

Service Quality of Telecommunication Network in India

Dr. Shipra Saxena

Assistant Professor

Institute of Management Studies,

Bundelkhand University, Jhansi

Email: drshipra911@gmail.com

Mayank Jindal

Assistant Professor

Chhatrapati Shahu Ji Maharaj

University, Kanpur

Email: mayankjindal.512@gmail.com

Abstract

The service quality of a Telecommunication Network can be measured by the feeling and experience of customers after taking the services. The main objective of this study is to assess the Service Quality of the Telecommunication networks in India through customer satisfaction. To achieve the aims of the study, 205 online random samples have been taken through the questionnaire from the Indian mobile network customers. Data have been collected mainly from Uttar Pradesh, Madhya Pradesh, Uttarakhand, Gujarat. Data has been analyzed by all valid and suitable statistical tools through computer software. 5 Hypotheses have been designed as per the need of the study and all hypotheses have been tested through ANOVA single factor test. Overall customer satisfaction level from all companies is 70.24% and wide report is available in the paper for satisfaction level from various companies on different services. This study is useful for the Indian Ministry of communication, telecommunication companies, Government, telecommunication companies' managers and officers in making better policy. It is also useful to gain knowledge internationally about the service quality of telecommunication companies in India.

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**Dr. Shipra Saxena,
Mayank Jindal**

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Introduction

India is the fastest-growing economy in the world with GDP growth of 9.5% and 8% in 2021 and 2022 respectively. Good communication connectivity at a reasonable rate is the need of India for continuous growth. At present Communication is not limited to one person to one person on call or SMS but its area has extended as the enhancing with the technological enhancement in the daily work of institutions and individuals also. According to the Annual Report of the Department of Telecommunications Ministry of Communications Government of India, 2020-21, as of 30 November 2020, 1171723022 total telephones (98.30% Wireless + 1.70% Wireline phones) are working in India.

The service quality of a Telecommunication Network can be measured by the feeling and experience of customers after taking the services. For the improvement of their performance or quality of service, the Telecommunication Network should measure how their products and services met or exceed customer expectations. The client should now be seen as a partner not just as an ordinary customer (Mahadevan, 2002). Service quality can be increased by providing services according to customers. Various banks are working for the urban area but the rural area is in a crunch for good banking services.

Telecommunication Industry in India

The Telecom sector is backed by supportive policies of the Government of India. The Government has ensured fair competition among service providers, and a fair and proactive regulatory framework that has resulted in telecom services being available to the consumer at affordable prices. Further, it has made sustained efforts at encouraging telecom equipment manufacture.

India is currently the world's second-largest country in terms of subscriber base of 1.17 billion. India's mobile subscriptions now constitute about 98% of all telephone subscriptions. The mobile industry is characterized by affordable tariffs, wider availability, roll-out of Mobile Number Portability (MNP), expanding 3G and 4G coverage, evolving consumption patterns and supportive policy and regulatory environment. The Government has placed considerable emphasis on the internet and broadband in the country as part of its Digital India campaign. Mobile has now emerged as the main platform for internet access in India, bringing connectivity to many previously unconnected populations. Efforts are being made to address the digital divide by extending inclusive internet access to every Indian, as mobile technology looks to empower the masses and become the critical means of accessing a broad range of public services (Annual Report, 2020-21, **Department of Telecommunications** Ministry of Communications Government of India).

Today's telecommunications industry is one of the biggest contributors to the growth of the economy, more so in the developing countries. Apart from contributing in terms of revenue, it also influences the growth and progress of many other sectors such as Health, Education, E-Governance, Rural development, etc. Governments of both countries China and India have recognized the influence and the importance of this industry, which is evolving at a rapid pace. Though both countries have been, and are, continuously trying to help the industry by bringing in reforms and adapting their policies and regulations, there is still a long road ahead before the nations benefit to the fullest extent from the telecom industry **Venkatram Rahul, (2012)**.

Review of Literature

Munyanti I. and Masrom M., (2018). As competition is increasing among the companies, especially in the mobile market, the market has become more extremely competitive and the service providers which moving aggressively in attracting customers via offering attractive promotions and services. Therefore, the service providers should take the necessary action for them to know the effect that will make customers more satisfied in choosing their services and also retain the existing customers and attract new customers into their company. The findings in this study are very informative for mobile network operators which indicate that quality of services, customer services, billing and price and network connectivity have a high impact on customer satisfaction. Therefore the companies should look back their services whether are compatible or not with the price, the quality and also the attitude of the staff that handling their customers. In motivating the customer of mobile telecommunication, the mobile network operators or providers should continuously satisfy their customers by improving all the factors that are being analyzed in this study especially the quality of services in ensuring the customer intention to buy their product is achieved.

Pahari Prakash, Guleria Deepa, Singh Ranbir, (2017). In contrast to the finding, it may be inferred that, call tariff followed by the network is the most influencing attribute for selecting the mobile service provider while network congestion is the major problem faced by the customer of MSP. Furthermore, overall customers are satisfied with their MSP with a p-value of 0.003. The present study supports the alternate hypothesis concluding; customer satisfaction has a significant association with the demographic factors i.e. age, education and income of the respondent at 0.01 significant level. Furthermore; there is a strong correlation between the service factors particularly network coverage, reliability of service, customer care and value-added service while the tariff of service has a weak correlation with customer satisfaction.

Pandiya D.K., Kumar B. and Choudhury M.H. (2014). The researcher indicates that the customers have shown their satisfaction on GPRS service (3.34), festival offer service (3.32), free-roaming service (3.29), validity service (3.21), bonus service (3.36) and online recharge service (4.5). However, the customers have reflected their dissatisfaction with the service quality of the network (2.9), customer care (2.94), SMS packs (2.74), free talk time (3.16), connection charges(3.71), Ease of availability of the retailer selling recharge coupon (3.12), Ease of availability of retailers transferring recharge voucher (3.06). As far as the performances of the cellular service providers are concerned, the performances of Vodafone and Reliance were found to be satisfactory whereas the performances of BSNL and Airtel were found to be dissatisfactory since the overall satisfaction scores of the customers of these latter brands were below the standard i.e. 3.19. Moreover, out of two performers i.e. Vodafone and Reliance, the customers of Vodafone were found to be more satisfied than the customers of Reliance.

Shah Rinal, Das Siddharth (2014). From the service quality concept, it can be concluded that service quality is the overall perception of consumers towards the services they are experiencing in a service sector.

Omonge S.O. (2013). In conclusion, there was a strong relationship between the quality service dimensions and customer satisfaction. Subscribers are generally dissatisfied with the services being offered by the MNO although the majority were satisfied. The MNO should therefore prioritize their quality service dimensions since they impact differently on customer satisfaction and that they are currently at different investment levels. Reliability and technical quality should be given more importance and that there is no need to invest in responsiveness since it is less effective due to redundancy.

Venkatram Rahul, (2012). while the Chinese government is concentrating on developing their domestic telecom firms and helping them expand globally, the Indian government is focusing on the reach of this industry to rural and remote areas within the country to help improve the connectivity and basic infrastructure. The future of the telecom industry is one filled with excitement and constant evolution. With all the new technologies and their applications that are coming in, “this is just the beginning”. Gadgets such as smartphones are today taking over PCs and entering the daily lives of people around the globe.

Laghari Khalil ur Rehman, Yahia Imen Grida ben, and Crespi Noel, (2009). from their analysis that traditional schemes are no more efficient management schemes due to continuous growth in the complexity on one hand and technological advancements in network & services on other hand, therefore a new set of enabling technologies was required.

Objective

The main objective of this study is to assess the Service Quality of the Telecommunication networks in India through customer satisfaction.

Research Methodology

To achieve the aims of the study, a questionnaire has been designed as per the many quality points of a mobile network including 17 questions and 6 demographic-related questions. 205 online random samples have been taken from the Indian mobile network customers. 17 items have been included as per the five-point Likert's scale in which 1 means highly dissatisfied and 5 means highly satisfied.

This study is based on primary and secondary data. A questionnaire has been designed to collect primary data and 205 samples have been collected from Uttar Pradesh, Madhya Pradesh, Uttarakhand, Gujarat and other states. Data has been analyzed through the Smart PLS, SPSS and M.S. Excel. 5 Hypotheses have been designed as per the need of the study and all hypotheses have been tested through ANOVA single factor test.

Data Analyse

Table 1. Demographic Details of Respondents

| Telecommunication Network Provider | Number | Percentage |
|---|---------------|-------------------|
| Jio | 111 | 54.14% |
| Airtel | 64 | 31.21% |
| VI | 25 | 12.19% |
| BSNL | 5 | 2.44% |
| Total | 205 | 100% |
| Time for Using This Network | | |
| Below 1 Year | 18 | 8.78% |
| 1 to 5 Years | 150 | 73.17% |
| 5 to 10 Years | 26 | 12.68% |
| Above 10 Years | 11 | 5.36% |
| Total | 205 | 100% |
| Gender | | |
| Male | 103 | 50.24% |
| Female | 102 | 49.75% |
| Total | 205 | 100% |
| Occupation | | |
| Student | 160 | 78.05% |
| Employed | 34 | 16.58% |
| Businessmen/Self-employed | 11 | 5.37% |
| Total | 205 | 100% |

| Age | | |
|----------------------------------|------------|-------------|
| Till 20 Years Old | 80 | 39.02% |
| 21-40 Years old | 121 | 59.02% |
| 41 - 60 years old | 4 | 1.95% |
| Total | 205 | 100% |
| Educational Qualification | | |
| Up to High School | 2 | 0.98% |
| Intermediate | 45 | 21.95% |
| Graduate | 86 | 41.95% |
| Post Graduate and Above | 72 | 35.12% |
| Total | 205 | 100% |

For a better analysis of the satisfaction level of respondents, it is essential to know what is the characteristics of samples on which results are based. All respondents are users of at least one telecommunication network. All type of people has come in random samples. 54.14% of respondents are using Jio Network, 34.21% respondents are using Airtel Network and 88.35% overall results will reflect the Jio and Airtel company customer satisfaction level. 73.17% of customers are using the same network for 1 to 5 years, which means most customers have given responses after sufficient experience of the network. Male and female both type of people has come in the sample. Most respondents are students, employed and young below 40 years of age and all respondents are educated and most respondents are 12th or more educated and results will highly reflect the customer satisfaction of educated, young, students & employed, male and female customers of the telecommunication network.

Table 2. Service Quality of Four Telecommunication Network Companies in India

| Service Name | Jio (%) N = 111 | Airtel (%) N = 64 | VI (%) N=25 | BSNL (%) N = 5 |
|--|----------------------------|------------------------------|------------------------|---------------------------|
| Sim Card Purchasing and Activation Process | 82.52% | 83.13% | 69.60% | 72.00% |
| Customer Care | 73.51% | 74.38% | 64.80% | 64.00% |
| Voice Quality in City (Urban Area) | 84.68% | 85.94% | 74.40% | 68.00% |
| Voice Quality in Villages (Rural Area) | 66.31% | 69.38% | 56.00% | 76.00% |
| Voice Quality at Highway or Roads | 75.86% | 77.19% | 62.40% | 60.00% |
| Internet Speed in City (Urban Area) | 80.72% | 81.25% | 71.20% | 52.00% |
| Internet Speed in Villages (Rural Area) | 59.28% | 59.69% | 48.80% | 40.00% |
| Internet Speed at Highway or Roads | 70.45% | 73.44% | 60.00% | 52.00% |
| Call / Voucher Recharge Rate | 54.95% | 52.19% | 48.00% | 68.00% |
| Internet Plan rate | 54.05% | 51.56% | 44.00% | 68.00% |

| | | | | |
|--|--------|--------|--------|--------|
| The company sends unwanted so many SMS and calls | 63.24% | 57.50% | 54.40% | 60.00% |
| Overall satisfaction level from the voice quality and internet speed | 74.95% | 75.00% | 64.00% | 68.00% |
| The company offers me good and new planes time to time | 64.14% | 60.00% | 50.40% | 64.00% |
| Caller tune services and charges | 78.56% | 65.00% | 43.20% | 64.00% |
| Recharge facility online | 92.25% | 89.06% | 78.40% | 84.00% |
| Recharge facility offline | 74.41% | 74.69% | 68.80% | 84.00% |
| The network is okay, I am satisfied and I am not planning to change my network company | 78.20% | 79.38% | 62.40% | 76.00% |
| Average | 72.24% | 71.10% | 60.05% | 65.88% |

In the random selection of 205 online samples through questionnaire, more than one-half of respondents are using Jio network and Jio is providing services with the high satisfaction in the comparison of other companies. Airtel is also providing better services in the comparison of VI and BSNL. Jio customers are 72.24% satisfied, Airtel customers are 71.10% satisfied, VI customers are 60.05% satisfied and BSNL customers are 65.88% satisfied. BSNL customers are highly satisfied with the VI company customers but more customers are using VI because of marketing strategies. Overall customers of Vi are more satisfied with the BSNL but in the digital era good internet speed at every place is the most important factor of telecommunication service and BSNL customers are very less satisfied with the internet speed. Internet speed of Airtel is some good than the Jio but Airtel and Jio both are providing the best internet services. Jio and Airtel customers are approx similar satisfied with their company services and both companies may have good future growth.

Table 3. Hypothesis Testing of Table 1

HA1: There is a significant difference between the Service Quality of Jio, Airtel, VI and BSNL service providers.

| ANOVA: Single Factor | | | | | | |
|----------------------|-------|----------|----------|----------|---------|--------|
| Groups | Count | Sum | Average | Variance | | |
| Jio | 17 | 1228.108 | 72.24165 | 113.6006 | | |
| Airtel | 17 | 1208.75 | 71.10294 | 134.8891 | | |
| VI | 17 | 1020.8 | 60.04706 | 114.9176 | | |
| BSNL | 17 | 1120 | 65.88235 | 128.2353 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | Df | MS | F | P-value | F crit |

| | | | | | | |
|----------------|----------|----|----------|----------|----------|----------|
| Between Groups | 1589.429 | 3 | 529.8096 | 4.310525 | 0.007849 | 2.748191 |
| Within Groups | 7866.283 | 64 | 122.9107 | | | |
| Total | 9455.712 | 67 | | | | |

The above table has been developed by the testing of the mean given in table 2 by the Anova single Factor Test through using MS Excel. P-Value is less than the Alpha Value (P-Value $0.0078 < 0.05$ Alpha Value). There is a significant difference between the Service Quality of Jio, Airtel, VI and BSNL service providers. It is clearly shown in the above table Jio and Airtel companies mean are high than the VI and BSNL and we can more details in table 2, Jio and Airtel companies are providing better services and as per the above testing, Jio & Airtel customers are statistically more satisfied than the customer satisfaction of VI & BSNL companies.

Table 4. Service Quality of Telecommunication Network in India

| No. | Particular | Average | SD | Percentages of Average |
|-----|--|---------|--------|------------------------|
| 1 | Sim Card Purchasing and Activation Process | 4.04 | 0.9091 | 80.88% |
| 2 | Customer Care | 3.62 | 1.0620 | 72.49% |
| 3 | Voice Quality in City (Urban Area) | 4.17 | 0.9102 | 83.41% |
| 4 | Voice Quality in Villages (Rural Area) | 3.31 | 1.1376 | 66.24% |
| 5 | Voice Quality at Highway or Roads | 3.71 | 0.9852 | 74.24% |
| 6 | Internet Speed in City (Urban Area) | 3.95 | 0.9689 | 79.02% |
| 7 | Internet Speed in Villages (Rural Area) | 2.88 | 1.1315 | 57.66% |
| 8 | Internet Speed at Highway or Roads | 3.48 | 1.0828 | 69.66% |
| 9 | Call / Voucher Recharge Rate | 2.68 | 1.2733 | 53.56% |
| 10 | Internet Planes rate | 2.62 | 1.2174 | 52.39% |
| 11 | The company sends unwanted so many SMS and calls | 3.01 | 1.3485 | 60.29% |
| 12 | Overall satisfaction level from the voice quality and internet speed | 3.67 | 0.8942 | 73.46% |
| 13 | The company offers me good and new planes time to time | 3.06 | 1.2511 | 61.17% |
| 14 | Caller tune services and charges | 3.48 | 1.2626 | 69.66% |
| 15 | Recharge facility online | 4.47 | 0.8718 | 89.37% |
| 16 | Recharge facility offline | 3.70 | 1.2264 | 74.05% |
| 17 | The network is okay, I am satisfied and I am not planning to change my network company | 3.83 | 1.1820 | 76.59% |
| | Average | 3.51 | 1.2201 | 70.24% |

Chavda (2015) said that “Customer satisfaction can be experienced in a variety of situations” and in this research 17 varieties of situations have been included. Five Point Likert’s Scale has been used to measure the satisfaction level. Recharge facility online, Voice Quality in City (Urban Area), Sim Card Purchasing and Activation Process, Internet Speed in City (Urban Area) and Voice Quality at Highway or Roads are the top five most satisfactory services provided by telecommunication companies in India. Internet Plan rate, Call / Voucher Recharge Rate, Internet Speed in Villages (Rural Area), Company sends unwanted so many SMS & calls and Company offers me good and new plans time to time are topmost five most dissatisfactory services provided by telecommunication companies in India. The overall customer satisfaction level is 70.24% from the questions asked from the customers but 76.59% of respondent customers are telling they are overall satisfied and they are not planning to change the network company because of non availability of other options, problems of changing in-network and because in the long experience satisfaction level was not high dissatisfactory.

Table 5. Hypothesis Testing

| Hypothesis | | Sample (N) | Average of Variables | Variance of Variables | P-Value | Alpha Value | Result |
|---|---|------------------------------|------------------------|------------------------------|---------|-------------|----------|
| HA2: There is a significant difference between the Service Quality to female and male customers. | Female | 102+ | 3.58, 3.45 | 0.2856, 0.2742 | 0.4728 | 0.05 | Rejected |
| | Male | 103= 205 | | | | | |
| HA3: There is a significant difference between the Service Quality to students and other customers. | Students | 160+ | 3.52, 3.49 | 0.2825, 0.2759 | 0.8557 | 0.05 | Rejected |
| | Other | 45= 205 | | | | | |
| HA4: There is a significant difference between the Service Quality to child (till 20 years), middle-aged (21 to 40 years) and old age (more than 40 years) customers. | Till 20 years Old | 80+ 121+ 4 = 205 | 3.62, 3.44, 3.40 | 0.2790, 0.2870, 0.2505 | 0.4298 | 0.05 | Rejected |
| | 21 to 40 Years Old | | | | | | |
| | More than 40 Years Old | | | | | | |
| | Less than 40 years Graduation Qualified Customers | | | | | | |

| | | | | | | | |
|---|--|---------------------|---------------|---------------|--------|------|----------|
| HA5: There is a significant difference between the Service Quality to graduate or above-qualified customers and less than graduation qualified customers. | Graduate or Above Qualified Customers, | 158+ 47 = 205 | 3.50, 3.54 | 0.27, 0.33 | 0.8249 | 0.05 | Rejected |
| | Less than Graduation Qualified Customers | | | | | | |

In the above table, N presents the number of samples in every variable, the average of variables is showing the average of each variable. The variance of Variables is showing the variance of each variable. P-Value of all above testing is more than the Alpha Value (P-Value > Alpha Value) and it has been concluded that there is no significant difference between the Service Quality to female and male customers. There is no significant difference between the Service Quality to students and other customers. There is no significant difference between the Service Quality to very young or children customers (till 20 years), middle-aged customers (21 to 40 years) and old age customers (more than 40 years). There is no significant difference between the Service Quality to graduated and non-graduated customers.

Conclusion

The main objective of this study is to assess the Service Quality of the Telecommunication networks in India through customer satisfaction. All type of people has come in 205 random samples. 54.14% of respondents are using Jio Network, 34.21% respondents are using Airtel Network and 88.35% overall results are reflecting the Jio and Airtel company customer satisfaction level. Jio customers are 72.24% satisfied, Airtel customers are 71.10 % satisfied, VI customers are 60.05% satisfied, BSNL customers are 65.88% satisfied and overall customer satisfaction levels from all four companies are 70.24%. Jio & Airtel companies are providing better services and Jio & Airtel customers are statistically more satisfied than the customer satisfaction of VI & BSNL companies.

This study is useful for the Indian Ministry of communication, telecommunication companies, Government, telecommunication companies managers and officers in making better policy. It is also useful to gain knowledge internationally about the service quality of telecommunication companies in India.

This study is limited to the most relevant 17 reflected scale items of services. Further study can make on the other items. Further study also can make for the assessment of the financial position of the telecommunication companies in India.

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