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Measuring Mobile Service Satisfaction: Factor Analysis Based Study on Mobile Users of Gujarat

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Abstract: ***Determination of customer satisfaction is one of the very important parameters for the telecom operators in India. This paper undertakes analysis of different factors, which enables to ear mark the major aspects that leads to satisfaction of mobile users. The study had been carried out among the mobile users of the state of Gujarat. The paper also tries to find out the gaps between customer expectation and their service satisfaction. The study also investigates the potentiality of the revenue generation and customer retention tools for telecom operators. Opinions of about 800 mobile users from 20 districts of Gujarat were captured through close ended questionnaire. Simple random sampling method was used, where the perception of individuals of various strata of the society were captured. Other than recording the personal data of the mobile users, in terms of name, age, gender, locality, profession, income and qualification, other useful information related to satisfaction from mobile services were also captured. Levels of satisfaction of the respondents were recorded using Likert 5-Point scale system. Statistical tool SPSS was used for the dimension reduction and identification of the significant factors using factor analysis. 19 attributes of satisfaction were grouped in 5 important factors with their respective factor loadings. These factors ensures enhancement of the customer experience as well as boosting service quality ,which helps in devising suitable sustainable strategies for the mobile market today. Further the levels of satisfaction of the mobile users of Gujarat were also analyzed with respect to various zones, urban-rural, age groups as well as income categories. These conclusive evidences may help the telecom players to enhance and retain their existing customer base as well as revenue.***

Index Terms*: *Perception, Factor Analysis, Principal Component, Factor Loading

I. INTRODUCTION

Telecom services have now become the need of the hour. Its transition from a luxury item has all been attributed by virtue of policy evolutions and change in mentality of the law makers. Its presence is now felt in every nook and corner of the society. The root of all development activities of the government in some way or the other boils down to telecom services. Digital India, a pioneer project of Government of India, is completely dependent on Telecom services. The touch of digitization is felt in every aspects of life whether it is banking, shopping, communicating and thus we are interconnected with telecommunication services day in and day out.

Changes in policy front and entry of new telecom operator like Reliance JIO in Indian Telecom market has ushered in cut throat competition. The telecom market has now become customer centric, where users are the dictators, who are becoming more and more demanding. Hence customer satisfaction has been the prime focus of all telecom operators. Identification of most important parameters related to customer satisfaction from mobile use is the most important aspect. The study is thus quite important in this regard. Mobile users of Gujarat have been chosen as the respondents for identification of most important parameters of satisfaction analysis related to mobile services through Factor Analysis from a set of parameters identified from various sources and through expert opinions.

II. LITERATURE REVIEW

Customer satisfaction is one of the prime elements for any Telecom service providers these days in India. It is because of the cut throat competition, which has made Telecom operators more proactive and sensitive towards the customers and their needs. Nurdaulet Nurysh, Navaz Naghavi, Benjamin Chan Yin Fah (2019) have observed that perceived value and service quality has positive relation towards satisfaction quotient of the customers. But, the research has also found that the interaction of both variables with attractiveness of alternatives has no effect to improve or enhance the satisfaction. To examine the important factors such as perceived value and service quality that can directly affect the customer satisfaction, the target population chosen by the researchers had been workers in universities and institutions of Malaysia. Various factors have different levels of impacts on customers. Sendecka and Nysveen (2006), opined that more and more customized, tailor made services that fulfill customer's needs and expectations would lead to a higher level of customer satisfaction. Negi (2009) and Rahman et al. (2011) has found that quality of network has been one of the prime factors of overall customer satisfaction level. In recent times, customer satisfaction has achieved new heights and paradigm shift from transactional marketing to relationship marketing (Sheth, Parvatiyar 1994). Organizations can achieve the goal of customer satisfaction by satisfying their customers' needs and wants (LaBarbera, Mazursky 1983). Customer satisfaction is of judgment level of satisfactory of consumption related pleasure (Oliver 1997). Satisfaction is thus a individual's feelings of happiness or disappointment that originates by comparing a product's perceived values and performance to the anticipated expectation (Oliver, Richard 2006).

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Any deficiency in expectation levels leads to customer dissatisfaction. When performance matches levels of expectations the customer is satisfied and contented. If the performance level exceeds expectation level, the customer becomes extremely joyous and elated (Fournier, Mick 1999). Mobile services providers are investing hefty sum of money but still there is a yawning gap in the actual and perceived value of the customer; A survey which is carried out by Barnhoom C. (2006), has found that although there is progress, nevertheless perceived value from the telecom operators has the lowest score. Langley C. John & Holcomb Mary C. (1996) opined that companies have the chance to increasing customer satisfaction level through creation of customer value like by providing customers the comparative net value, efficiency level, and feeling of differentiated services. Anderson E. W., Fornell C and Lehmann D. R. (1994), McDougall, G. H. and Levesque T. (2000), Ravald, A. and C. Gronroos (1996) concluded that perceived value is the prime determinant of customer satisfaction.

III. OBJECTIVE

This research aims to identify factors of satisfaction of mobile users of Gujarat with respect to the range of the services and supports being offered by various Telecom operators. The study explores the gaps in the 'Customer Expectations' v/s 'Customer Experiences' for the actual services provided by the mobile service providers in Gujarat and identifies the real time issues encountered by the customers. Survey Questionnaire prepared with '5 Point Likert Scale' is analyzed under the Factor Analysis for identifying the factors affecting customer satisfaction. Further the research also evaluates a comparison of satisfaction factors of respondents of various zones of Gujarat, urban vs rural areas of Gujarat and an age wise comparison of satisfaction factors.

IV. RESEARCH METHODOLOGY

The research is about fulfilling the desired objective. A primary data set composed of questionnaires, focused on 19 different parameters (Table 1.1) of satisfaction related to mobile services was distributed among various mobile users across Gujarat

Table 1.1 Details of the attributes

Sr No	Attributes
1	Tariffs and plans
2	Service activation
3	Billing complaint
4	Prompt resolution to billing complaints
5	Service provider's image
6	Interruption in voice based services
7	Responsiveness towards customers
8	Promptness of coverage complaint resolution
9	Frequency of call drop and its resolution
10	Prompt resolution to data service interruption
11	Voice clarity
12	Promotional offers
13	Penetration of franchisee retail network
14	Helpline and support centers
15	Internet data service interruptions
16	Online services
17	Internet data speed
18	Coverage of 4G services
19	Promotional and marketing activities

A. Research Design

Since the study is about identification of factors of satisfaction of Mobile users in Gujarat, the whole mobile user base of all the telecom operators in Gujarat are the prospective population. 800 samples were drawn from this population. The samples were chosen from 20 districts of Gujarat i.e Ahmedabad, Vadodara, Anand, Kheda,Panchmahal,Dahor,Bharuch,Surat,Navsari,Banskatha ,Sabarkatha,Mehsana,Patan,Rajkot,Amreli,Bhavnagar,Jamn agar,Junagadh,Surendranagar and Bhuj. These districts cover 91.2 Per cent of the overall population of Gujarat. Respondents were also chosen based on various age groups, gender, various income groups, locality, qualification and profession etc. The data thus collected helped in getting an insight of the factors related to changing satisfaction level among various mobile users of Gujarat based on various demographic factors like zones, area(urban vs. rural) and ages.

B. Data Collection Methods

The primary data was collected through interception and interview of the respondents at various societies, market area, retail stores etc. as well as through email.

Table 1.2 Distribution of Respondents

Sr No	Attributes
1	Tariffs and plans
2	Service activation
3	Billing complaint
4	Prompt resolution to billing complaints
5	Service provider's image
6	Interruption in voice based services
7	Responsiveness towards customers
8	Promptness of coverage complaint resolution
9	Frequency of call drop and its resolution
10	Prompt resolution to data service interruption
11	Voice clarity
12	Promotional offers
13	Penetration of franchisee retail network
14	Helpline and support centers
15	Internet data service interruptions
16	Online services
17	Internet data speed
18	Coverage of 4G services
19	Promotional and marketing activities

Customer Satisfaction Level was recorded using Likert Scale under 5- Point Scale System. Under Factor Analysis, Principal Component Analysis method was used for the Dimension Reduction and Identification of the Significant Factors for mobile user Satisfaction. Here, 19-attributes measuring the mobile customer Satisfaction with their respective Factor Loadings. Likert scale was derived by the American educator and psychologist R. Likert in the 1920's. Likert statements are generally a Five or Seven point scale. It is used as one of the most basic Psychometric tools in the field of Social Sciences research.

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It is one of the most prominently applied tools for collecting data related to Perception, Attitudes, Values, Intentions, Habits and Behavior changes. In a Likert Scale, the motto of the research is for deriving the opinions/perceptions of participants .On a predetermined scale, every element of Agreement or Disagreement is assigned a numeric value. It can be coded as "1 which stands for Strongly Disagree, 2 stands for Disagreed, 3 stands for Undecided, 4 stands for agreed and 5 stands for Strongly agreed." Factor Analysis is a SEM (Structural Equation Modeling), which measures the variability among Correlated Variables with respect to lower number of Unobserved Variables defined as Factors.

V. RESULTS AND DISCUSSIONS

The results are divided into various subsections which are descriptive statistics, reliability analysis and factor analysis.

A. Descriptive Statistics

Descriptive statistics described here the frequency and percentage of profiles of the respondents. Table 1.2 shows that demographic profiles of respondents according to variables like gender, age, profession, income, locality and qualification.

Table 1.3 Demographic factors

Factors	Particluars	Frequency	Percentage
Gender	Male	470	58.8
	Female	330	41.3
Area	Urban	434	54.2
	Rural	366	45.7
Age	Less than equal to 12 years	25	3.1
	Between 13-25 years	212	26.5
	Between 26 to 40 years	249	31.1
	Between 41 to 60 years	232	29.0
	Greater than 60 years	82	10.3
Marital Status	Married	477	59.6
	Unmarried	323	40.4
Profession	Business	152	19.0
	Govt. Service	124	15.5
	Private Service	194	24.3
	Retired	26	3.3
	House wife	103	12.9
	Student	101	12.6
	Farmer	77	9.6
	Unemployed	23	2.9
Annual Income	Less than Rs.1,00,000	133	16.6
	Rs.1,00,001- Rs.3,00,000	124	15.5
	Rs.3,00,000 - Rs.5,00,000	216	27.0
	Rs.5,00,001- Rs.10,00,000	163	20.4
	Above Rs.10,00,000	72	9.0
	Not earning	92	11.5
Qualification	Post Graduation	135	16.9
	Graduation	397	49.6
	Diploma/ITI	101	12.6
	S.S.C/H.S.C	167	20.9

As far as gender is concerned, 41.3 per cent respondents are female and 58.8 per cent respondents are male.

Classification of respondents age wise shows that 31.13 per cent respondents are of age group 26-40 years, 29 per cent are in age group 41-60 years, 26.5 per cent in age group of 13-25 years , 10.25 per cent in age bracket greater than 60 years and 3.13 per cent are in age group less than 12 years.

It is also found that 59.63 per cent respondents are married while 40.38 per cent respondents are unmarried.

As far as professionals are concerned, 24.25 per cent respondents are in private job, 19 per cent in business, 15.5 per cent in government job, 12.88 per cent house wife, 12.63 per cent students, 9.63 per cent farmers, 3.25 per cent retired person and 2.88 per cent unemployed.

Income bracket of the respondents show that 27 per cent respondents are in 3-5 lakh annual income group, 20.38 per cent in 5-10 lakh income bracket, 16.63 per cent in less than 1 lakh per annum bracket,15.5 per cent between 1-3 lakh and 9 per cent in above 10 lakh bracket.

49.63 per cent respondents are graduates, 20.88 per cent are SSC/HSC qualified, 16.88 per cent are post graduates and 12.63 per cent are Diploma/ITI qualified.

B. Reliability Test

In this study the main focus is to identify the factors that affect mobile user's satisfaction level. The reliability test shows that Cronbach's Alpha was 0.851 for 19 items. Cronbach's Alpha Coefficient must be greater than 0.65. Here the value is well above. Therefore, there was internal consistency of the scales and tools used here are highly reliable.

C. Factor Analysis

Factor analysis was used to construct the new factors affecting mobile user's satisfaction level. Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy are both tests that can be used to determine the factorability of the matrix as a whole.

Determination of the methods of Factor Analysis

To carry out factor analysis there are various methods available, among them Principal component method is carried out for our research purpose.

Table 1.4 Appropriateness of Factor Analysis and number of factors

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.778
Bartlett's Test of Sphericity	Approx. Chi-Square	8427.705
	Degree of Freedom	171
	Significance	.000

In the next step, KMO (Kaiser-Meyer-Olikn) Statistic is computed for the Suitability and Sample Adequacy of the data. It is also a measure of the Data Sufficiency. Its value must be 0.7 and above. Here, the KMO measure of sampling adequacy is 0.778. Barlett's test of Sphericity tests the hypothesis of population correlation matrix vis a vis its identity matrix. Here, the Chi-Square Statistic is 8427.705 with 66 degree of freedom. The value is significant at 95% Confidence level. Thus, based from the results, it is appropriate to proceed with Factor Analysis to examine factors that affect mobile user's satisfaction level.

Factor Analysis using principal component analysis method

Communalities indicate the common variance shared by factors with given variables. Higher communality indicated that larger amount of the variance in the variable has been extracted by the factor solution. For better measurement of Factor Analysis, Communalities should be 0.4 or greater. Here, all the Attributes have Communalities greater than 0.4.

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Table 1.5 displays the total variance explained at five stages for factors that affect mobile user's satisfaction level in Gujarat. These five factors were extracted because their Eigen values were greater than 1. When these five factors were extracted, then 67.398 percent of the Variance would be justified.

Table 1.5 Communalities

Communalities		
	Initial	Extraction
Tariffs and plans	1.000	.660
Service activation	1.000	.624
Billing complaint	1.000	.713
Prompt resolution to billing complaints	1.000	.728
Service provider's image	1.000	.942
Interruption in voice based services	1.000	.663
Responsiveness towards customers	1.000	.466
Promptness of coverage complaint resolution	1.000	.757
Frequency of call drop and its resolution	1.000	.798
Prompt resolution to data service interruption	1.000	.628
Voice clarity	1.000	.634
Promotional offers	1.000	.510
Penetration of franchisee retail network	1.000	.525
Helpline and support centers	1.000	.507
Internet data service interruptions	1.000	.542
Online services	1.000	.647
Internet data speed	1.000	.823
Coverage of 4G services	1.000	.711
Promotional and marketing activities	1.000	.927
Extraction Method: Principal Component Analysis.		

Table 1.6 Total Variance Explained: Extraction Method - Principal Component Analysis.

	Initial Eigenvalues		
Component	Total	Variance %	Cumulative %
1	5.633	29.650	29.650
2	2.457	12.931	42.581
3	1.888	9.939	52.520
4	1.517	7.982	60.502
5	1.310	6.897	67.398
6	.966	5.085	72.483
7	.818	4.308	76.791
8	.767	4.038	80.829
9	.624	3.286	84.114
10	.484	2.548	86.663
11	.476	2.503	89.166
12	.412	2.170	91.336
13	.399	2.100	93.436
14	.324	1.705	95.141
15	.306	1.609	96.750
16	.234	1.232	97.982
17	.172	.906	98.888
18	.162	.851	99.739
19	.050	.261	100.000

Rotation Sums of Squared Loadings			
Component	Total	Variance (%)	Cumulative (%)
1	4.141	21.794	21.794
2	2.504	13.179	34.973
3	2.236	11.769	46.742
4	2.195	11.552	58.294
5	1.730	9.105	67.398

Extraction Sums of Squared Loadings			
Component	Total	Variance (%)	Cumulative (%)
1	5.633	29.650	29.650
2	2.457	12.931	42.581
3	1.888	9.939	52.520
4	1.517	7.982	60.502
5	1.310	6.897	67.398

Table 1.7 shows the rotated factor matrix for the desired questionnaire. Tabachnick and Fidell [28] opined that variable with factor loadings more than 0.45 be chosen in this study because loadings equals to 0.45 is understood to be average, whereas loadings 0.32 is considered to be not so good. After performing Varimax Rotation Method with Kaiser Normalization, Factor 1 comprised of seven items with factor loadings ranging from 0.55 to 0.84. Factor 2 comprised of four items with factor loadings ranging from 0.46 to 0.87. Factor 3 comprised of two items with factor loadings of 0.936 and 0.949. Factor 4 comprised of three items with factor loadings ranging from 0.53 to 0.82. Factor 5 comprised of three items with factor loadings ranging from 0.56 to 0.61.

Table 1.7 Rotated Component Matrix

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
Promptness of coverage complaint resolution	.841				
Frequency of call drop and its resolution	.838				
Voice clarity	.761				
Prompt resolution to data service interruption	.681				
Interruption in voice based services	.636				
Responsiveness towards customers	.592				
Service activation	.557				
Internet data speed		.873			
Coverage of 4G services		.781			
Online services		.669			
Internet data service interruptions		.460			
Service provider's image			.949		
Promotional and marketing activities			.936		
Billing complaint				.820	
Prompt resolution to billing complaints				.798	
Tariffs and plans				.536	
Penetration of franchisee retail network					.616
Promotional offers					.616
Helpline and support centers					.564
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 8 iterations.					

Interpretation of Factors

Factor Number 1

Analysis of rotated component matrix at Table 1.7 highlights that "Promptness of coverage complaint resolution", "Frequency of call drop and its resolution", "Voice clarity" , "Prompt resolution to data service interruption", "Faults in voice based services" ,"Responsiveness towards customers" and "Service activation" have loading factors of 0.841,0.838,0.761,0.681,0.636,0.592 and 0.557 respectively. This highlights to the fact that factor 1 is a combination of seven variables. Hence factor 1 can be phrased as "**Prompt service delivery and responsiveness of service providers**".

Factor Number 2

Analysis of rotated component matrix at Table 1.7 shows that" Internet data speed", "Coverage of 4G services", "Online services" and "Internet data service interruptions" have loading factors of 0.873,0.781,0.669 and 0.460 respectively. This points to the fact that factor 2 is a combination of four variables. Hence factor 2 can be phrased as "**High speed internet service**".

Factor Number 3

Rotated component matrix at Table 1.7 highlights that "service provider's image" and "promotional and marketing activities" have loading factors of 0.949 and 0.946 respectively. This highlights to the fact that factor 3 is a combination of two variables. Hence factor 3 can be phrased as "**Image of service provider**".

Factor Number 4

Analysis of rotated component matrix shows that Occurrence of "Billing complaint", "Prompt resolution to billing complaints" and "tariffs & plans" have loading factors of 0.820,0.798 and 0.536 respectively. This means that factor 4 is a combination of three variables. Hence factor 4 can be phrased as "**Billing performance**".

Factor Number 5

"Penetration of franchisee retail network"," Promotional offers" and "Helpline and support" have loading factors of 0.616, 0.616 and 0.564 respectively. This points to the fact that factor 5 is a combination of three variables. Hence factor 5 can be phrased as "**Customer support".**

Table 1.8 Factors and its associated Names

Sr No	Factor	Name on the basis of inferences	Percentage of Variance
1	Factor 1	Prompt Service Delivery and responsiveness of Service Provider	29.650
2	Factor 2	High Speed Internet Service	12.931
3	Factor 3	Image of Service Provider	9.939
4	Factor 4	Billing Performance	7.982
5	Factor 5	Customer Support	6.897

The Scree plot displays the number of the factor w.r.t. its corresponding Eigen value. The Scree plot arranges the Eigen values from largest to smallest. It explains the first five factors, having Eigen value greater than 1, for the Total Variability in data (given by the Eigen values).

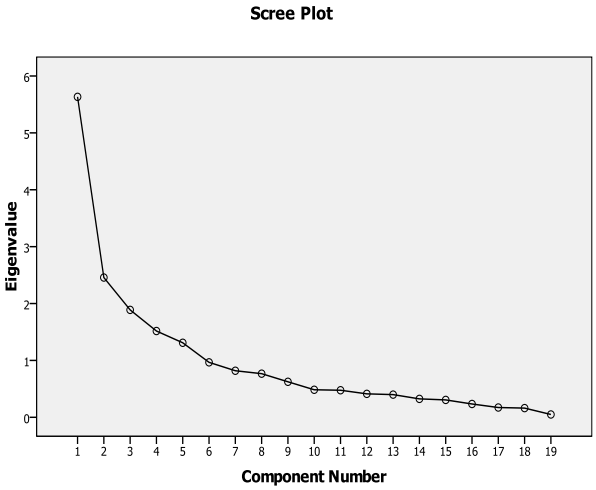

Figure 1.1 Scree Plot

D. Analysis of Satisfaction

a . Based on various zones of Gujarat

Table 1.9 Zone wise Customer Satisfaction

Particulars	Central Gujarat %	Factor Avg %	North Gujarat %	Factor Avg %	Saurastra %	Factor Avg %	South Gujarat %	Factor Avg %	Factor Designation
Promptness of coverage complaint resolution	59.8		73.2		58.9		65.3		
Frequency of call drop and its resolution	67.2		65		76.2		87.1		
Voice clarity	69.5		56.9		67.3		79		
Prompt resolution to data service interruption	64.1		46.3		57.4		79.8		Factor 1
Faults in voice based services	72.1	63.1	72.4	60.8	65.8	62.5	66.9	69.4	
Responsiveness towards customers	58.7		61		58.9		57.3		
Service activation	50.7		51.2		53		50.8		
Internet data speed	57.3		56.9		76.2		83.1		
Coverage of 4G services	58.7		52		78.2		78.2		
Online services	62.1	56.9	61.8	53.4	87.1	78.8	87.9	79.6	Factor 2
Internet data service interruptions	49.6		43.1		73.8		69.4		
Service provider's image	51.3	54.1	48.1	33.8	60.4	61.9	80.6	82.6	Factor 3
Promotional and marketing activities	57		19.5		63.4		84.7		
Occurrence of Billing complaint	64.4		17.9		69.3		86.3		
Prompt resolution to billing Complaints	53.8	61.5	20.3	26.5	54	63.8	85.2	86.7	Factor 4
Tariffs and plans	66.4		41.5		68.3		88.7		
Penetration of franchisee retail network	60.7		50.4		65.8		86.3		
Promotional offers	71.2	68	50.4	57.73	65.8	65.8	94	82.4	Factor 5
Helpline and support centers	72.1		72.4		65.8		66.9		

The respondents in this study were chosen from 4 different zones of Gujarat. Their responses towards satisfaction and with respect to the factored parameters of satisfaction from mobile services are tabulated in Table 1.9.

Analysis of the above data suggests that customer satisfaction in Prompt service delivery and responsiveness of service provider is best in South Gujarat while in north Gujarat the satisfaction level is worst. Satisfaction in terms of high speed internet services is again supreme in south Gujarat while north Gujarat stands in the bottom in this regard. In all the other parameters, like image of the service provider, billing performance and in terms of customer support, south Gujarat reigns supreme and North Gujarat is in the bottom of the rung.

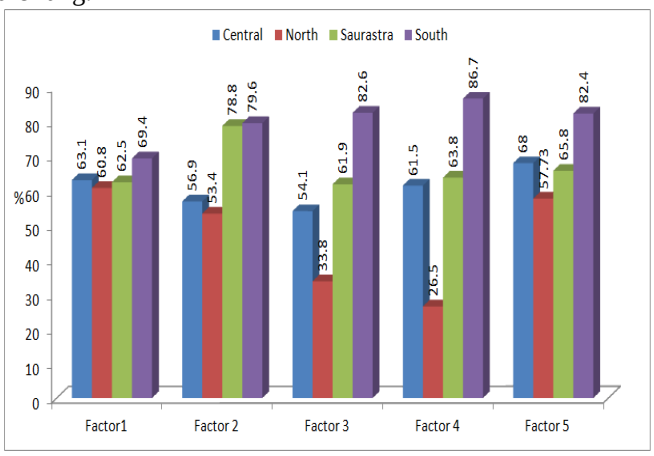

Figure 1.2 Zone wise satisfaction analysis (in Percent)

b. Based on Urban and Rural areas

The respondents in this study were chosen from various urban and rural areas of Gujarat. Their responses towards satisfaction and with respect to the factored parameters of satisfaction from mobile services are tabulated in Table 1.10.

Table 1.10 Area wise Customer Satisfaction

Particulars	Urban %	Factor Average	Rural %	Factor Average	Factor Description
Promptness of coverage complaint resolution	67.5	67.4	46.8	60.4	Factor 1
Frequency of call drop and its resolution	78.3		67.5		
Voice clarity	78.6		64.1		
Prompt resolution to data service interruption	65.7		63.7		
Faults in voice based services	71.2		68.8		
Responsiveness towards customers	58.8		59		
Service Activation	52.1		52.9		
Internet data speed	69.1	68	65.4	63	Factor 2
Coverage of 4G services	69.8		61.4		
Online services	74.4		70.8		
Internet data service interruptions	59		56.3		
Service provider's image	58.8	62.7	58.3	52.3	Factor 3
Promotional and marketing activities	66.6		46.4		
Occurrence of Billing complaint	69.8	68.4	53.6	54	Factor 4
Prompt resolution to billing complaints	60.8		46.8		
Tariffs and plans	74.7		61.7		
Penetration of franchisee retail network	67.1	72.7	62.7	63.7	Factor 5
Promotional Offers	80		59.7		
Helpline and Support Centers	71.2		68.8		

Analysis of above table suggests that satisfaction level of mobile users in rural areas in terms of prompt service delivery and responsiveness of service providers, high speed internet service, image of service provider, billing performance and customer support vis-à-vis urban area is lacking. Out of all the factors, image of service providers in the eyes of the respondents and billing performance in rural area is significantly lacking. Telecom service providers need to work judiciously to improve these factors in rural areas to increase tele density in the rural bands.

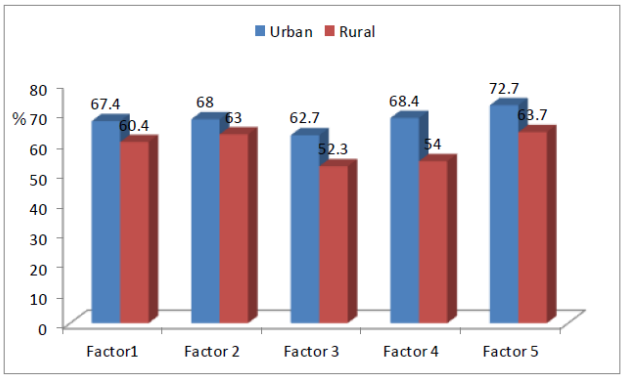

Figure 1.3 Area wise satisfaction Analysis

c. Based on Age groups

The respondents in this study were divided in four age groups. Their responses towards satisfaction and with respect to the factored parameters of satisfaction from mobile services are tabulated in Table 1.11

Table 1.11 Age group wise Customer Satisfaction

Particulars	13-25 years %	Factor Avg %	26-40 years %	Factor Avg %	41-60 years %	Factor Avg %	>60 years %	Factor Avg %	Factor Designation
Promptness of coverage complaint resolution	68.9	56.5	59.4	72	72	55.9	79.3	78.8	Factor 1
Frequency of call drop and its resolution	74.1		76.3		57.8		91.5		
Voice clarity	65.6		76.7		54.7		90.2		
Prompt resolution to data service interruption	51.4		71.9		50.9		76		
Faults in voice based services	47.2		92.4		57.3		85.4		
Responsiveness towards customers	45.3		68.7		51.7		73.2		
Service activation	43.4		58.6		47		56.1		
Internet data speed	73.1	70.5	71.9	69.8	53.9	54.8	62.2	64.9	Factor 2
Coverage of 4G services	72.6		68.7		55.6		64.6		
Online services	78.3		76.7		61.2		67.1		
Internet data service interruptions	58		62.2		48.7		65.9		
Service provider's image	56.6	51.6	73.5	69.1	53	51.05	31.7	60.35	Factor 3
Promotional and marketing activities	46.7		64.7		49.1		89		
Occurrence of Billing complaint	51.4	53.7	76.7	73.3	60.3	55.4	54.9	60.5	Factor 4
Prompt resolution to billing Complaints	49.5		64.7		51.7		40.2		
Tariffs and plans	60.4		78.7		54.3		86.6		
Penetration of franchisee retail network	58.5	59.4	77.1	85	50	51	87.8	89.4	Factor 5
Promotional offers	72.6		85.5		45.7		95.1		
Helpline and support centers	47.2		92.4		57.3		85.4		

The responses show that the elderly (greater than 60 years) are more satisfied towards Prompt service delivery and responsiveness of service providers' i.e factor 1 and customer support of their service providers' i.e factor 5 than any other age groups. The younger brigade (between 13-25 years) is the most satisfied age group towards high speed internet services of their service providers i.e factor 2. People in the age group of 26-40 years are most satisfied in terms of satisfaction towards the image and billing performance of their service providers.

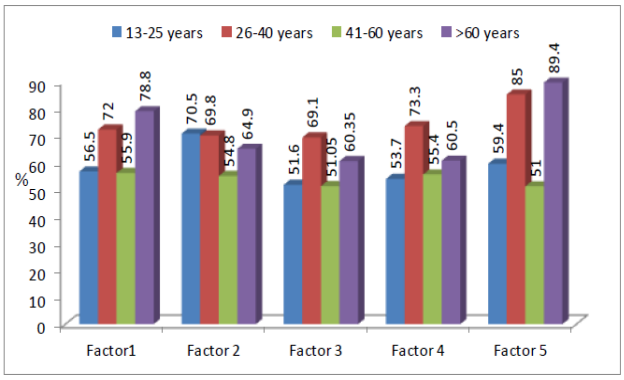

Figure 1.4 Age group wise satisfaction Analysis

VI. CONCLUSION AND FUTURE SCOPES

Under Factor Analysis, Significant Factors for parameters of satisfaction for mobile users were identified. Here, 19 Attributes were grouped under 5 factors, with their respective Factor Loadings. This study has revealed that the significant factors (Prompt service delivery and responsiveness of service provider, High speed internet service, Image of service provider, Billing performance and Customer support) are significant for mobile users satisfaction in Gujarat. It identifies the Service gaps between customer expectations v/s customer experiences. Enhancement of customer experience quality and satisfaction are the key issues for sustainability of telecom service providers. These findings will be useful to the telecom operators for enhancing the quality of service and improvement of their image. Analysis and implementation of the factors by the telecom companies can add towards customer acquisition and customer retention. From the perception analysis of the respondents from various zones of Gujarat suggests that South Gujarat region scored heavily in terms of mobile customer satisfaction compared to all the other zones. These observations can be quite handy for the telecom operators to plan and devise strategies related to sales and marketing along with optimization of mobile network .A comparative study of urban and rural Gujarat has clearly suggested that perceived satisfaction level of respondents belonging to rural areas are far less than their urban counterparts, which suggests that QOS at rural areas are not at par compared to the cities. This may be one of the very reasons of the yawning gap between urban and rural teledensity. As far as age wise analysis are concern, it is seen that young brigade are the most satisfied lot of high speed internet services compared to all other age groups.

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Telecom operators may plan some innovative measures like tariff plans, improved quality of service to increase the perceived satisfaction level of middle aged and senior citizens towards high speed internet services.

REFERENCES

1. Anderson, E. W., Fornell, C. and Lehmann, D. R. (1994). "Customer Satisfaction, Market Share, And Profitability: Findings From Sweden". The Journal of Marketing, 58(3), pp.53-66.
2. Barnhoom, C., (2006). "Customer satisfaction increases in the Telecommunications industry". Synovate Research Reinvented.
3. Chen A. H., et. al (2011). "The Causes of Customer Satisfaction in Telecommunication Services: An Empirical Study". Proceedings of the 7th International Conference on Advanced Information Management and Service.
4. Chen A., Lu, Y. Gupta, S. and Xiaolin,(2014). "Can Customer Satisfaction And Dissatisfaction Coexist? An Issue of Telecommunication Service in China". Journal of Information Technology, 29(3), pp.237-52. 5. Cheng, N., (2016).
5. Dehghan, A.; Zenouzi, B.; Albadvi, A. 2012. An investigation on the relationship between service quality and customer satisfaction: in the case of CCG CO, International Business Research 5(1): 3–8.
6. Fornell, C.; Westbrook, R. A. 1984. The vicious circle of consumer complaints, Journal of Marketing 48(3): 68–78. http://dx.doi.org/10.2307/1251330
7. Lawlay, D. N. & Maxwell, A. E. (1963), Factor Analysis as a Statistical Method. London: Butterworth.
8. R. A. Johnson and D. W. Wichern, Applied Multivariate Statistical Analysis. Fifth Edition. Prentice-Hall, Inc, Upple Saddle River, 2002
9. Carver, R. H. & Nash, J. G., Doing Data Analysis with SPSS. Thomson Brooks/Cole, Belmont, 2006.
10. Churchill, G. A. & Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. Journal of Marketing Research, 19(3), 491-504.
11. Folkes, V.S. (1984). Consumer Reaction to Product Failure: An attributional approach. Journal of Consumer Research, 398-409.
12. Fornell, C. (1992). A National Customer Satisfaction Barometer: The Swedish Experience. Journal of Marketing, 56(1), 6–21.
13. Nurdaulet Nurysh, Navaz Naghavi, Benjamin Chan Yin Fah (2019). Study on Factors Affecting Customer Satisfaction in Mobile Telecommunication Industry in Malaysia, *International Journal of Recent Technology and Engineering (IJRTE)*.ISSN: 2277-3878, Volume-7. Issue-5S. January 2019.
14. Md. Danish, Manjari Chakraborty.(2019). Measuring the Tourist Service Satisfaction: Factor Analysis based Study at Red Fort Complex.*International Journal of Recent Technology and Engineering (IJRTE).* ISSN: 2277-3878, Volume-7 Issue-5S, January 2019.
15. Negi, R. (2009). Determining customer satisfaction through perceived service quality: a study of Ethiopian mobile users. International Journal of Mobile Marketing, 4(1): 31–38
16. Jagdish N.Sheth, Atul Parvatiya.(1995). The evolution of relationship marketing .International Business Review,Volume 4, Issue 4, 1995, Pages 397-418.
17. La Barbera, P.A. and Mazursky, D. (1983). A Longitudinal Assessment of Consumer Satisfaction/Dissatisfaction: The Dynamic Aspect of the Cognitive Process. Journal of Marketing Research,20, 393-404. http://dx.doi.org/10.2307/3151443
18. BasriModding2, Baharuddin Semmaila2, Achmad Gani2.(2016). Journal of Business and Management Sciences, , Vol. 4 No. 4, 76-81
19. SUSAN FOURNIER, DAVID GLEN MICK.(1999).REDISCOVERING SATISFACTION, VOLUME: 63 ISSUE: 4, PAGE(S): 5-23
20. Eugene W. Anderson, Claes Fornell and Donald R. Lehmann.(1994). Customer Satisfaction, Market Share, and Profitability: Findings from Sweden. *Journal of Marketing.* Vol. 58, No. 3 (Jul., 1994), pp. 53-66
21. https://www.census2011.co.in/census/state/districtlist/gujarat.html
22. Gordon H.G.Mcdougall,Terrence Levesque,(2000)"Customer Satisfaction with services:putting perceived value into the equation",Journal of services marketing,Vol.14 Issue:5,pp.392-410,http://Doi.Org/10.1108/08876040010340937
23. Annika Ravald, Christian Grönroos, (1996) "The value concept and relationship marketing", European Journal of Marketing, Vol. 30,Issue:2 , pp.19-30, https://doi.org/10.1108/03090569610106626

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