IMPACT OF INFRASTRUCTURE, MARKETING, AND PRICING STRATEGIES ON CUSTOMER SATISFACTION OF TELECOM USERS
A SECTORAL STUDY

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Abstract

The rapid growth and development of information technology has increased the competitiveness of the Indian telecom industry, leading to the intensification of competition in this industry. To evaluate telecom users' customer satisfaction and preference for buying a particular network, researchers developed a model using five constructs: telecom network infrastructure, telecom provider marketing strategy, telecom network pricing policy, preference for buying, and customer satisfaction. The study concluded that pricing and marketing, not telecom infrastructure, influence consumer preferences. Infrastructure, not pricing, affects customer satisfaction in the telecom industry. Customer satisfaction can be affected by SIM preference. Airtel, BSNL, Vodafone Idea, and Jio have similar perceptions when compared.

INTRODUCTION

India is now world's second-largest telecom market. (Tanwar & Mittal, 2022) Indian telecom has consolidated from fourteen carriers in 2016 to four operators in 2021, although competition is intensifying as seen by the number of unique porting requests issued by Indian mobile consumers, which reached 5.74 million in March 2020 and continues to rise.(Bhale & Bedi, 2021). Customer satisfaction, is a metric used to assess how satisfied customers are with a telecom company's products, services and capabilities. Because of varying customer demands, service providers in the Indian telecommunications industry are now facing numerous challenges to their long-term viability

in a competitive environment. In the telecom industry, service quality basically measures how well a telecommunication network meets a customer's expectations. The company's telecommunications infrastructure affects customer expectations. It includes wires, satellites, microwaves, and 5G mobile networks. Infrastructure facilities, marketing strategies, and pricing strategies all contribute to customer satisfaction in the telecom industry.

Thus, researchers have analysed the perception of customer satisfaction of users of Airtel, Jio, Vodafone-Idea and BSNL. The researchers have analyzed whether preference for buying a particular telecom network is impacted by Infrastructure facilities, Marketing strategies and pricing strategies. The researchers have also studied about customer satisfaction in telecom sector based on infrastructure facilities, pricing and preference for buying. By applying multigroup researchers have also compared the perception of users of Airtel, Jio, Vodafone-Idea and BSNL.

REVIEW OF LITERATURE

John, (2011) used factor analysis to determine the main elements affecting BSNL customers' loyalty. Trustworthiness, relationships, image, value-added services and swapping phone numbers influenced BSNL customer loyalty. The results highlighted that BSNL must modernize its technology and portray itself as young-friendly, as youth are the main market for mobile providers. *Danish et al., (2015)* suggested that telecom sector customer care is vital for customer retention because customers demand prompt problem solutions and feedback. *Qalati et al., (2019)* conducted a study to find out mediating role of consumer buying behaviour and conclude that there is direct relationship of price with customer satisfaction in telecom sector. *Savant et al., (2021)* analysed

The pricing strategy of the telecom industry has no effect on customer satisfaction, but its infrastructure does

Bharti Airtel, BSNL, Reliance Jio, and VI – Vodafone Idea using balance scorecard. Airtel has showed a reasonably consistent performance from a consumer viewpoint, despite other incumbent carriers declining. BSNL has maintained a consistent market share by not losing customers to competitors. Vodafone-Idea is losing market share and customers. *Das (2021)* concluded that respondents are satisfied with Jio-services. His study concluded that Reliance Jio Limited should improve their network speed in Mandya city in order to reach maximum customers. *Vijayaragunathan & John, (2022)* used the Markov Prediction Chain model to understand young subscribers' preferences for network service providers in Pondicherry, India, and concluded that public sector players lose to private sector players. *Bamoriya & Singh, (2011)* adopted descriptive design and suggested that from consumers' perspective security, privacy and standardization of services are the critical issues for choosing telecom network. *Charan, H.N (2022)* concluded that most of the telecom customers are expecting quality in service. According to *Pattnaik & Mishra, (2022)* provision of quality service, initiatives of public relationship programs and generation of timely customer satisfaction play a significant role in the variation of customer loyalty.

Although, a lot of research is being the done in telecommunication sector with reference to customer satisfaction, no study indicates comparison of users of Airtel, Jio, Vodafone-Idea and BSNL related to infrastructure facilities, marketing and pricing strategies.

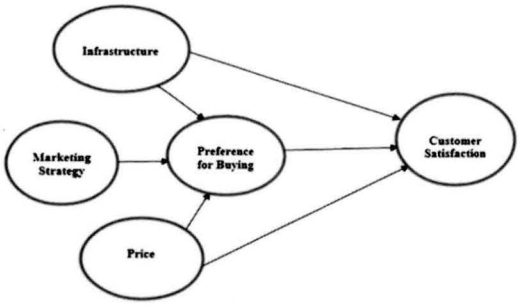
CONCEPTUAL FRAMEWORK

To critically evaluate the customer satisfaction of telecom users and their preference for buying a particular network, *the researchers developed a model using five constructs (Figure 1): four independent variables, namely infrastructure facilities provided by telecom networks; marketing strategy of telecom providers; pricing policy of the telecom network; preference for buying; and one dependent variable, i.e., customer satisfaction.*

For 'Infrastructure', respondents were questioned on network connectivity and coverage, internet speed, quality of service, reliability of service provider, privacy, process time, and value-added services. For "Marketing Strategy," the researchers raised questions about brand image, new plans and offers, customer care centre service, availability of recharge outlets, TV ads, billboards, and banners, service provider image, service standards, long-term relationship with service provider and billing system. The 'Pricing strategy' includes questions on the price of internet data, fixed rental per month, S.T.D. rates, I.S.D. rates, rates for value-added services like caller tune, information, etc.

'Preference for buying' includes questions like: product/service plays, price, availability of recharge outlets, promotion, employees of the service provider and process time. "Customer Satisfaction" includes questions about how satisfied a customer is with its network's connectivity, coverage area, data speed, value-added services, billing clarity, sales promotion offers, voice clarity, dealer network, and roaming facility.

FIGURE1: CONCEPTUAL FRAMEWORK



Based on the above conceptual framework, following hypotheses can be drawn:

H1: Infrastructure facilities provided by telecom sector has no significant impact on preference for buying.

H2: Infrastructure facilities provided by telecom sector has no significant impact on customer satisfaction.

H3: Marketing techniques of telecom sector has no significant impact on preference for buying.

H4: Pricing strategy of telecom sector has no significant impact on preference for buying.

H5: Pricing strategy of telecom sector has no significant impact on customer satisfaction.

H6: Preference for Buying a particular telecom SIM has no significant impact on Customer Satisfaction.

RESEARCH METHODOLOGY

Non- probability convenience sampling was applied in the research. The data was collected using Google form questionnaire. To assess the appropriateness of the sample size, Taro Yamane's calculation was used which gives sample size of 400. Data from 452 telecom respondents using Airtel, Jio, Vodafone-Idea or BSNL were used in the study. The data so gathered were analyzed using Jamovi and Smart PLS SEM.

FINDING AND ANALYSIS

Demographic

TABLE 1: DEMOGRAPHIC PROFILE

Frequencies of Gender								
	JIO		Airtel		Vodafone Idea		BSNL	
Levels	Counts	% of Total	Counts	% of Total	Counts	% of Total	Counts	% of Total
Female	38	36.2%	58	43.3%	48	43.2%	31	30.4%
Male	67	63.8%	75	56%	63	56.8%	71	69.6%
Prefer not to say			1	0.7%				
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**
Frequencies of Age								
Below 18	2	1.9%	2	1.5%				
18-24	41	39%	28	20.9%	37	33.3%	36	35.3%
25-40	53	50.5%	87	64.9%	56	50.5%	47	46.1%
41-60	9	8.6%	17	12.7%	17	15.3%	19	18.6%
61 and above					1	0.9%		
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**
Frequencies of Education								
Higher Secondary	8	7.62%	14	10.4%	21	18.9%	3	2.95%
Bachelor's degree	48	45.71%	93	69.4%	60	54.1%	21	20.6%
PG Degree	41	39.05%	25	18.7%	27	24.3%	65	63.7%
Other	8	7.62%	2	1.5%	3	2.7%	13	12.75%
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**
Frequencies of Occupation								
Govt. Employee	33	31.4%	49	36.6%	27	24.32%	51	50%
Private Employee	9	8.6%	31	23.1%	22	19.82%	36	35.3%
Professional	4	3.8%	25	18.7%	22	19.82%	8	7.8%
Self employed	3	2.9%	7	5.2%	10	9.01%	1	1%
Student	56	53.3%	22	16.4%	30	27.03%	6	5.9%
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**
Frequencies of Income per month								
less than 5,000	41	39.04%	18	13.43%	26	23.42%	33	32.4%
5,001 to 20,000	18	17.14%	56	41.8%	55	49.55%	21	20.6%
20,001 to 50,000	33	31.42%	57	42.54%	23	20.72%	24	23.5%
50,001 to 1,00,000	8	7.6%	3	2.23%	6	5.41%	16	15.7%
1,00,001 and above	5	4.8%			1	0.9%	8	7.8%
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**
Frequencies of Using Mobile connection								
Prepaid	86	81.9%	93	69.4%	97	87.4%	87	85.3%
Post-paid	8	7.6%	33	24.6%	6	5.4%	10	9.8%
Both	11	10.5%	8	6%	8	7.2%	5	4.9%
Total	**105**	**100%**	**134**	**100%**	**111**	**100%**	**102**	**100%**

(Source: Authors own calculation using Jamovi)

Confirmatory Composite Analysis

Measurement Model

Using confirmatory composite analysis, the constructs' reliability was evaluated. Cronbach's Alpha (Nunnally, 1978) Composite reliability and Rho A **(Henseler et al., 2015)** values for all five constructs (Table 2) were greater than 0.70 for the purposes of the study, indicating that the questionnaire was reliable according to this model. The minimum acceptable value for average variance extracted (AVE) is 0.50, indicating that anything above this value is acceptable. Table 2 shows the questionnaire meets AVE requirements. The data thus meets all reliability criteria. Smart PLS software calculates factor loading using partial least squares which should be greater than 0.70. All indicators are appropriate because their factor loadings are above 0.70 (Figure 2).

FIGURE 2: MEASUREMENT MODEL

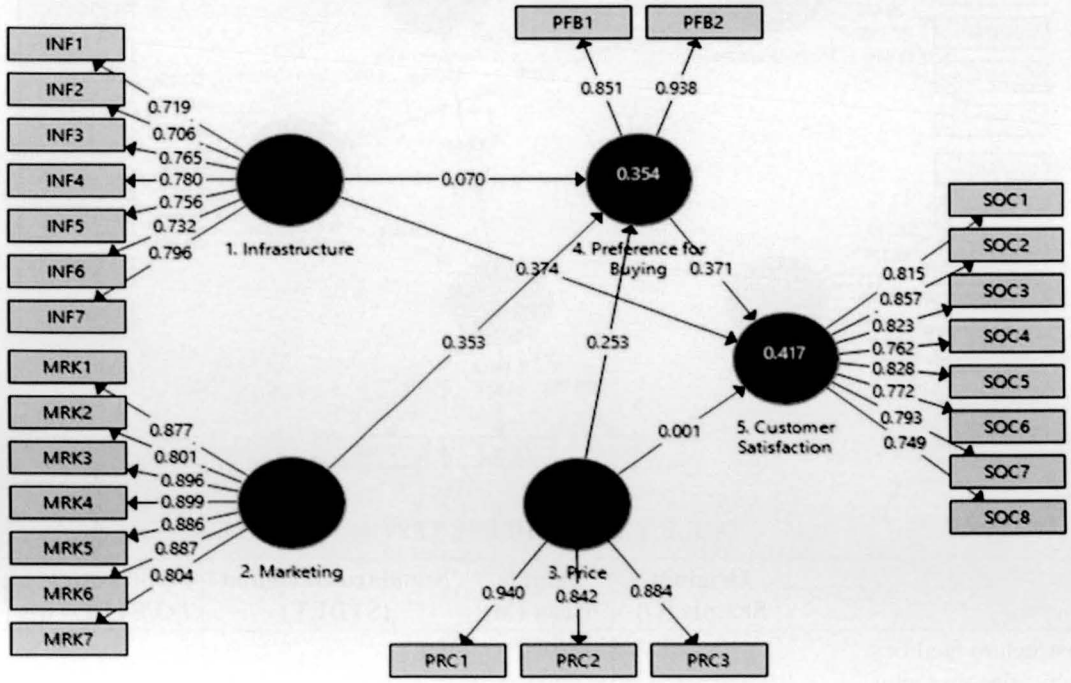


TABLE 2: CONSTRUCT RELIABILITY AND VALIDITY

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Infrastructure	0.871	0.875	0.900	0.564
Marketing	0.944	0.946	0.954	0.748
Price	0.869	0.898	0.919	0.792
Preference for Buying	0.763	0.857	0.890	0.802
Customer Satisfaction	0.920	0.922	0.934	0.641

(Source: Authors own calculation using SmartPLS)

Structural Equation Model

The hypothesis was tested and the predictive power of the model was examined, using a boot strapping procedure with 5000 bootstraps. Figure 3 and Table 4 display the analysis' findings. The hypotheses results are indicated by the T statistics and P-value. Statistical significance is defined as a p-value less than 0.05. It indicates strong evidence to reject the null, as the null hypothesis has a less than 5% likelihood of being correct.

Thus, it can be concluded that hypotheses H1 and H5 are accepted based on P-value, while hypotheses H2, H3, H4 and H6 failed to accept the null hypothesis, implying that telecom sector infrastructure has no significant impact on

buying preference and pricing strategy has no significant impact on customer satisfaction. Telecom marketing and pricing strategies affect buying preference. Also, the infrastructure facilities provided by the telecom sector have a significant impact on customer satisfaction, as does the preference for buying a particular telecom Sim.

FIGURE 3: STRUCTURAL EQUATION MODEL

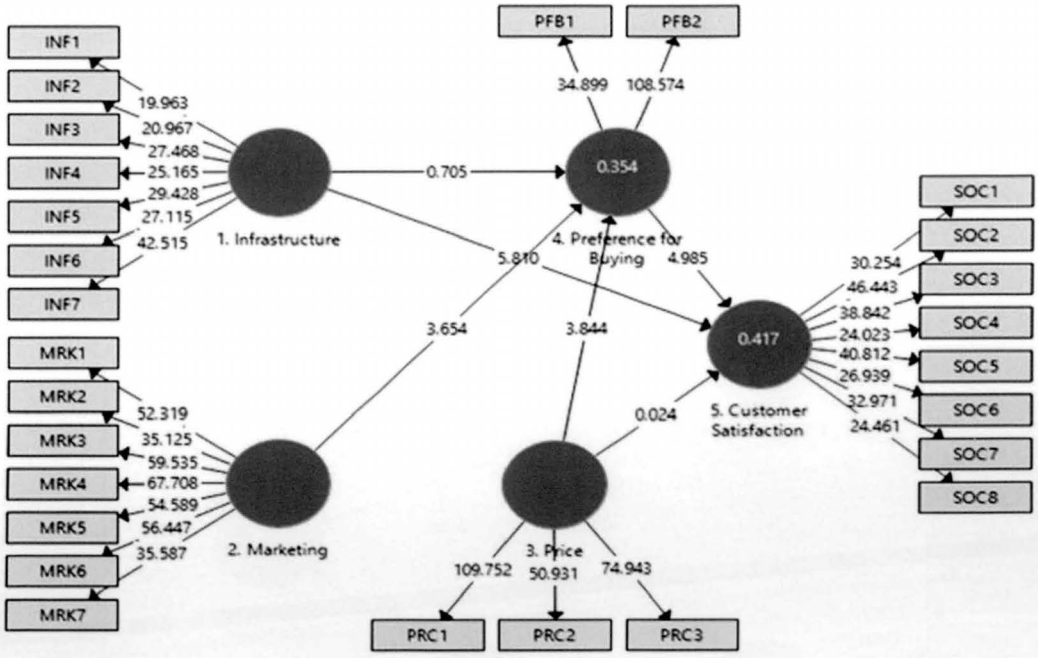


TABLE 4: HYPOTHESES TESTING

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
H1: Infrastructure facilities provided by telecom sector have no significant impact on preference for buying.	0.070	0.071	0.099	0.705	**0.481**
H2: Infrastructure facilities provided by telecom sector have no significant impact on customer satisfaction.	0.374	0.382	0.064	5.810	**0.000**
H3: Marketing techniques of telecom sector has no significant impact on preference for buying.	0.353	0.351	0.096	3.654	**0.000**
H4: Pricing strategy of telecom sector has no significant impact on preference for buying.	0.253	0.258	0.066	3.844	**0.000**
H5: Pricing strategy of telecom sector has no significant impact on customer satisfaction.	0.001	0.004	0.057	0.024	**0.981**
H6: Preference for buying a particular telecom Sim has no significant impact on customer satisfaction.	0.371	0.362	0.074	4.985	**0.000**

(Source: Authors own calculation using SmartPLS)

MULTIGROUP ANALYSIS

A multigroup analysis was conducted between the users of Jio, Airtel, Vodafone-Idea and BSNL. The results can be seen in Table 5 given below. Multigroup analysis has provided results based on boot strapping results of data collected. Multi-group analysis is offered to 6 groups, namely, customers who use Airtel vs customers who use BSNL , customers of Airtel vs JIO, customers of Airtel vs Vodafone idea, customers of BSNL vs JIO, customers of BSNL vs Vodafone idea and customers of JIO vs Vodafone idea (*Multigroup Analysis (MGA) - SmartPLS*, n.d.). All the P values are above .05 implying that there is no change in perception of Airtel, BSNL, Vodafone Idea and Jio when compared to each other. Thus, it can be concluded that there is difference in the perception of these users when compared to each other.

TABLE 5: MULTIGROUP ANALYSIS

	p-Value original 1-tailed (Airtel vs BSNL)	p-Value original 1-tailed (Airtel vs JIO)	p-Value original 1-tailed (Airtel vs Vodafone idea (VI))	p-Value original 1-tailed (BSNL vs JIO)	p-Value original 1-tailed (BSNL vs Vodafone idea (VI))	p-Value original 1-tailed (JIO vs Vodafone idea (VI))	p-Value new (Airtel vs BSNL)	p-Value new (Airtel vs JIO)	p-Value new (Airtel vs Vodafone idea (VI))	p-Value new (BSNL vs JIO)	p-Value new (BSNL vs Vodafone idea (VI))	p-Value new (JIO vs Vodafone idea (VI))
1. Infrastructure -> 4. Preference for Buying	0.584	0.442	0.326	0.308	0.189	0.329	0.833	0.884	0.652	0.615	0.378	0.657
1. Infrastructure -> 5. Customer Satisfaction	0.762	0.776	0.303	0.495	0.095	0.083	0.476	0.449	0.606	0.991	0.189	0.166
2. Marketing -> 4. Preference for Buying	0.243	0.139	0.566	0.368	0.821	0.914	0.487	0.278	0.869	0.737	0.359	0.172
3. Price -> 4. Preference for Buying	0.619	0.798	0.842	0.877	0.897	0.646	0.763	0.403	0.316	0.246	0.205	0.709
3. Price -> 5. Customer Satisfaction	0.376	0.488	0.841	0.622	0.911	0.860	0.751	0.975	0.318	0.756	0.177	0.281
4. Preference for Buying -> 5. Customer Satisfaction	0.051	0.056	0.139	0.585	0.647	0.610	0.101	0.112	0.278	0.831	0.705	0.780

(Source: Authors own calculation using SmartPLS)

CONCULSION

The telecom industry in India is now more competitive, thanks to the rapid growth of IT and mobile technology. The study measured user satisfaction in the telecom industry. According to the study, pricing and marketing are the main factors that influence consumer preferences, not telecom infrastructure. The pricing strategy of the telecom industry has no effect on customer satisfaction, but its infrastructure does. Preference for buying a particular SIM can have an impact on customer satisfaction. Furthermore, it can be concluded that there is no change in perception of Airtel, BSNL, Vodafone Idea, and Jio when compared to each other. It can be further concluded that in the age group 41–60, the highest proportion of the respondents used BSNL services when compared to each other. When the education qualification of respondents was compared, it can be concluded that out of the total users of BSNL, 63.70 per cent of users hold a PG degree. When the occupations of different respondents were compared, it was further found that out of all the Jio users, 53.30 per cent are students and out of all users of BSNL, 50 per cent have Government jobs indicating that elderly people have more faith in BSNL as compared to private players. When prepaid and postpaid connections of all respondents were compared, it was noticed that Jio, BSNL, and Vodafone-Idea users mostly have prepaid connections, which account for 81.9 per cent, 87.40 per cent , and 85.30 per cent of users respectively, whereas in the case of Airtel, out of the total users, 69.40 per cent use prepaid connections, whereas 24.60 per cent of users have postpaid connections and 6 per cent used both.

LIMITATION AND FURTHER STUDY

This study used data from Bhopal and the surrounding area in Madhya Pradesh. If users from other States or mobile companies are considered, results may change. Data was collected via Google form and shared with individuals who knew the researcher. The questionnaire didn't include mobile users from far away, other States, and other countries. Their view may affect the study's results. MA

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