude, the report as given an insight of how the HT consumers perceive the services of NPCL, also this research as provided a path way for further research, i.e. a research can be formulated to find the exactly which variable of the services provided by the NPCL has been hampering the attainment of 100% level of satisfaction.

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Annexure

Table 1: Questionnaire

QUESTIONNAIRE

HT Consumer 1

1. Time
2. Employee Behavior
3. Complaint Handling Procedure
4. Billing

Variables	1	2	3	4

Grades	Symbol
Excellent	E
Good	G
Satisfactory	S

Table 2: Replies of the Questionnaire

Variable/HT Customer		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Time		S	G	G	G	G	E	E	E	E	E	G	G	E	G	E
Employee Behavior		G	E	G	E	G	S	E	S	E	E	G	G	G	S	S
Complain Handling Procedure		G	G	G	E	G	G	S	G	S	G	G	E	G	G	E
Billing		G	G	G	E	G	G	E	E	G	G	G	E	E	G	G

Grades	Symbol
Excellent	E
Good	G
Satisfactory	S

Table 3: Computation

COMPUTATION OF CUSTOMER SATISFACTION IN PERCENTAGE																
Variable/HT Customer		**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**	**C11**	**C12**	**C13**	**C14**	**C15**
Time		S	G	G	G	G	E	E	E	E	E	G	G	E	G	E
Employee Behavior		G	E	G	E	G	S	E	S	E	E	G	G	G	S	S
Complain Handling Procedure		G	G	G	E	G	G	S	G	S	G	G	E	G	G	E
Billing		G	G	G	E	G	G	E	E	G	G	G	E	E	G	G

NOTE

Grades	Score
Excellent (E)	5

Good (G)	3
Satisfactory (S)	2
Total	10
Variable	**Score**
Time	2.5
Employee Behavior	2.5
Complain Handling Procedure	2.5
Billing	2.5
Total	10

Customer Satisfaction for NPCL	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Time	5.0	7.5	7.5	7.5	7.5	12.5	12.5	12.5	12.5	12.5	8.0	8.0	12.5	8.0	12.5
Employee Behavior	8.0	12.5	8.0	12.5	8.0	5.0	12.5	5.0	12.5	12.5	8.0	8.0	8.0	5.0	5.0
Complain Handling Procedure	8.0	8.0	8.0	12.5	8.0	8.0	5.0	8.0	5.0	8.0	8.0	12.5	8.0	8.0	12.5
Billing	8.0	8.0	8.0	12.5	8.0	8.0	12.5	12.5	8.0	8.0	8.0	12.5	12.5	8.0	8.0
Total	29.0	36.0	31.5	45.0	31.5	33.5	42.5	38.0	38.0	41.0	32.0	41.0	41.0	29.0	38.0
Total = Sum in % * 2	58	72	63	90	63	67	85	76	76	82	64	82	82	58	76