

Cluster analysis of Customers in Telecom Industry towards recommendations of TRAI

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ABSTRACT

The Indian telecom sector has grown enormously in last few years. The number of players as well as the level of competition is continuously increasing. The regulators are frequently coming up with new regulations and policies. Hence, now it has become necessary to understand the TRAI's Recommendations for customers' satisfaction and provide the best of the services to them. This is not important for attracting new customers but also helps in retaining them. The service providers are required to examine the customer satisfaction for Indian telecommunication sector. The telecommunication industry being a service oriented industry has to sustain on the TRAI's recommendations in lieu of the consumer protection, mobile number portability, unwanted commercial communication, complaint redressal system, telecommunication tariff, quality of customer service & billing accuracy. The survival and growth of a telecom service provider not only depend upon its ability to provide qualitative services to its customers on a sustained basis, but in building a long-term mutually beneficial and trust-worthy relationship with its customers. The operational and service aspects of the telecommunication service providers have witnessed significant changing owing to the innovations of science and technology and computer revolution. In this study cluster analysis was applied to measure the loadings of the seven recommendations of TRAI.

1. Introduction

Today the telecommunication industry is facing a dramatically aggressive competition in a new deregulated environment. Competition will undoubtedly continue to be a more significant factor. The winds of economic transformation are blowing across the globe. Therefore, it becomes necessary for every telecom operator to analyze the fundamental redefinition of its business and its relationship with its customers in terms of customer satisfaction.

The present study is focused to analyze various parameters of TRAI's guidelines on which customer satisfaction has been judged. This research study also has attempted to measure the cluster of customer groups towards seven recommendations of TRAI.

In Indian telecom sector, the service quality is one of the important attributes which includes the appearance of physical facilities, equipment, personnel and communication material. In the research study the quality of service is measured by the variables up to date and advanced equipments, visually appealing physical facilities, neat & clean Service staff appears, physical facilities matching with telecom services. The quality of the physical settings is tangible evidence of the care and attention to details exhibited by the service provider. The customer using telecom services may be influenced by the quality of tangibles related to the services. This is due to the fact that when a customer is going to use the telecom services provided by a telecom company, he may give more weight to the physical facilities associated with the telecom service.

It is suggested that telecom operator should design the physical facilities, equipments and communication materials according to the expectations and preferences of the customers. Tangibility aspect of service quality is found to be more important to post paid customers because such customers are frequently visiting the office of the telecom companies for bill payment and other related work. So the physical facilities offered by telecom operators are having more impact for post paid customers and accordingly the telecom companies should design physical facilities.

Responsiveness as dimension of service quality has been highlighted as willingness of the firms' staff to help customers and provide prompt service. Telecom customer expects prompt response from telecom operators and responsiveness means that the service is accomplished on promised time and customer service staff is always willing to help customers. The customer using telecom services expects responsiveness in services. This will influence the perception of that customer with reference to the telecom services provided by the service providers

Customer satisfaction constitutes a cardinal indicator of assessing the success of any business organization. Satisfied customers are assets that ensure a regular cash flow for the business organization in future. Customer satisfaction from TRAI's factors in telecom services is an experience-based assessment made by the customer of how far his own expectations about the individual characteristics or the overall functionality of the service obtained from the provider have been fulfilled. It is found in the research study that the customer satisfaction is highly influenced by TRAI's Recommendations. This is due to the fact that in telecom services billing accuracy is

a major concern of consumers. It is important aspect of telecom service if it is accurate then customers may feel satisfied. The next most influencing measured variable for the construct customer satisfaction with telecommunication tariff. In telecom service it has always been an important consideration by consumers. Telecom customers generally prefer those telecom services which provide acceptable and reasonable tariff and it is also a matter of deciding the satisfaction level of the customers. Tariff/call rate play a very important role in deciding the satisfaction level of customers with reference to the price and value added service delivered by the telecom service. The next influencing measured variable for the construct customer satisfaction from price & value added service is "Value added service". The customer is having the habit of comparing the cost of the service with the value added service delivered by the service. The statistically significant of the construct is on the variable "billing accuracy". Accuracy in billing is also important in case of prepaid telecom customers and more important in case of post paid telecom customers.

It is observed in the research study that telecom customer satisfaction from price and value added factor is highly influenced by sales promotion offers and tariff/call rate. Hence it is suggested that telecom operators should design attractive sales promotion offers and tariff/call rate options for telecom customers.

The next influencing measured variable for the construct customer satisfaction with unwanted commercial communication. Telecom pays a great attention to their customers against unwanted commercial communication. Customer satisfaction refers to the assessment of all interactions with product or service from a provider, relative to expectations. It seems logical that a highly satisfied customer would be a retained customer. It is found and concluded that the customer satisfaction in telecom sector has positive significant impact on customer satisfaction. Hence it is suggested that telecom operators should strengthen their efforts to satisfy the customer and satisfied customers would lead to retained customers. Customer satisfaction leads to customer retention, this is the major cause behind the companies intense focus on customer satisfaction is that. It has been denoted that loyal customers provides the largest revenue to the service companies, as the costs observing regular customers are lower than the ones of attracting and serving new customers. The long term relationship between the service provider and their customers is considered in the concept of relationship marketing, which focuses on customer keeping instead of customer catching.

Service quality positively influences customer satisfaction, indicating that when telecom companies provide good service quality, perceived value and customer satisfaction can be positively impacted. In other words, the higher perceived value can result in to a higher customer satisfaction. In the ever burgeoning competition in the environment, quality services and customer satisfaction are critical to corporate success. Delivering high quality services is closely linked to profits, cost savings and market share. Companies should, be aware of the fact that customer dissatisfaction results into the customer exit which further leads to deteriorating the brand.

2. Literature Review

The research study of **G.S Popli and Manish Madan (2013)** provided Determinants of Customer Satisfaction in Telecom Industry - A Study of Indian Telecom industry. The purpose of this study is to find out those determinants and factors which it can affect and have an impact on the satisfaction level of customers in the telecom industry in the National Capital Region of Delhi, India especially the cellular sector. By satisfying the customers, the organization can maximize the number of users. The main objective of this kind of study is to search and find the factors influencing the satisfaction level of the customers in the telecom industry. The study has identified major six factors through which are responsible for customer satisfaction in telecom industry.

The research study of **K. Keerthi, R. Renukadevi, N. Noora (2013)** provided A research with an objective of providing an overview of consumer satisfaction and discuss about Indian consumers' perception is widely varied in accordance with service network communication, Technology adoption, customer care services, fringe benefit services, service quality, brand switching attitude. A structured questionnaire was developed to collect the required primary data from the consumers. Data are analyzed with suitable statistical tools for interpretation. The outcome of this research shows a comprehensively integrated framework to understand the relationship among several dimensions, service quality and availability has a significant impact on consumer perception choice in selecting cellular mobile service provider. Indian Consumer Market Scaling New Height Tele-communication.

According to the research study of **R. Jayaraman (2013)** Strategic Priorities for the Indian Telecom Industry in the Next Decade provided The mushrooming of services, devices, telecom towers, use of diesel have all brought in their wake, some issues as well, although the low cost of the voice services – said to be the lowest in the world – has washed away much of the criticism. In this paper, the authors trace the development of the Indian telecom industry.

The research study of **Akshaya Kumar Sahoo, Uma Sankar Mishra (2013)** provided research attempts to know the existence of significant difference between public and private telecom service providers concerning to customer satisfaction on customer loyalty and to know the degree of impact of customer satisfaction on customer loyalty as the two objectives and the data is collected through a structured questionnaire from 360 customers selected on stratified random basis from customers of both public sector and private sector mobile telecom service providers. The findings of the study is an useful information for both public sector and private sector mobile telecom service providers for the understanding of existing situation of the customer thought for their services. So this conclusion can get drawn here that the many of the other hidden components can be not revealed with this study effecting customer loyalty for the services of the service provider either the public or private. The further research might be able to find those components and would be revealing some other outcome.

3. Research Methodology

Research Type: Descriptive Research.

Research Area: The study was carried out in M.P & CG. The questionnaires were distributed to the consumers of M.P & CG.

Universe: Population in the study refers to group of service class, business class, Students and other professionally qualified

Sampling Method: For the purpose of this research, convenience and purposive sampling have been used. It involves selecting sample elements that are most readily available to participate in the research and who can provide the information required to support the research according to the convenience.

Sample Size: Sample is the subset of the population. Sample size selected for the purpose of this study comprised of 600 customers.

Tools for data collection: Only primary data has been used for the study. The tool used for the primary data collection is a self-designed questionnaire, which has been made after reviewing the previous literature and consulting with experts of educational field. For the collection of reviews, the researcher has studied national and international journals, articles, books and internet. The secondary data was collected from published National and International Journals. Thereafter the required data were analysed and inferences/interpretations have been made.

relationships are examined. Cluster analysis is the obverse of factor analysis. Whereas factor analysis reduces the number of variables by grouping them into a smaller set of factors, cluster analysis reduces the number of observations or cases by grouping them into a smaller set of clusters.

In this study this test has been applied to examine the segments of customers into various homogenous groups on the parameters of TRAI's recommendations. This analysis is useful for any service providers so that can understand which factor is the most important from the perspective of customers and offer lucrative package to its customers. For this study seven factors were considered based on the TRAI Recommendation Guidelines. These are:

- Consumer Protection
- Complaint Redressal System
- Quality of Service
- Mobile Number Portability
- Billing Accuracy
- Telecommunication Tariff
- Unwanted Commercial Communication

In the table given below the initial cluster centers are the variables values of the K well spaced observations. These are the primary values on which customers' responses are indicated. It has been revealed from the table that for group 1 customers the highest value is 30.00 and the lowest value is 20.00, in the same way the second rank goes to the group 2 customers which have the highest value is 25.00 and the lowest value is 12.00, the third group of customers have highest value 20.00 and the lowest value 10.00, the fourth group of customers have highest value 19.00 and the lowest value 10.00, the same is case with the fifth group of customers have highest value 18.00 and the lowest value is 9.00, sixth group of customers have the highest value 17.00 and the lowest value is 8.00 and the last group of customers have highest value is 16.00 and the lowest value is 7.00.

4. Objective of the Study

1. To examine the segments of customers into various homogenous groups on the parameters of TRAI's recommendations.

5. Cluster Analysis

Cluster analysis makes no distinction between dependent and independent variables. The entire sets of interdependent

Table 1: Initial Cluster Centers

	Cluster						
	1	2	3	4	5	6	7
G1	30.00	20.00	22.00	24.00	28.00	24.00	23.00
G2	25.00	12.00	21.00	28.00	30.00	16.00	28.00
G3	20.00	18.00	12.00	16.00	15.00	10.00	17.00
G4	10.00	15.00	15.00	18.00	16.00	14.00	19.00
G5	18.00	9.00	10.00	15.00	17.00	13.00	10.00
G6	15.00	8.00	16.00	17.00	11.00	12.00	8.00
G7	15.00	14.00	13.00	8.00	12.00	16.00	7.00

Table 2: Iteration History^a

Iteration	Change in Cluster Centers						
	1	2	3	4	5	6	7
1	2.379	3.098	5.734	5.164	5.557	5.107	6.111

a. Convergence achieved due to no or small change in cluster centers. The maximum absolute coordinate change for any center is 4.667. The current iteration is 1. The minimum distance between initial centers is 11.091.

Table 3: Final Cluster Centers

	Cluster						
	1	2	3	4	5	6	7
G1	38.92	20.60	22.05	24.14	24.27	22.80	23.25
G2	33.74	13.80	23.87	27.86	28.11	20.16	26.25
G3	19.20	18.60	13.33	15.81	15.83	19.44	16.05
G4	19.63	15.60	16.58	18.00	17.93	14.40	18.45
G5	19.00	19.80	14.01	16.24	16.02	12.44	13.25
G6	18.75	14.80	14.96	16.80	14.06	11.32	11.45
G7	14.39	17.00	11.04	11.64	11.42	19.08	18.75

Table 4: ANOVA On Cluster Analysis

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	Df		
F1	447.645	6	1.827	593	245.040	.000
F2	1253.183	6	2.491	593	503.134	.000
F3	502.003	6	1.513	593	331.803	.000
F4	137.004	6	.856	593	160.097	.000
F5	327.116	6	2.630	593	124.372	.000
F6	475.598	6	2.357	593	201.798	.000
F7	191.502	6	1.813	593	105.603	.000

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters.

From the above ANOVA table, it has been cleared that the calculated F value of all the factors are higher than the tabulated value (2.47) at .000 significant level. Variables with large F values provide the greatest separation or distance between clusters. In this ANOVA table the greater value is 503.134, it means the factor 2 (Complaint Redressal System) have long distance with the clusters and the service providers should focus on this area. The smallest unit is 105.603, hence with regard to this factor 7 (Telecommunication Tariff) customers are satisfied with schemes and offers.

In Cluster 1, 87 customers, in Cluster 2, 105 customers, in Cluster 3, 100 customers, in Cluster 4, 103 customers, in Cluster 5, 96 customers, in Cluster 6, 59 customers and 50 customers are in Cluster 7 were classified.

Table 5: Number of Cases in each Cluster

	1	87.000
	2	105.000
	3	100.000
Cluster	4	103.000
	5	96.000
	6	59.000
	7	50.000
Valid		600.000

The above mentioned seven factors were examined from the perspective of the level of customer satisfaction. These factors are as follows:

- **Consumer Protection:** TRAI has recommended several programs for protecting the customers so that they may aware about the policies and regulations of the Telecom.
- **Consumers Complaint Redressal:** Telecom Consumers Complaint Redressal Regulations deal with handling of consumer complaints, service request and provision of information to consumers
- **Quality of Service:** The TRAI Act provides that the Authority shall lay-down the standards of quality of service to be provided by the service providers and conduct periodical survey of such service provided by the service providers so as to protect the interest of the consumers of telecommunication service.
- **Billing Accuracy:** In order to protect the interest of subscribers from inaccurate billing and charging, the Authority has prescribed a uniform code of practice for metering and billing accuracy.
- **Mobile Number Portability:** Mobile Number Portability means the facility which allows a subscriber

to retain his mobile telephone number when he moves from one Access Provider to another irrespective of the mobile technology or from one cellular mobile technology to another of the same Access Provider within in a licensed service area.

- **Unwanted Commercial Communications:** In order to curb menace of unsolicited commercial communications/telemarketing calls TRAI had notified the Telecom Unsolicited Commercial Communications Regulations and established the National Do Not Call Registry (NDNC). Despite various measures taken by the Authority for curbing unsolicited commercial communications, dissatisfaction on this account among telecom customers continued.
- **Telecommunication Tariff:** Telecommunication Tariff is one of the most important issues concerning the consumers. The Telecom Regulatory Authority of India Act, therefore, specifically provides that the Authority may from time to time notify in the official gazette the rates at which the telecommunication services shall be provided.

6. Conclusion

The findings of study imply that by providing quality service, accuracy in billing, proper complaint handling system, tariff, consumer protection can certainly ensure that the customers would stay with the brand. Their relationship between service quality and customer loyalty is a signal for the managements of the Telecom service providers. This reflects that developing that the service provider firms should maintain high service quality standards. Also by ensuring a good complaint redressal mechanism in place the companies can improve the overall service quality of their organizations. This study has highlighted a number of key issues that are useful to assisting the managers in the telecommunication market. The issues discussed TRAI's Recommendations that have been shown to have significant impact for consumers' satisfaction and subsequent loyalty to his telecom service provider. Also the key parameters relating to the complaint redressal mechanism have also been discussed. It is evident that the service provider companies must identify the needs of the customers and gaps in the service delivery and develop appropriate service quality

strategies to meet such requirements. This is so because this study had shown that there is a strong relationship between customers' perceived service quality level and customer satisfaction. That is if customers' perceived service quality level is high satisfaction will also be high. Surely, quality service results into customer loyalty and satisfaction. The study has shown that customers' satisfaction is achieved only when the customers believe that customers services offered are effective and high.

Hence it is concluded that understanding how consumers perceive service quality and being able to measure TRAI's factors can benefit the service providers of the Telecommunication services. The continuous audit of the complaint redressal system and the complaints of the customers helps in increasing the retention rates. By making use of the available models to assess service quality helps in the better understanding of the various factors and customer satisfaction. This would help them to make the necessary improvements.

7. Suggestions

On the basis of findings of the study the following suggestions were given :

- The companies should find ways to retain the existing customer by ensuring quality services to the customer. Service quality is the key to customer satisfaction and future profitability.
- The telecom service provider should ensure that the technical quality parameters of the service quality should be taken in to consideration by the service provider from time to time to raise the service level satisfaction among customer.
- Telecom customer expects prompt response from telecom operators and responsiveness means that the service is accomplished on promised time and customer service staff is always willing to help customers.

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