Determinants of Customer satisfaction of mobile network providers : An Empirical investigation

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Abstract:
During last 20 years, the Indian Telecommunication sector has enriched lives and the way we live & communicate. The main objective of writing present research paper is to explore the list of significant factors/dimensions affects Customer Satisfaction / CSAT towards various cellular telecom service providers in state of Haryana. Although comprehensive theoretical and empirical studies are available in different parts of country & its states, which sheds immense light on significant factors heighten CSAT, but frequent changes during last decade in mobile telephony such as roll out of 4G technology and emerging new technology such as 5G and M2M, digital wallets introduction, intensifying rivalry among existing telecom players and new players entry in telecom cellular industry creating fuss for telecommunication industry in terms of attracting, sustaining and satisfying customer. This teething trouble directly gave an impetus to the current empirical study i.e. to list down important factors significant to customer satisfaction and also generates revenue for the firm. The Research methodology of the study is based on the primary data collection undertaken in the five cities of haryana state on a sample size of 350 mobile phone users. A 61 questions long structured questionnaire was administered including questions on demographic profile, current telecom operator, customer satisfaction and problems faced by them. This questionnaire is helpful to elicit the responses and opinions of users using telecom services. Data was collected and assessed using SPSS (Statistical package for social sciences) software. Moreover, Cronbach's coefficient alpha was used to find out reliability of the study and exploratory factor analysis was conducted to explore list of important determinants affects CSAT. The outcome of current empirical study revealed 10 dimensions in total, which influence the choice of customer, affects customer satisfaction and also benefit the mobile phone operators to attract & acquire new prospective customer as well as to satisfy and retain old customer. Moreover, these factors help the telecom business tycoons to frame their plans and offers i.e. marketing strategies accordingly.

KEYWORDS: cellular services, customer satisfaction, telecom industry, service quality, brand image, price, customized plans, sales promotional offer.

Introduction: India is a fastest developing country with open market democracy having population of people around 1.32 billion (According to United Nations Estimates, June 1, 2018). The result of marvellous efforts put by service sector and most importantly by telecom companies shows positive impact on GDP (Gross Domestic Product). Presently, the telecom sector is contributing 6.5 % to India's GDP and projected to contribute 8.2% by the end of 2020, according to report of Assocham India, 2017. This sector is the backbone of digital India, our government vision and   acting as fastest rising service industry having stupendous customer subscriber base/population of approximately 1206.22million (Wire line subscribers 22.81 million and wireless subscribers 1206.22 million.) The highly competitiveness between two market segments i.e. FSP's (fixed service providers) and CSP's(cellular service providers) of eight telco providers operating in haryana intensifying competition manifold which further have strong impact on RMS (Revenue Market Share) & CMS (Customer Market Share). Moreover, this sector is the life-blood of all other sectors and business organisations. Varoius sectors from Industry and Economy i.e healthcare, education, mining, manufacturing and market need services provided by telecom sector in form of voice calls, video calls, video conferencing, data, broadband service, technologies etc.. Hence, it is clear that just like Essentials of life i.e.*Water, air, food, clothing and shelter*, telecom sector become part and parcel of life.

The characteristics of Indian Mobile/Cellular Telecommunication Market:

> *MAJOR WIRELESS PLAYERS IN HARYANA (WITH CUSTOMER SUBSCRIBER BASE):*

S.NO.	WIRELESS SERVICE PROVIDERS	CUSTOMER SUBSCRIBER BASE (India)*	CUSTOMER SUBSCRIBER BASE (Haryana)*
1	M/S Vodafone India Limited	222697757	4002935
2	M/S Tata Teleservices limited	31189225	1321541
3	M/S Reliance JIO Infocomm limited	186560828	4770299
4	M/S Idea Cellular Ltd	211209603	5363143
5	M/S Bharat Sanchar Nigam Ltd	111679483	4476401
6	M/S Bharti Airtel limited	304191806	4002935

Subscribers means IN MILLION.

*** The above subscribers list was declared by MSPs(Mobile Service Providers)*

Source: www.trai.gov.in, Press Release No. 56/2018, pp. 14-15

> *OPERATIONAL PERFORMANCE INDICATORS:*

S.NO.	PARTICULARS	WIRELESS SUBSCRIBERS
1	Total Telephone Subscribers	1183.41*
2	Urban Telephone Subscribers	662.18 *
3	Rural Telephone Subscribers	521.23 *
4	Overall Teledensity	91.09 **
	• Urban	161.17 **
	• Rural	58.67 **
5	Broad Band Subscribers	394.65 *

Subscribers means IN MILLION

*** means IN PERCENTAGE*

Source: www.trai.gov.in, Press Release No. 56/2018, Highlights of Telecom Subscription Data as on 31st March, 2018, pp.1

Paper type: Empirical Research Method

Objective of the study: 1) To identify the factors that influencing customer satisfaction in mobile/ cellular telecommunication market in Haryana.

    2) To provide suggestions to the SP's (Service Providers) on the key findings of the research.

Definition and Measurements of variables affecting customer satisfaction in telecommunication sector with hypothesis development:

Service Quality: The concept of service quality is an idea which is abstract in nature (Parasuraman Zeithmal, and Berry, 1985, 1988; Carman, 1990). It's not possible to describe and delineate the term "service quality" in one line because of substantial research done by various researchers and opinions given by many academicians and practitioners (Holbrook, 1994). Service quality is viewed as a principal instrument to consider total quality (Parasuraman et. al, 1988, 1991). Another definition of quality given by Czepiel, 1990 states that it is considered as an essential indicator to attract & sustain relationships with customer. Therefore, this determinant is helpful in gaining a perpetual competitive advantage (Boshoff & Gray, 2004). In operations management, SQ includes two dimensions to satisfy customer. First, features of the product & its suitability of use and second, error/fault free product or service (Holbrook, 1994). Initially, In 1988, service quality 5 dimensional framework was used by telephone Companies, insurance companies, banks, securities and brokerage to find customers opinions and elicit responses about services by using 22 items and five sub dimensional framework i.e. Reliability, Responsiveness, Tangibility, Assurance, and Empathy. These five dimensions entitled as SERQUAL MODEL (Brensinger&Lambert, 1990; Carman, 1990; Parasuraman 1985, 88.91; Woodside 1989) .This model is widely accepted and appreciated by managers (Parasuraman, Zeithmal, and Berry, 1991), academics (Babakus & Boller, 1992; Carman, 1990, Crompton & Mackay, 1989; Woodside, 1989) ,practitioners and researchers (Carman, 1990; Dabholkar, 1996). But later on it was found many issues related with discriminant validity, variance and reliability were making model unfit due to many gaps therefore, this model disapproved by many researchers and academicians and the PZB robust and generic model, SERQUAL was replaced by new model given by by Groonos, Cronin& Taylor (1992) known as SERPERF, Service Quality with Perception only. This model is used to measure service quality (performance only) in cellular mobile telecommunication industry (Dabholkar et.al., 2000). This fresh superior Performance- Perception methodology is very useful to measure service quality in various sectors by using the same SERQUAL-FIVE dimensional structure comprises reliability, responsiveness, assurance, empathy, tangibility etc. along with same 22 items of serqual model. This is popularly known as **Functional Quality** aspect of any product/service but unfortunaltely in telecom sector, this methodology is unable to assess overall service quality because of its non comprehensiveness. This functional quality aspect is not giving consideration to technical aspect or customer perceived service quality which is an important aspect of product quality. So, the current research paper demands another methodology for telecom sector which is useful in overall assessment of service quality. Therefore, an approach termed as an INTEGRATED APPROACH OR METHODOLOGY which covers both aspects of telecom sector i.e. functional quality aspect and technical quality aspect. Gronroos, 1984 explained the need of both aspects in order to get customer satisfaction from QoS (Quality of Service). A shift from voice/call centric domain to data/internet centric domain requires good network/product quality. Hence, it is clear that technical quality construct, a service quality determinant is an essential sub dimension in satisfying customer (Spring & Machoy, 1996).

Furthermore, a new dimension i.e. convenience is also added to the functional quality aspect along with five dimensions to make study more exhaustive and inclusive.

Brand image: In 1955, Gardner and levy has propunded the concept of 'brand image' as an important intangible asset. As many years passing by, its importance increases many fold and building brand image is considered as an important construct in satisfying and attracting customer. Therefore, this concept should be taken care by companies in order to preserve and maximise the growth of brand. The research findings of study conducted by Svendsen, G.B. et.al., 2013 highlights the importance of brands and shows that a strong brand image helps the service providers in reducing churn rate and heighten customer satisfaction. The findings of this study is consistent with findings of another study conducted by Malik, M.E. et.al. in Pakistan telecommunication sector and concluded that building brand image and equity is an important imdictaor in creating and satisfying customers. Therefore , brand image is considered as an important determinant of marketing.

Customized Plans and Sales Promotional Offers: Appealing and Eye- catching customized plans and sales promotional offers have significant effect on increasing CMS (Customer Market Share) and RMS (Revenue Market Share). Moreover, designing of these plans and offers is very crucial task for service providers because it has direct impact on profits i.e. ARPU (Average Revenue Per User).
Customized plans means "*Design plans for Customer by Customer*". Now-a-days, service providers provides free applications online to help customer in designing plans of own choice and telecom operators like Vodafone , idea and airtel have successfully launched online applications like Smart Assistant Digital Advice Solutions to help customer in designing plan as per their need and desire. Promotional tools are the aids in cash or in kind which act as an inducement for customer and have positive impact on sales. Advertising, Direct Marketing, Internet Marketing, personal selling and Sales Promotional tools are the five significant elements of promotion to produce loyal,satisfied and happy customer in long run. A study conducted by Srinivasan, S.S. et. al. ,1998 explain the importance of promotional tools i.e. cash back, bonus pack, price off/ discount etc. in building brand image, rising profits/ revenue and maximising sales. Moreover, another study by Abedin, M.Z. et.al ,2015 consider promotions as the significant marketing activities. Therefore its clear that sales promotional tools and customized plans both are imperative in influencing choice of customer while making purcharse decision for new connection.

Price/ call and data charges: Price is an amount of money, expressed in financial terms charged from buyer for the product and service rendered (Kotler and Armstrong, 2010). According to telecom terminology, the term price means all rentals, charges, tarrifs for calls made and data used. Khan, S. and Afsheen, S. ,2012 in their study explained that a good pricing plan always give precious contentment to customer.
Yadav, R.& Dabhade, N. explained that price fairness is most influencial factor than any other factor i.e. customer services*.* Another study conducted by Ahasanul Haque, Sabbir Rahman, Mahbubur Rahman, 2010 has consistent results and showcased the importance of determinant price chased by SQ, technical quality and promotion. Many studies consider call and data charges or pricing structure as an important factor in telecom sector while making choice of cellular service providers (Muzammil Hanif et.al, 2010; Pandiya, D. et.al.,2014, Balakumar, V. et. al, 2014;

Abdul, F. et.al.,2014; Buvaneswari, R. et.al, 2013; Patel, D., 2015.
therefore, it is apparent that pricing structure is a noteworthy feature in satisfying customer. In the currrent study, the researcher considered the factor price/tariff which includes both call tariff and data tariff .

**Customer Satisfaction in Telecommunication: Observations from literature:**

Table: Select renowned works in Customer Satisfaction Measurement in mobile telecom industry in India or in World. These four factors i.e. F-1, F-2, F-3, F-4 are discussed by many research papers as shown by table below:

| | | F-1   SERVICE QUALITY | | | | | | | F-2 | F-3 | F-4 |
| | | 1(A) FUNCTIONAL QUALITY | | | | | | 1(B)TECHNICAL QUALITY | | | |
AUTHOR	YEAR	REL	RES	ASS	EMP.	TAN.	CON.	CNTW+DNTW	B.IMG.	C.PLANS, SALES P.OFFERS	CP & DP
Yadav, R.& Dabhade, N.	2013	Y	Y	Y	Y	Y		Y		Y	Y
Iqbal, A.	2010		Y	Y				Y			Y
Eshghi, A. et.al	2008	Y	Y	Y	Y	Y	Y	Y	Y	Y	y
Pandiya, D. et. al	2014		Y							Y	Y
Balakumar, V. et. al	2014					Y		Y	Y		Y
Sharma, R.	2014	Y	Y	Y	Y	Y	Y	Y		Y	
Abdul, F. et.al.	2014							Y	Y		Y
Vats, G.	2014	Y	Y	Y	Y	Y	Y	Y			
Emerah, A.A.	2013	Y	Y	Y	Y	Y	Y	Y		Y	Y
Khan, S.A. et.al	2013	Y	Y	Y	Y	Y	Y	Y			
Kiran kumar, A.C. et. al								Y	Y	Y	Y
Ratnesh, K. et.al	2013		Y	Y			Y	Y		Y	Y
Arokiasamy, A.R. et.al	2013	Y	Y	Y	Y	Y		Y			Y
Zaim, S. et.al		Y	Y					Y	Y		Y
Almossavi, M. et.al	2012		Y				Y	Y		Y	Y
Khan, S.	2012		Y					Y		Y	Y
Buvaneswari, R. et.al	2013						Y	Y	Y		Y
Patel, D.	2015							Y	Y	Y	Y
Rajpurohit, R.C.S. et.al	2011		Y				Y	Y	Y	Y	Y
Kim, M. et.al	2004	Y	Y				Y	Y		Y	Y
Makkar, U. et.al	-----	Y	Y	Y	Y	Y	Y	Y		Y	Y
Rahman, M.S. et.al	2016	Y	Y	Y	Y	Y	Y		Y		Y
Henry, B. et.al	2013	Y	Y	Y	Y	Y	Y		Y		Y
Shakir, H. et.al	2010	Y	Y	Y	Y	Y	Y	Y	Y		Y
Rahman, S. et.al	2010	Y	Y	Y	Y	Y	Y			Y	Y
Total		14	20	14	12	13	15	21	11	14	22

'Y' means *'Yes'. Here, 'Y' means the factors explored and studied by previous researchers in their studies and blank space means not considered by concerned research study.*

Here REL means Reliability, RES means Responsiveness, ASS means assurance, EMP means Empathy, TAN means tangibility, and CON means Convenience, B.IMG. means Brand image, C. plans & Sales P. Offers means customized plans and sales promotional offers and CNTW & DNTW means call and data network, CP & DP means call and data price. In the current study all these factors are taken into consideration because all the factors are considered as important and supported by previous researchers. On the basis of the extensive ROL available, a theoretical frame/ structure have been prepared with the help of conclusions and suggestions given by previous studies & researchers. This structure elaborated that there is relationship between customer satisfaction and its determinants.
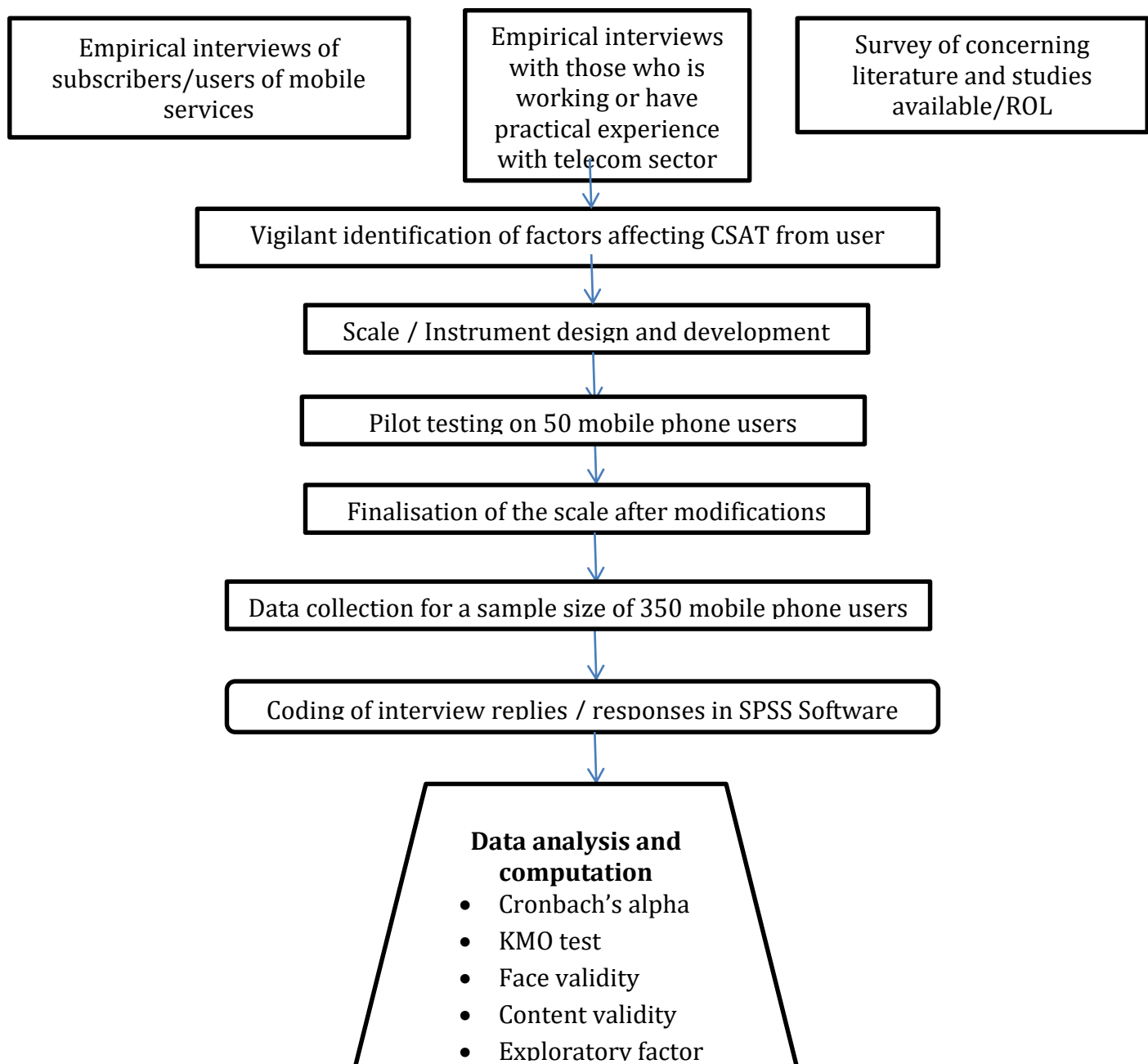
Model construct/ Theoretical framework
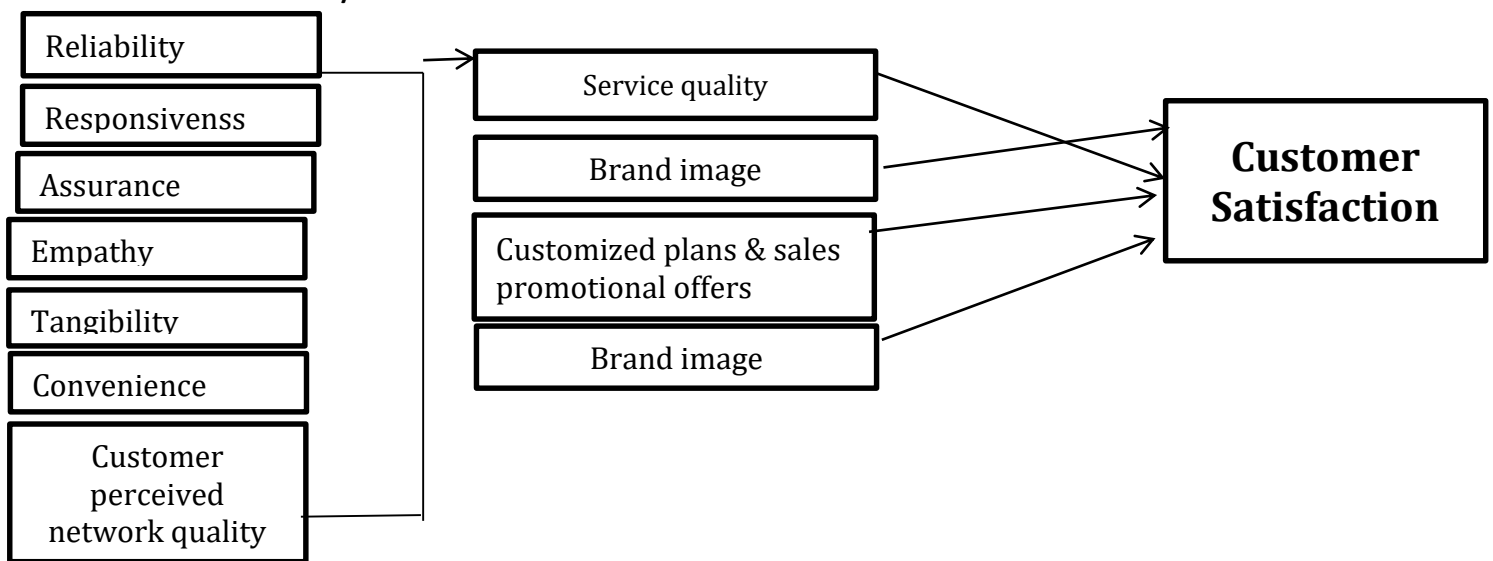
Development of survey instrument:

Major divisions	Questions	Open ended questions	Multiple choice questions	Likert-5 point scale type questions	Total
General & demographic information	Gender Age Occupation Education Family income Marital status Residential area	1	1 -- 1 1 1 1 1	-----------	7
Telecom operator details	Name of operator How long use Prepaid/ post-paid M.Expenses Services used	------------	1 1 1 1 1	------------	5
Customer satisfaction level	Statements (From 1 to 55)	-------------	------------	50	50
Total	----------------	1	11	50	62

Research Methodology

Research methodology is a systematic way or science to study and solve a research problem logically and scientifically. In this research paper, the researcher conducted an empirical survey in order to investigate customer satisfaction towards various telecom service providers operating in Haryana. For this very purpose, a stepwise layout was prepared by the researcher to measure customer satisfaction in cellular industry from customer perspective i.e. mobile user perspective.

Empirical interviews of subscribers/users of mobile services	Empirical interviews with those who is working or have practical experience with telecom sector	Survey of concerning literature and studies available/ROL

Vigilant identification of factors affecting CSAT from user

Scale / Instrument design and development

Pilot testing on 50 mobile phone users

Finalisation of the scale after modifications

Data collection for a sample size of 350 mobile phone users

Coding of interview replies / responses in SPSS Software

Data analysis and computation
- Cronbach's alpha
- KMO test
- Face validity
- Content validity
- Exploratory factor

Design of the study: Research design and Sample design

Research Design:

The current research paper is a type of an experimental study or data based research. These empirical types of studies are deliberated as ideal and most powerful among all types of studies to test hypothesis(C. R. Kothari and Gaurav Garg, Research Methodology: methods and techniques,

page no -3) .In this study, the researcher adopted the conceptual structure within which research is conducted is combination of both designs i.e. ***EXPLORATORY and DESCRIPTIVE.***

Sample Design:

In practical life, it is infeasible to gather responses and opinions from very large and infinite population. So, by keeping the mind the problems of cost and time, in current study the researcher collected responses via sample taken from the population and represent the population correctly. The phases included in sample design are given in table below:

1	**Objective**	To investigate the factors affecting customer satisfaction towards various telecommunications service providers in haryana.
2	**Universe**	Complete subscriber base / mobile phone users in haryana.
3	**Population**	Subscriber base / mobile phone users in 5 administrative blocks in Haryana.
4	**Sample size**	350 respondents are taken to collect responses in the study.
5	**Area**	Ambala, Rohtak, Gurgaon, Hisar, Karnal and Faridabad.
6	**Sampling Technique**	Multi stage cum convenience sampling technique

Research Approach: The researcher used *survey method* to collect responses from 400 mobile phone users in various parts of haryana, especially 5 significant blocks of Haryana.

Data collection: In the current study, the researcher used questionnaire method to collect responses or required data .The researcher employed two methods to collect responses from the respondents. First, face to face interaction with respondents i.e. by personally helping them in understanding questions stated in the questionnaire and Second getting remaining questionnaire filled through email and post. The period of data collection is from *September, 17 to March, 18.*

The multistage cum convenience sampling technique was employed by the researcher to collect responses and elicit opinions. Finally 400 questionnaires were distributed on the basic of telecom operator market quota. Out of total number of questionnaires distributed, 380 were received with a response rate of 95%. Further, 30 more questionnaires were rejected due to problems of incomplete responses given in questionnaire. Five point rating scale was used to measure the responses. The scale was selected on the basis of previous theories or literature review available. This scale ranging from *"strongly disagree" to "strongly agree"*

Data Analysis and Results with Interpretation: The responses given by 350 mobile phone users of various telecommunication service providers was firstly collected, then coded and analysed using SPSS. Statistical package for social sciences is a great tool which provides various options to check reliability or consistency of data. Moreover, this tool helps the researcher to explore significant factors leads to consumer satisfaction.

1	First phase of Data analysis	Check reliability/ consistency of data.
2	Second phase of data analysis	Check sample adequacy.
3	Third stage of data analysis	Find the factor structure with the help of EFA (Exploratory Factor Analysis).

Assessment of reliability analysis: The underlying objective of the current study is to find out the important constructs or determinants influencing customer satisfaction towards various telecommunication service providers in haryana. Before conducting factor analysis, the foremost step is to compute reliability (both overall and construct wise) to check the internal consistency

of data. The reliability test of items was computed by coefficient of alpha known as ***Cronbach's alpha*** given by Cronbach's in 1951. For a reliable measure, values of alpha should be greater than 0.7 (Nunally, 1978), in middle of 0.65 to 0.75 (Kroz et.al, 2008), greater than 0.6 (Mohd. Salleh Abu et.al, 2001) . The results revealed by the current study shows that overall alpha is 0.9 and the alpha coefficient of all the items ranged from 0.82 to 0.94 as given in *Table: 1, Reliability scores* Hence, it is concluded that present research paper had good consistency i.e. great consistency value.

TABLE 1: RELIABILITY SCORES: Cronbach's Alpha

Parameters of Customer Satisfaction

DIMENSIONS/CONSTRUCT	SUB-DIMENSIONS	NO OF ITEMS	CRONBACH'S ALPHA
(**1**)SERVICE QUALITY	Reliability	4 ITEMS	**0.826**
	Responsiveness	5 ITEMS	**0.874**
(α =0.913)	Assurance	4 ITEMS	**0.759**
	Empathy	6 ITEMS	**0.881**
	Tangibility	4 ITEMS	**0.883**
	Convenience	5 ITEMS	**0.894**
	Perceived network quality	6 ITEMS	**0.941**
(**2**) BRAND IMAGE	Brand image	5 ITEMS	**0.910**
(**3**)CUSTOMIZED PLANS AND SALES PROMOTIONAL OFFERS	Customized plans and sales promotional offers	6 ITEMS	**0.900**
(**4**) PRICE/ CALL & DATA CHARGES	Price/ call and data charges	4 ITEMS	**0.829**
TOTAL= 4 constructs	**10 Sub dimensions**	**49 ITEMS**	**0.925**

Assessment of Sample Adequacy: Factor analysis is a data hungry technique which requires large sample size. Measures like KMO and Barlett's test of sphericity helps the researcher to check the appropriateness of sample size and a sample adequacy gives positive signal to further proceed for factor analysis successfully. The current paper spss output for factor analysis reveals that KMO VALUE is **0.881** which is greater than minimum acceptable limit of 0.6 given under KMO statistic (Kaiser & Rice, 1974). Generally the value of KMO statistic varies from 0 to 1. If the measure values of KMO statistic of a study closer to 1, it's clear indicator of suitability of factor analysis. The value is 0.000 in case of Barlett's Test of sphericity .This value is also acceptable and significant. Hence, it's clear that sample is adequate enough according to the results of Kaiser Normalization; the researcher can successfully proceed for FACTOR ANALYSIS. The results are given below;

TABLE 2: SAMPLE ADEQUACY:

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.881
Bartlett's Test of Sphericity	Approx. Chi-Square	10327.996
	Df	1176
	Sig.	.000

Assessment of factor structure: Using factor analysis: In social sciences and behavioural sciences research, F.A. is most frequently used empirical method which reduces or condenses big set of measured determinants in few categories called factors/ latent factors i.e. unobserved variables. It's the most popularly used multivariate technique which employed three important methods. The methods are *the centroid method*, *the principal component methods* and the

maximum likelihood method. The current study adopts the most popular method i.e. principal component method. Steps involved while running factor analysis:

Stage-1➜Click on **Analyse**, select '**Data Reduction'** and then **Factors**

Stage-2➜Select all the variables and put in the variable list

Stage-3➜a) Click on descriptive and select **KMO and Barlett's test of sphericity**

   b) Choose method "**principal component**"

   c) Select **Varimax** method of rotation

   d) Click on options, under this tick the option **sorted by size** and **suppress small coefficients** less than 0.4

   e) Then press '**ok**' and output will appear.

➤ Output file reveal results of factor analysis that there are total 10 numbers of factors which influence the choice of customers towards telecommunication service providers in Haryana, as explained by table 3. Firstly, these factors are selected on the basis of their eigenvalues. Selection of any significant variable needs Eigen value>1, otherwise the factor is least or non-significant. Extracted sum of squared loadings of table3 shows that the last 10th factor Eigen value is 1.434 which is greater than 1. Hence only 10 factors are significant because 11th factor Eigen value is less than 1. Moreover, the results reveal that these 10 factors (selected on the basis of Eigen values) explained total amount of variance 70.486 which is very good. According to hair et.al in his seventh edition book Multi Variate Analysis, pp. 114 evidence that 60 percentages or higher variance explained is sufficient enough to proceed further or to make factor models. Another criterion to check while making factor models that communality values should exceed 0.5 and the current study fulfil this criteria too. After reviewing results of communality, it was found that the values lie within the communality table are relatively large (greater than 0.5) for all variables which signifies the data set fitness. Hence, none of the statement is removed in this step. Every statement is taken into account for further analysis.

FACTOR ANALYSIS RESULTS:

TABLE3: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.256	22.971	22.971	11.256	22.971	22.971	4.895	9.990	9.990
2	3.998	8.160	31.131	3.998	8.160	31.131	4.253	8.680	18.670
3	3.672	7.493	38.624	3.672	7.493	38.624	3.941	8.042	26.712
4	3.139	6.405	45.029	3.139	6.405	45.029	3.888	7.934	34.646
5	2.755	5.621	50.651	2.755	5.621	50.651	3.518	7.179	41.826
6	2.554	5.212	55.863	2.554	5.212	55.863	3.408	6.955	48.781
7	2.180	4.449	60.312	2.180	4.449	60.312	3.017	6.156	54.937
8	1.907	3.891	64.203	1.907	3.891	64.203	2.711	5.532	60.469
9	1.645	3.356	67.559	1.645	3.356	67.559	2.514	5.132	65.601
10	1.434	2.926	70.486	1.434	2.926	70.486	2.394	4.885	70.486

TABLE4: Rotated component matrix
(Factor extraction results of customer satisfaction matrix)

STATEMENTS	ITEMS DESCRIPTION	COMPONENT									
		1	2	3	4	5	6	7	8	9	10
DNTW_4	Provides fast Internet browsing speed and data services.	.855									
CNTW_2	The company has wide network coverage in rural as well as urban areas.	.845									
DNTW_6	3G /4G services are offered by my telecom operator.	.838									
CNTW_3N	I don't face regular problem with voice quality / voice clarity.	.837									
CNTW_1N	My call connects either in the Ist attempt or during the conversation of call.	.834									
DNTW_5N	My internet speed is good & it takes less time to download any apps or data from website.	.833									
PO_2	Provider special festival offers from time to time		.828								
PO_3	Offers provided by my service provider are value for money		.812								
PO_5	My operator offers free coupons, bonus points, cash back offers, freebies from time to time		.811								
PO_4	No roaming charges on data pack and voice plans.		.799								
PO_6	Provides additional applications like Games on Demand/ Music on Demand etc.		.781								
PO_1	I am offered options for recharges of data & call plans From low to high vaue.		.760								
BI_5N	I feel that my service provider follow business values and ethics.			.859							
BI_3	I feel that my service provider is famous and leader in its field.			.853							
BI_4	I feel that my service provider is committed and loyal to its promises.			.847							
BI_2	I feel that my service provider has good brand name and image in the market.			.832							
BI_1	I feel that my service provider is socially responsible.			.817							
EM_3	Call Centre employees can speak the language (English /Hindi) of my choice.				.809						
EM_2	Service centres are open on all working days & are easily accessible.				.790						
EM_5	Retail outlets for recharge and bill payment are easily accessible.				.747						
EM_4	My telecom operator understands my specific needs. (For e.g. what kind of plans, I would like to activate).				.745						
EM_6	My operator pushes alerts, in case my usage exceeds to average monthly limit.				.733						
EM_1	The staff gives individualized attention to me & to my queries.				.700						
C_3	Ease of registering complaints and queries.					.812					
C_2	Ease of balance enquiry and detailed summary of call bills, SMS, data & VAS (value added services).					.811					
C_4	Ease of blocking SIM, getting new SIM & getting PUK (personal unblocking key) in case of SIM theft/lost.					.795					

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		1	2	3	4	5	6	7	8	9	10
C_1	Adequate working hours are given by the staff to solve problems (means less waiting time).					.792					
C_5	I get enough options for bill payments & recharge through debit/ credit card, mobile wallets, net banking and paytm etc.					.698					
RE_5N	Service provider's staff doesn't appears to be very busy while responding to my complaints.						.814				
RE_1	Provides fast services such as new number activation, new call and data pack activation, caller tune activation & instant call alerts etc.						.806				
RE_3	Customer Care staff responded to my complaints very nicely.						.803				
RE_4	Customer Care services are available round the clock i.e. 24/7.						.788				
RE_2N	Whenever toll free number is called, my requests & queries are taken care of.						.780				
TA_2	Attractive & comfortable sitting arrangement at reception of customer care centre.							.850			
TA_3	Office staffs at service centres are well dressed.							.830			
TA_4	Updated information & relevant material associated with the products (e.g. brochure & booklets of promotional schemes) are readily available at the service counters.							.822			
TA_1	Latest facilities, like top up, free Wi-Fi are available at the service centres							.766			
CT_1	Tariff charges of my telecom operator are fair & genuine.								.829		
CT_3	Offers data services at fair prices.								.820		
CT_4	Various data plans are offered by my operator as per my need (from very low value to high value /denominations).								.794		
CT_2N	I would not like to switch to other service provider if rates are less, even if it offers poor services.								.739		
R_2	Informs me timely about progress of my complaints.									.759	
R_1	My telecom operator/mobile company provides services as per their commitments.									.733	
R_3N	Unnecessary deductions and charges are levied by my operator.									.732	
R_4	Provides error less detailed bill summary of voice (calls) & internet.									.659	
AS_3	I feel secure in providing my sensitive information (e.g. Aadhar card no.) at the time of taking connection.										.743
AS_4	Courtesy and politeness is shown by staff at service centre.										.740
AS_2	The service personnel are technically smart to handle all issues.										.727
AS_1	At the time of taking a new connection, concerned staff extended full help & shown friendly behaviour towards me.										.692

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 4 reveals that total number of factors is 10. All factors have amazing factor loadings ranges from 0.659 to 0.859. The table clearly shows the sequence i.e. the first significant factor is, CNTW

and DNTW followed by customized plans and sales promotional offers. The third significant factor is brand image chased by empathy, convenience, reliability, tangibility, call tariff, responsiveness and last but not the least is assurance.

Hence, it is clear from the current empirical study that the most significant factor affect customer satisfaction is customer perceived network quality and least important factor is assurance.

Limitations of the study and direction to future research:

- The mobile users/ cellular customers are scattered world-wide. The current empirical paper is given due consideration to six cities of Haryana state only. Hence, this study is narrow in terms of geographical coverage area.
- Another limitation is that the sample size chosen for this study is very less i.e. 350. For more appropriateness while generalizing results, sample size should be increase by succeeding studies to empirically establish the findings of this study.
- Limited time factor is also the restraining force.

Conclusion: The results showed by current study showcased four dimensions/ construct, consisting 10 sub dimensions are the important factors successfully explored and empirically checked using Exploratory factor Analysis. The hypothesis set was well proved that all 4 factors are significant in cellular market.The name of the factors explored were given:

 Fact 1: Service quality includes functional quality & technical quality with alterations

Fact 2: Brand image

Fact 3: Customised Plans and Sales Promotional offers

Fact 4: Price/ call & data structure.

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