

A Study On Perceived Reliability Of The Telecome Services In Kerala

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Abstract

In Kerala, telecommunication sector has undergone radical changes in the form of technological advancement and cutthroat competition. There are however a number of different dimensions of service quality and reliability is one dimension that would largely influence the perception and satisfaction of customers. In the uses the SERVQUAL model to determine and evaluate the real reliability of the four leading telecom service providers in Kerala, namely: BSNL, Airtel, Vi and Jio. A pre-structured questionnaire was conducted to 600 respondents in various parts of the Kerala state and its main dimension is reliability i.e. can provide the specified service in a consistent and accurate way. The descriptive statistics, Chi-square tests, and Analysis of Variance (ANOVA), were applied in order to perform the data analysis. The results show that there exist a lot of differences in the perception of reliability in the providers, BSNL being ranked as the most reliable, followed by Airtel, Vi, and Jio. These learnings are indicative of the need to improve the level of service reliability in order to instill a sense of customer trust and loyalty in the highly competitive telecom market of Kerala.

INTRODUCTION

Telecommunication industry is one of the pillars of the contemporary communication system, making personal, commercial, and governmental connections. The industry has been growing tremendously in Kerala due to advancement in technology, regulatory measures and the growing number of customers. Service reliability may become an obstacle that a customer faces despite the increase in the number of service providers; hence, service reliability can go a long way to altering service satisfaction and loyalty. Reliability according to Parasuraman and team (1988) is supported by doing the promised service in a more reliable and accurate way. It is an important aspect of service quality, which affects customer expectation and perceptions. With respect to the state of Kerala where the telecom services form an indispensable part of the daily routine people, knowing how the customers of same think and perceive the reliability of the service providers is significant with regard to the service providers to differentiate and improve on their services as part of the competition. The proposed study is expected to measure and compare the perceived service reliability of the four leading telecom service firms in Kerala, namely BSNL, Airtel, Vi, and Jio based on the SERVQUAL model. The research places emphasis on the dimension of reliability, thus aiming at establishing the sources of strengths and improvement areas, which would yield important information to both service providers and policymakers

LITERATURE REVIEW

Meena Suguanthi Govindaraj (2017) conducted a study in Tamil Nadu to determine factors influencing customer perceptions of service quality in the telecommunications industry. The study identified dimensions such as responsiveness, reliability, assurance, tangibility, empathy, and perceived network quality as significant determinants of customer satisfaction.

According to Silky Vigg Kushwah and Ahuti Bhargav (2014) analyzed the gap between customer expectations and perceptions of service quality in the Indian telecom sector. Their study revealed a significant gap, indicating that customers' expectations often exceed their perceptions of service delivery, thereby affecting overall satisfaction.

Girish M.C. (2019) examined the service quality experiences among different telecom providers in Kerala. The study utilized exploratory factor analysis to measure service quality perceptions of customers in terms of their demographic factors. The findings highlighted the importance of technical quality and customer expectations in shaping service quality perceptions.

Research objectives

1. Analyze the reliability (RLB) items for telecom service providers in Kerala.
2. Assess the relationship between reliability (RLB) levels and telecom service providers in Kerala.

3. compare overall reliability (RLB) among different telecom service providers in Kerala.
4. Identify significant differences in overall reliability (RLB) between telecom service providers in Kerala.

Hypothesis

Analyzing Reliability (RLB) Items:

- H0: There is no significant variation in the reliability (RLB) items across telecom service providers in Kerala.
- H1: There is significant variation in the reliability (RLB) items across telecom service providers in Kerala.

Assessing the Relationship Between Reliability (RLB) Levels and Telecom Service Providers:

- H0: There is no significant relationship between reliability (RLB) levels and telecom service providers in Kerala.
- H1: There is a significant relationship between reliability (RLB) levels and telecom service providers in Kerala.

Comparing Overall Reliability (RLB) Among Telecom Service Providers:

- H0: There is no significant difference in overall reliability (RLB) among different telecom service providers in Kerala.
- H1: There is a significant difference in overall reliability (RLB) among different telecom service providers in Kerala.

Identifying Significant Differences in Overall Reliability (RLB) Between Telecom Service Providers:

- H0: There are no significant differences in overall reliability (RLB) between telecom service providers in Kerala.
- H1: There are significant differences in overall reliability (RLB) between telecom service providers in Kerala.

RESEARCH METHODOLOGY

Research Design

The research study used quantitative, research design of a cross-sectional approach in measuring the perceived reliability of the telecom services offered by the BSNL, Airtel, Vi, and Jio within Kerala. The study employed an organized questionnaire anchored on the SERVQUAL framework whereby customer perceptions were established by use of the dimension of reliability.

Population

The study specifies the population size of telecom customers in Kerala as being exact, but when it comes to establishing its sample size of 600 respondents, it can be said that the research can draw meaningful conclusions concerning customer perception of service reliability. This is because when stratified sampling is used, the representativeness of the sample will be increased and it will be able to give a comparative analysis of the four telecoms providers.

Sample Size

A total of 600 respondents participated in the research and each of the four major players of telecom services in Kerala namely BSNL, Airtel, Vi (formerly Vodafone Idea) and Jio had 150 customers each as the respondents of the research.

Sampling Technique

The stratified random sampling approach was able to induce fairness to all the four telecom companies.

Data Collection Tool

A structured questionnaire was constructed to be the main tool of collection of data.

Conceptual Framework

The conceptual model of the study is about the construct of service reliability that is a key consideration of the general service quality of any telecommunications sector. The notion of service reliability is measured by five main factors, namely: stickiness to stipulated terms and conditions, availability of good calling service (this entails good call clarity, connectivity and few or no redissent call redessent), faithfulness, timeliness of services and uniformity of services. The combination of these factors helps to exhibit the main aspects of reliability as of the opinion of the consumer. The framework helps in a comparison between the performance of each of the telecom companies to the extent of delivering reliable services. To a larger extent this framework is supported through the use of SERVQUAL Model that is

developed by Parasuraman, Zeithaml, and Berry (1988). There are five key dimensions of service quality that this model has discovered namely, Reliability, Responsiveness, Assurance, Empathy and Tangibles. Of these, the most important determinant of customer satisfaction and loyalty is reliability especially in utility based services like telecommunications.

RESULTS

The indicators of reliability are Proper service as per promised terms and conditions, Reliable calling service, Trustworthiness, Prompt services, and Consistent services. These indicators were identified based on the established theoretical models such as SERVQUAL and are used to capture the core dimensions of service reliability from the customer's perspective. The responses collected through a structured questionnaire were analyzed using descriptive statistics to summarize the data patterns and customer perceptions. To examine the association between service providers and the reliability indicators, Chi-square tests were applied. Furthermore, Analysis of Variance (ANOVA) was used to assess whether there were statistically significant differences in the mean reliability scores among the four telecom companies. Table 4.1 provides the summary of the descriptive statistics for the reliability (RLB) dimension in telecom services. Reliability measures the extent to which telecom providers deliver consistent, trustworthy, and dependable services to their customers. The items evaluated include adherence to promised terms, reliable calling services, trustworthiness, promptness, and service consistency.

Table 4.1 Descriptive statistics of Reliability (RLB) Items

Item	Item Description	Mean	Standard Deviation	Min	Max
RLB1	Proper service as per promised terms and conditions	3.87	0.932	1	5
RLB2	Reliable calling service	3.90	0.889	1	5
RLB3	Trustworthy	3.81	0.963	1	5
RLB4	Prompt Services	3.56	1.017	1	5
RLB5	Consistent Services	3.82	0.861	1	5

The item Reliable calling service (RLB2) achieves the highest mean score of 3.90, indicating that customers find calling services to be a dependable aspect of telecom service reliability. The standard deviation of 0.889 suggests that experiences in this area are relatively consistent among customers. Similarly, Proper service as per promised terms and conditions (RLB1) has a high mean score of 3.87, indicating positive perceptions about the alignment of service delivery with promises. The items Trustworthy (RLB3) and Consistent services (RLB5) have mean scores of 3.81 and 3.82, respectively. While these scores indicate that customers generally find telecom providers reliable in these aspects. The item Prompt services (RLB4) has the lowest mean score of 3.56 and the highest standard deviation (SD = 1.017), indicates that timeliness is the least reliable aspect, with significant variability in customer experiences.

Table 4.2 shows the descriptive statistics for the reliability dimension (RLB) across four major telecom service providers in Kerala. Reliability is a core determinant of service quality, reflecting customers' perceptions of how well providers deliver on promises.

Table 4.2 Descriptive statistics of Reliability (RLB) Items on telecom service providers

Item	Vi		Jio		BSNL		Airtel	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Proper service as per promised terms and conditions	3.55	1.007	4.01	0.959	3.97	0.904	3.93	0.778
Reliable calling service	3.89	0.499	3.39	1.163	4.37	0.848	3.96	0.601
Trustworthy	3.71	0.922	3.33	0.967	4.39	0.865	3.8	0.786
Prompt Services	3.55	0.916	2.95	1.032	4.03	0.951	3.71	0.856
Consistent Services	3.55	0.879	3.73	0.802	4.18	0.89	3.81	0.748

In the dimension Proper service as per promised terms and conditions, Jio leads with the highest mean score of 4.01, followed by BSNL (3.97) and Airtel (3.93). Vi has the lowest score (3.55), indicating a weaker perception of service delivery as per promises. In Reliable calling service, BSNL stands out with the highest mean score of 4.37, indicating strong reliability in calling services. Airtel follows with 3.96, while Vi scores 3.89. Jio lags behind significantly with a mean score of 3.39, indicates customer dissatisfaction in this area. BSNL is rated highest for trustworthiness with a mean score of 4.39, reflecting customers' strong confidence in the provider. Airtel (3.8) and Vi (3.71) show moderate trust levels, whereas Jio scores the lowest (3.33), indicating concerns regarding trust. considering Prompt Services, BSNL leads with a mean score of 4.03, showing a strong ability to deliver timely services. Airtel (3.71) and Vi (3.55) perform moderately, but Jio scores lower (2.95), underscoring delays or inefficiencies in service delivery. BSNL achieves the highest score of 4.18, signifying customer satisfaction with its consistent service. Airtel follows with 3.81, while Jio (3.73) and Vi (3.55) show relatively lower performance in maintaining consistent service standards.

The analysis reveals significant variations in the reliability performance of the telecom providers. BSNL consistently leads across all reliability items, reflecting a strong emphasis on fulfilling promises, delivering reliable calling services, ensuring trust, and maintaining promptness and consistency. Airtel performs well in most areas, though it slightly trails BSNL. Vi demonstrates moderate reliability overall, with lower scores in fulfilling promises and ensuring consistency. Jio emerges as the weakest performer in reliability, particularly in providing prompt services and maintaining trustworthiness

Table 4.3 Association between Reliability (RLB) Levels on Telecom service providers

Telecom service providers	Reliability (RLB) Levels			Total	Chi-Square	P value
	Low	Medium	High			
Vodafone - Idea	65(43.3)	79 (52.7)	6 (4.0)	150	103.61	0.000
Jio	83 (55.3)	59 (39.3)	8 (5.3)	150		
BSNL	34 (22.7)	58 (38.7)	58 (38.7)	150		
Airtel	59 (39.3)	73 (48.7)	18 (12.0)	150		
Total	241	269	90	600		

Table 4.3 presents a comparative analysis of the overall reliability (RLB) scores among four major telecom service providers in Kerala.

Table 4.3: Overall Reliability (RLB) Among Telecom Service Providers in Kerala

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Vi	150	3.6520	.73143	.05972	3.5340	3.7700
Jio	150	3.4813	.81334	.06641	3.3501	3.6126
BSNL	150	4.1893	.71223	.05815	4.0744	4.3042
Airtel	150	3.8400	.56758	.04634	3.7484	3.9316
Total	600	3.7907	.75706	.03091	3.7300	3.8514

BSNL has the highest mean score of 4.19, significantly above the overall mean. This suggests that customers perceive BSNL as the most reliable provider, with a narrow confidence interval (4.07–4.30) indicating consistent feedback among users. Airtel scores 3.84, the second-highest mean, slightly above the overall average. Its narrower standard deviation (0.57) indicates a more consistent perception of reliability compared to other providers, with a confidence interval of 3.75–3.93. Vi has a mean score of 3.65, slightly below the overall average, showing moderate customer satisfaction with reliability. Jio records the lowest mean reliability score of 3.48, indicating customer dissatisfaction in this dimension. The wider standard deviation (0.81) and broader confidence interval (3.35–3.61) reflect greater variability in customer experiences with Jio's reliability.

Hence the analysis reveals a distinct hierarchy in the perceived reliability of telecom service providers in Kerala. BSNL outperforming its competitors with consistently high reliability scores. Airtel ranks second

and Vi performs moderately, Jio ranks last, with the lowest reliability score and high variability, indicating significant gaps in meeting customer expectations.

Table 4.4 presents the results of a one-way ANOVA analysis performed to examine the differences in overall reliability (RLB) scores among the four major telecom service providers in Kerala.

Table 4.4 ANOVA Results for Overall Reliability (RLB) Among Telecom Service Providers in Kerala

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.443	3	13.814	27.275	.000
Within Groups	301.865	596	.506		
Total	343.308	599			

The sum of squares between groups is 41.443, with 3 degrees of freedom, yielding a mean square of 13.814. This indicates considerable variance in reliability scores attributable to differences among the telecom providers. The F-statistic is 27.275, which is substantial and indicates that the differences in mean scores among the providers. The p-value is .000, well below the 0.05 threshold. This confirms that the differences in reliability scores among the providers are statistically significant. Hence the ANOVA results reveal significant differences in the overall reliability (RLB) scores among the four telecom service providers.

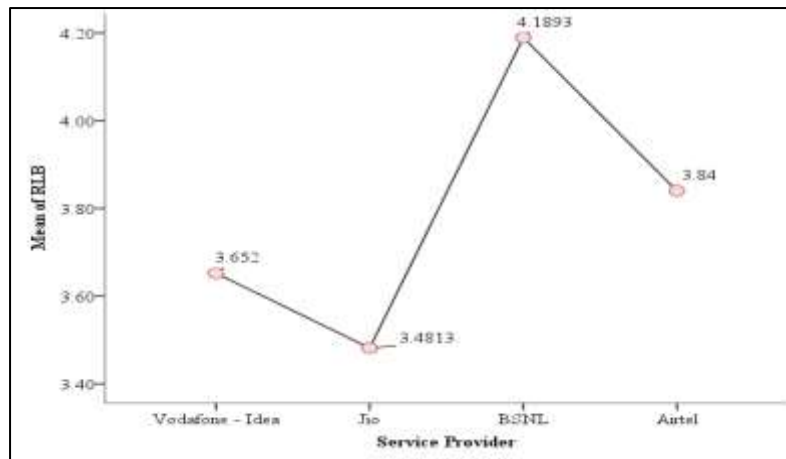
Table 4.5 exhibits the results of a post-hoc analysis conducted to identify pairwise differences in overall reliability (RLB) scores among the four telecom service providers in Kerala

Table 4.5 Post-Hoc Comparison of Overall Reliability (RLB) Among Telecom Service Providers in Kerala

Service providers		Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Vi	Jio	.17067 [*]	.08218	.038	.0093	.3321
	BSNL	-.53733 [*]	.08218	.000	-.6987	-.3759
	Airtel	-.18800 [*]	.08218	.023	-.3494	-.0266
Jio	BSNL	-.70800 [*]	.08218	.000	-.8694	-.5466
	Airtel	-.35867 [*]	.08218	.000	-.5201	-.1973
BSNL	Airtel	.34933 [*]	.08218	.000	.1879	.5107
*. The mean difference is significant at the 0.05 level.						

Vi's reliability score is 0.17067 points higher than Jio's, with a significance level of 0.038. This indicates that Vi is perceived as slightly more reliable than Jio. BSNL outperforms Vi, with a mean difference of -0.53733, significant at the 0.000 level. This substantial difference highlights BSNL's stronger reliability performance. Airtel slightly outperforms Vi, with a mean difference of -0.18800, significant at 0.023. BSNL significantly outperforms Jio, with a mean difference of -0.70800, the largest among all comparisons, and significant at the 0.000 level. Airtel also outperforms Jio, with a mean difference of -0.35867, significant at 0.000, showing Jio's relatively lower reliability perception. BSNL's reliability is higher than Airtel's, with a mean difference of 0.34933, significant at 0.000, indicating BSNL's continued dominance in this dimension.

The post-hoc analysis indicates the reliability differences among telecom providers. BSNL consistently outperforms all other providers, demonstrating the highest reliability perception. Airtel ranks second, showing significantly better performance than Jio and a slight edge over Vi. Vi occupies the third position, being marginally more reliable than Jio but significantly outperformed by BSNL and Airtel. Jio has the lowest reliability perception, with significant gaps compared to all other providers.



DISCUSSION

The concept of reliability is indeed recognized as a crucial dimension of service quality within the Indian telecommunication sector. Reliability, in the context of telecom services, involves aspects such as delivering service as promised, dependability, and accuracy. Poor service quality, which would include issues with reliability, can lead to customer dissatisfaction and potentially cause customers to switch to other providers, especially with the availability of Mobile Number Portability.

A significant gap between customer expectations and perceptions regarding service quality, including reliability, has been noted in various studies across India. One study conducted in Kerala specifically compared private and public sector service providers using the SERVPERF model, which assesses perceived service quality based on actual performance, including reliability aspects. This study found that private sector service providers outclass the public sector service providers (like BSNL) in every aspect of quality of service. Regarding reliability aspects measured ('Service delivered as promised', 'Dependable staff', and 'Staff records all transaction details accurately'), the private sector providers had significantly higher mean scores than the public sector. For 'Sympathetic approach of staff', the public sector had a higher mean score. This finding from pdf4.pdf contradicts the statement in your query that BSNL consistently leads in reliability compared to private players. Another source focusing on BSNL in a specific district found that while a majority were satisfied with the BSNL network compared to other brands, customers experienced issues like 'No Clear voice' and 'Line fault', and satisfaction with 'Responsiveness in dealing with customer' had the lowest mean score. A literature review mentions one study (Stella 2018) that found the overall service quality of BSNL satisfactory among customers, but also cites another study (R Upadhy, Vashundhra Sharma 2012) revealing that BSNL had weak network performance compared to other brands. A study focused on Jio customer satisfaction in Ernakulam district evaluated satisfaction with factors related to reliability, such as network coverage, call clarity, internet speed, and customer service. The majority of Jio users in that study were found to be satisfied with these aspects. Correlation analysis indicated a high positive relationship between customer service and overall satisfaction, and between internet speed and customer service. This study concluded that customers in Ernakulam were satisfied with Jio's present offerings/service. However, this source does not compare Jio's reliability performance directly against other specific providers using a standardized set of reliability dimensions. A study found that the private sector, which includes Airtel and Vi, generally outperformed the public sector (BSNL) in most measured reliability aspects. One review mentions that Airtel had a better distribution strategy/network compared to BSNL.

A study conducted in Kerala specifically compared private sector and public sector mobile phone service providers using the SERVPERF model, which assesses perceived service quality based on performance. This study included samples from customers of Airtel, BSNL, Idea, Jio, and Vodafone in Kerala. Its major conclusion was that private sector service providers outclass the public sector service providers in every aspect of quality of service. Regarding specific reliability aspects, the study found that variables such as 'Service delivered as promised', 'Dependable staff', and 'Staff records all transaction details accurately' showed a significant difference, with the mean scores being significantly higher for private sector providers compared to the public sector provider (BSNL). This finding from the Kerala-specific study directly contradicts the assertion that BSNL consistently leads in reliability when compared to private sector competitors like Airtel, Vi (formed by Vodafone and Idea), and Jio. Another study focusing on BSNL in

a specific district of Kerala mentions that while a majority of customers in that sample preferred BSNL due to its network compared to other brands (67%), the study also revealed issues like 'No Clear voice' (49%) and 'Line fault' (30%) in landline connections. Furthermore, a review cited in this source (Dr. R Upadhy, Vashundhra Sharma 2012) indicated that BSNL had "weak network performance compared with other brands". These findings provide mixed signals about BSNL's reliability and include a conflicting perspective from a cited study, further challenging the idea of BSNL consistently leading in reliability.

A study on Jio customer satisfaction conducted in Ernakulam district, Kerala, evaluated aspects related to service, including network coverage, call clarity, and internet speed, which are linked to perceived reliability. The findings indicated that the majority of Jio users in that specific sample were satisfied with these aspects, and there was a high positive correlation between internet speed and customer service, as well as between customer service and overall satisfaction. The study concluded that customers in Ernakulam district were satisfied with Jio's current offerings/service. However, this study focused solely on Jio customers and did not provide a direct comparative reliability analysis or ranking against other providers like BSNL, Airtel, or Vi. Another study that included samples from Airtel, Idea, Vodafone, BSNL, and Reliance Jio across five districts of Northern and Central Kerala mentions evaluating service quality in terms of reliability, responsiveness, assurance, and network quality. While it aimed to assess the effectiveness of these providers in managing customer relationships, the provided excerpts do not contain the specific comparative analysis or ranking of these five providers based on the measured reliability dimensions.

CONCLUSION

The comparative analysis of service reliability among major telecom providers in Kerala showing the significant differences in customer perceptions. The reliability indicators such as proper service delivery, reliable calling, trustworthiness, promptness, and service consistency, the study revealed a clear hierarchy in perceived performance. BSNL emerged as the most reliable service provider, consistently meeting customer expectations across all dimensions. Airtel followed closely, reflecting strong performance but need improvement. Vi demonstrated moderate reliability, indicating a balanced but less robust service experience. Jio, however, ranked the lowest, with the highest variability in customer responses, suggesting inconsistency and notable gaps in reliability. Hence this research showing the importance of maintaining service consistency, prompt responsiveness, and trust-building measures in sustaining customer satisfaction and competitive advantage.

Limitations of the study

1. The research is limited to only telecom service providers in Kerala and therefore it cannot be used to represent other regions as far as reliability of carrying out the services is concerned, the research cannot be generalized.
2. The customer perceptions on service reliability are always personalized and bound to be varied depending on individual experiences, biasness as well as the expectations which confounds the objective of uniformity in answers and influence the stability of answers.
3. This sample cannot be representative of the total customers of all telecom operators because some customers, with different age, income and location might have different experiences and perceptions with respect to service reliability.
4. The self-reporting data obtained via survey means that it encounters social desirability type of bias, the respondents overly giving answers based on what they are required to think and not based on actual experiences.
5. The research is based on five major indicators of reliability but it fails to address other possible factors that may influence reliability such as network infrastructure problem, weather conditions, or other technological setbacks, which might have limited the views of reliability.

Social Implication

The results of the research provide important information which help to modify social relations in the field of telecommunications. However, by determining the discrepancies between service reliability in telecom providers, this study highlights the necessity of improving service reliability that is critical in building trust and satisfaction among consumers. Enhanced delivery of services may result in increased

customer retention and satisfaction, which helps to produce the overall well-being of the society. Also, through the appreciation of trust and timeliness of service, telecom providers can now embrace more consumer friendly ways of doing their business which helps in the long run to enhance the social outlook of the company brand and in the quality of living in people, especially in areas.

Policy implication

Findings presented in this paper can be used to make policies aimed at enhancing the quality of services in the telecommunications industry. The policymakers can use these as a basis to suggest establishment of strong service delivery standards whereby all telecom providers should be able to satisfy certain minimum reliability. These rules have the potential of being fair and holding responsible companies, especially those that perform poorly. Also, this study brings out the necessity of enhanced consumer protection strategy whereby consumers stand compensated or safeguarded in the case of failure of service standards. With these loopholes filled, policies can eliminate differences in the service quality making sure that both cities and rural locations are connected to the various dependable and standardized telecom services so as to enable a fair access to needed communication infrastructure.

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