

A STUDY OF THE IMPACT OF SERVICE QUALITY ON CUSTOMER SATISFACTION USING SERVQUAL MODEL

(With special reference to Airtel & BSNL in Western Uttar Pradesh)

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Abstract

The study revolves around the measurement of service quality of two different telecom service providers in terms of comparison. The study used exploratory and quantitative design towards the measurement of causal relationships and to arrive at taking the inferences from the results. The base of this study is the SERVQUAL model which was used for this comparative study research. The study was carried out with only 384 samples. The responses of the 384 respondents on both the telecom companies were put to the analysis and the results were interpreted in the sequence of demographic profile, common method variance, reliability analysis using the base of Cronbach's alpha values, confirmatory factor analysis, constructs validity (Convergent and discriminant validity).

Keywords: Telecom Sector, Public and Private, SERVQUAL Model.

Introduction

The telecom industry of India is the fastest growing industry in the world because of the rapid growth in the communication sector. India has the second-largest number of the mobile subscriber's more than one billion subscribers in the world after China (Indian brand equity Foundation, 2012). The cut-throat competition in the telecom sector has resulted in the lowering of prices for the services thus opening the market for new customers. Price is no longer the decisive factor in purchasing decisions however the quality of services has emerged as the key determinant for the consumer purchases. The intangibility of the quality of services makes it difficult to measure and maintaining the uniformity becomes a tedious task. In the present competitive scenario, it becomes pertinent for the firms to maintain sustainable services of high quality. Every adult and even the kids keep the cell phones in their close vicinity even during leisure time (Oyatoye, Adebisi & Amole, 2015). This telecom sector is becoming competitive day by day due to new evolving and advance technologies therefore the players in this sector are looking for markets all over the world (Hossain & Suchy, 2013). (Lehtinen and Lehtinen, 1982) discovered the three dimensions of service quality named physical quality, corporate quality and interactive quality. (Gronroos, 1984) referred to three dimensions of service quality like functional dimension which refers to the performance of the services, technical dimension refers to what the customer gets and corporate image refers to how the customers perceive the service organization. (Parasuraman et al, 1985) developed GAP Model a service quality model based on GAP analysis. Later in 1988, they developed a SERVQUAL model using five dimensions Tangibles, empathy, Assurance, Reliability and responsiveness. (Wang and Io, 2002) added one more dimension network quality in the SERVQUAL model to measure the service quality and found that the network quality and empathy are most important drivers of service quality and that each service quality dimension has a significantly positive impact on customer satisfaction. (Seth et.al, 2008) also adopted SRVQUAL model with some modification and added convenience and customer perceived network quality dimensions along for the study of cellular mobile services in the Indian telecom sector and found that responsiveness is the most important dimension to enhance service quality. (Negi, 2009) investigated the role of service quality in overall satisfaction for the mobile subscribers and added network quality, complaint handling and service convenience with SERVQUAL scale. (Kim et.al, 2004) revealed that service quality has a positive impact on customer satisfaction for cellular mobile services and call quality has an impact on customer satisfaction. (Barnhoorn, 2006) included courtesy, ease of availability, recharge, affordable prices

as some dimensions for service quality for South African mobile users. (Santouridis & trivellas,2010) suggested six quality dimensions including quality of networks, value-added services, mobile devices, customer services, pricing and billing system for the mobile users of Greece and the findings revealed that customer service and pricing structure have a positive impact on the customer satisfaction and loyalty of the customers.(Hosseini et.al ,2013) proposed and validated multidimensional measurement model of service quality for Iranian mobile service users where value-added services, pricing plans and service convenience were the most important out of seven dimensions of perceived service quality.

Review of Literature

The review of the previous studies focused on the growth, development and innovations in the telecom industry. The reviews of literature helped to identify the research gap for the study. (George P. Wioschis & Gilbert A. Churchill Jr., 1979) found in their study that the young generation has significantly greater economic motivations for consumption. The study also suggests that the product or service attributes play an important role in decision making of the consumer which is different for a different consumer. Due to this, the companies need to adjust their marketing mixes accordingly to have an impact on the consumer decision-making process. (Parasuraman A. et al., 1988) carried out their study on service quality and identified the contributing factors for service quality. The factors identified are tangibility, reliability, responsiveness, assurance and empathy. The items in SERVQUAL are arranged into the five distinct dimensions which are as Tangibles, Reliability, Responsiveness, Assurance, and Empathy. (David L. Loudon and Albert J. Della Bitta, 1993) in their book 'Consumer Behaviour' describes the Consumer decision processes as a four-stage model consisting of Need recognition, search for information and evaluation of alternatives, purchase process and post-purchase behaviour.(Colin Gilligan et.al. 1995) in their book 'Strategic Marketing Management' observed that the market position determines the marketing strategies of the organizations.(Zeithaml & Bitner, 1996) argues that the characteristics of services which are intangibility, heterogeneity and inseparability make them difficult to measure and evaluate as compared to tangible goods. (Fornell C. et al., 1996) argued that perceived quality, have a direct and positive impact on overall customer satisfaction. They emphasized that the overall customer satisfaction, has three antecedents, they are perceived service quality, perceived value and customer expectation. 'The services marketing system consists of seven Ps (Booms & Bitner, 1981) the 4Ps are the traditional Product, Price, Place, Promotion and the remaining three are Process, Physical evidence and people. The four features referred to as 4I's (Dotchin and Oakland, 1994; Hope and Muhlemann, 1997) are as Intangibility, Inconsistency, Inseparability and Inventory. (Lars Grønholdt et al., 2000) conducted the study for finding out the relationship between customer satisfaction and customer loyalty. They developed a model which links customer satisfaction to its elements which in turn leads to customer loyalty. (Carl E. Batt & James E. Katz, 1998) focused their study on the spending behaviour of consumers and telecommunications services in the United States. (Seungjae Shin et.al., 1998) conducted their study to identify the best pricing strategies for the telecommunications industry. They suggested that the pricing strategy identified through analysis of customer call behaviour pattern is best suited for the telecom industry. (Adrian Payne & Pennie Frow, 1999) studied the need for developing a segmented service strategy in which they proposed a four-step framework for developing a segmented service strategy. The four steps are as define the structure of the market, Segment the customer base, Identify segments' needs and Implementation.

Research Design

In the paper, extensive literature review was conducted and the conceptual framework was developed. Moreover, the broad latent variables of the study were identified in the form of independent and dependent variables. The identified independent and dependent variables were utilised in the two studies of this research for comparison. This research study followed the mixed pattern of research design i.e. exploratory and quantitative approach towards the multiple causal relationship measurement

Sample of study & Determine Sample Size

The sample of the study was undertaken as 384 each for the customers of BSNL and AIRTEL based on the study of (Krejcie and Morgan, 1970). (Krejcie and Morgan, 1970) states that "the efficient method of determining the sample size needed to be representative of a given population. when the population is unknown there is an option to select the sample size which is available in the google sample size calculator, which is also based on (Krejcie and Morgan, 1970).The method to arrive at the sample size, the population is

unknown; the total number of population of the study is assumed at 100000000....nth and takes the confidence interval as 95%, which will arrive at 384.

Data Collection

The data was collected from Meerut city. The street intercept method was undertaken for the collection of data. The street-intercept method is a feasible alternative to traditional population survey methods and may provide better access to harder-to-reach segments of the urban population safely".

Data Analysis

At the initial level, the preliminary analysis was conducted, wherein the demographic profile and the common method variance were analysed and then compared. Subsequently, the objective wise analysis was carried on separately for Airtel and BSNL data. Later on, a comparison was carried on. Along with the data analysis, the interpretation also discussed therein.

i) Responses of the Airtel and BSNL Customers (Refer table 1)

TABLE -1
Questionnaire Distribution and Response Rate

S. No.	Name of District/ State	Administered	Returned and valid	Used in research	The methodology adopted in Distributing Questionnaires
1	Meerut	500 (Airtel Users)	391 (384 valid)	384 (Refer Note)	Fieldwork
2	Meerut	450 (BSNL Users)	389 (All Valid)	384 (Refer Note)	Field Work

Source: Primary Data

ii) Demographic Profile

The demographic information of the customers includes their gender, age educational qualification, occupation, household income and is given below in a series of tables.

Gender of the Respondents

Refer table 2.

TABLE 2
Distribution of the customers based on Gender

Gender	Number of Customers	
	AIRTEL Customers	BSNL Customers
Male	213	216
Female	171	168

Source: Primary Data

Age of Respondent

(Refer table 3).

TABLE 3 (Age Groups)

Age (in years)	Number of customers	
	AIRTEL Customers	BSNL Customers
20-30	181	205
30-40	68	57
40-50	94	77
50-60	14	16
More than 60	27	29

Source: Primary Data**Level of Education** (Refer table 4)**TABLE 4
Level of Education**

Education	Number of customers	
	AIRTEL Customers	BSNL Customers
Doctorate	82	78
Post- Graduate	140	158
Under – Graduate	152	138
Others	10	10

Source: Primary Data**Occupation Status of respondent**

(Refer table 5)

**TABLE 5
Occupation Status**

Occupation Status	Number of Customers	
	AIRTEL Customers	BSNL Customers
Private Job	284	269
Govt. Job	51	36
students	15	37
Self Employed	34	42

Source: Primary Data

Income of respondents

(Refer to Table 6).

TABLE 6
Household Income of Respondents

Household Monthly Income	Number of Customers	
	AIRTEL Customers	BSNL Customers
15000-30000	66	62
31000-45000	92	95
46000-60000	79	117
61000-75000	48	54
76000-90000	48	48
91000-105000	4	3
More 105000	47	5

Source: Primary Data**Common Method Variance of Airtel Data**

The common method variance can create systematic extent inaccuracy, which further may lead to both Types I and Type II errors” (Podsakoff *et al*, 2003). Refer to Table 7.

Table 7
Common Method Variance
by
Total Variance Explained
(Airtel Data)

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.985	21.374	21.374	5.985	21.374	21.374
2	2.811	10.038	31.412			
3	1.893	6.761	38.172			
4	1.639	5.855	44.027			
5	1.578	5.637	49.663			
6	1.375	4.911	54.575			
7	1.169	4.176	58.751			
8	1.096	3.916	62.667			
9	1.051	3.755	66.421			
10	1.004	3.584	70.005			
11	.885	3.161	73.166			
12	.797	2.848	76.014			
13	.737	2.632	78.646			
14	.677	2.416	81.062			
15	.607	2.167	83.229			
16	.569	2.031	85.260			
17	.498	1.778	87.039			

18	.493	1.761	88.800			
19	.464	1.656	90.456			
20	.449	1.602	92.058			
21	.438	1.563	93.621			
22	.337	1.205	94.826			
23	.311	1.109	95.935			
24	.284	1.013	96.947			
25	.256	.914	97.862			
26	.246	.879	98.741			
27	.193	.689	99.430			
28	.160	.570	100.000			

Extraction Method: Principal Component Analysis.

Source: Primary Data

Common Method Variance of BSNL Data

Harman's one-factor test (Harman, 1960) uses exploratory factor analysis", where all variables are loaded onto a single factor and fixed invariance of 1 from the total number of variables *i.e.* there is no rotation (Podsakoff *et al.*, 2003). Refer to table 8.

Table 8
Common Method Variance
by
Total Variance Explained
(BSNL Data)

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.180	22.070	22.070	6.180	22.070	22.070
2	2.596	9.271	31.342			
3	1.895	6.767	38.109			
4	1.611	5.754	43.863			
5	1.480	5.287	49.150			
6	1.357	4.846	53.996			
7	1.237	4.416	58.413			
8	1.090	3.892	62.304			
9	1.042	3.722	66.027			
10	.954	3.407	69.434			
11	.856	3.057	72.491			
12	.783	2.798	75.289			
13	.728	2.600	77.889			
14	.709	2.531	80.420			
15	.642	2.292	82.712			
16	.578	2.064	84.777			
17	.533	1.903	86.679			
18	.494	1.763	88.442			
19	.493	1.761	90.203			
20	.472	1.687	91.890			
21	.409	1.459	93.349			
22	.352	1.257	94.606			
23	.344	1.228	95.834			
24	.314	1.123	96.956			
25	.264	.944	97.900			
26	.252	.899	98.800			

27	.183	.654	99.454		
28	.153	.546	100.000		

Extraction Method: Principal Component Analysis.

Source: Primary Data

Comparison of Common Method Variance (Airtel Data and BSNL Data)

Overall results of both the data indicate that there exist biasness but within the prescribed limits (Malik, 2016). (Refer table no. 9)

TABLE 9			
Comparison of Common Method Variance (CMV)			
AIRTEL Data	CMV (in %) Sample size = 384	BSNL Data	CMV (in %) Sample size = 384
Total number of Stimuli and response variables included	21.374	Total number of Stimuli and response variables included	22.070
Source: Primary Data			
Note: CMV < 50%			

Reliability Analysis

“A measure to be acceptable of coefficient alpha should be above 0.7, the reliability of items in different variables was assessed by computing the coefficient alpha” (Cronbach, 1951). Refer to table 10 and table 11.

Airtel Data

Table 10	
Reliability Statistics of AIRTEL Data	
Cronbach's Alpha	N of Items
.863	25
Source: Primary Data	

BSNL Data

Table 11	
Reliability Statistics of BSNL Data	
Cronbach's Alpha	N of Items
.854	25
Source: Primary Data	

Comparison of Airtel Data and BSNL Data

The reliability analysis results of both the response data were compared and it was found that the Airtel customers provided more reliable information compared to BSNL data. It indicates the consistency of Airtel customers is more reliable compared to the BSNL customer's response. Refer to table 12.

Table 12 Comparison of Reliability Analysis		
Cronbach's Alpha	Airtel Data	.863
	BSNL Data	.854
Source: Primary Data		

ii) Confirmatory Factor Analysis (CFA)

CFA is also called measurement model, as there is a structure of the latent variables, where the validity of the individual items along with the constructs are checked. It does not dispense variables to elements but it signifies the model in the form of measurable variables which represent the concepts.

TABLE 14 Confirmatory Factor Analysis of AIRTEL Data				
Fit Indices Indicator	Parsimonious Model Indices	Improved Model		
	1	2	3	4
CMIN/DF	4.33	3.33	3.11	2.89
χ^2	511.88	310.88	210.87	190.9
DF	275	270	200	198
GFI	0.608	0.699	0.775	0.804
NFI	0.675	0.701	0.780	0.806
CFI	0.621	0.671	0.799	0.811
RMSEA	0.125	0.119	0.100	0.091
p-value	0.000	0.000	0.000	0.000
Model Decision				Moderate Fit Model
Source: Primary Data				

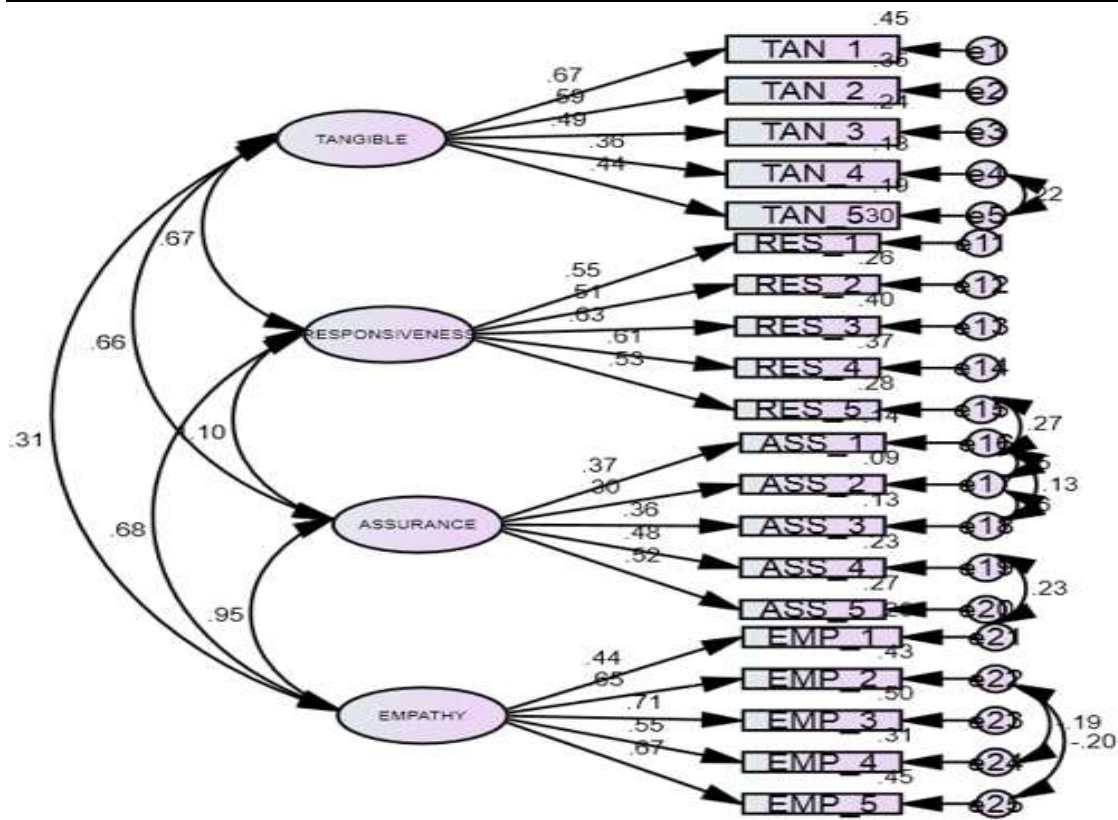


Fig 1: CFA – AIRTEL DATA

The measurement model of BSNL Data

In the study, it was established that the consistency variables and its concepts were not applicable in the study area and it was two in numbers i.e. reliability and empathy (Refer the CFA structure) and these were deleted completely, as unable to fit in the criterion of fit indices.

TABLE 17
Confirmatory Factor Analysis of BSNL Data

Fit Indices Indicator	Parsimonious Model Indices	Improved Model
	1	4
CMIN/DF	7.33	3.00
χ^2	711.89	211.10
DF	575	255
GFI	0.407	0.801
NFI	0.405	0.803
CFI	0.402	0.807
RMSEA	0.227	0.098
p-value	0.000	0.000
Model Decision		Moderate Fit Model

Source: Primary Data

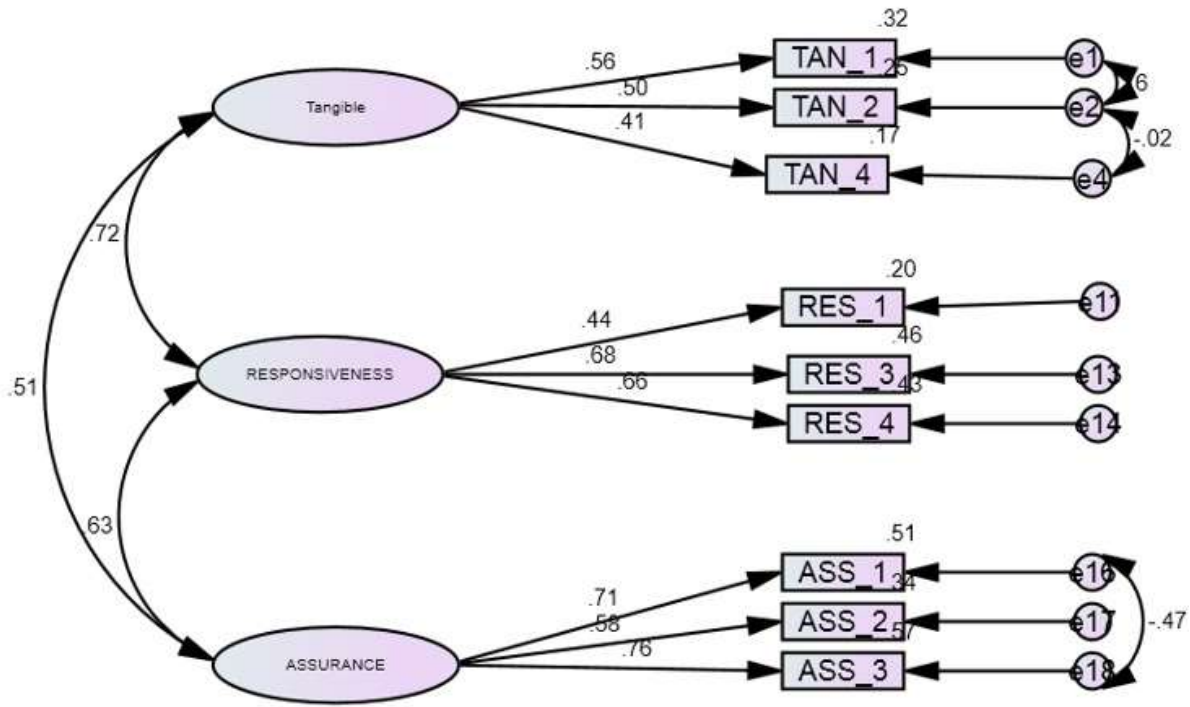
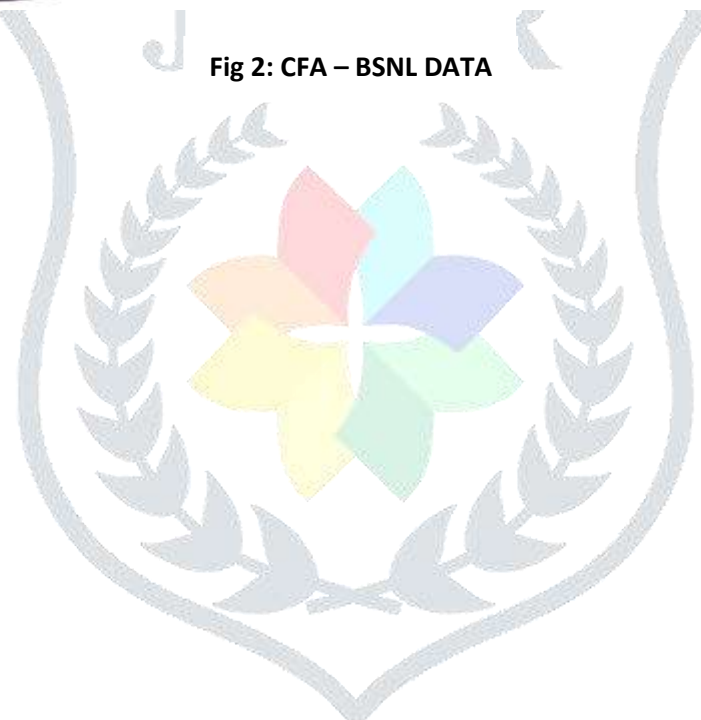
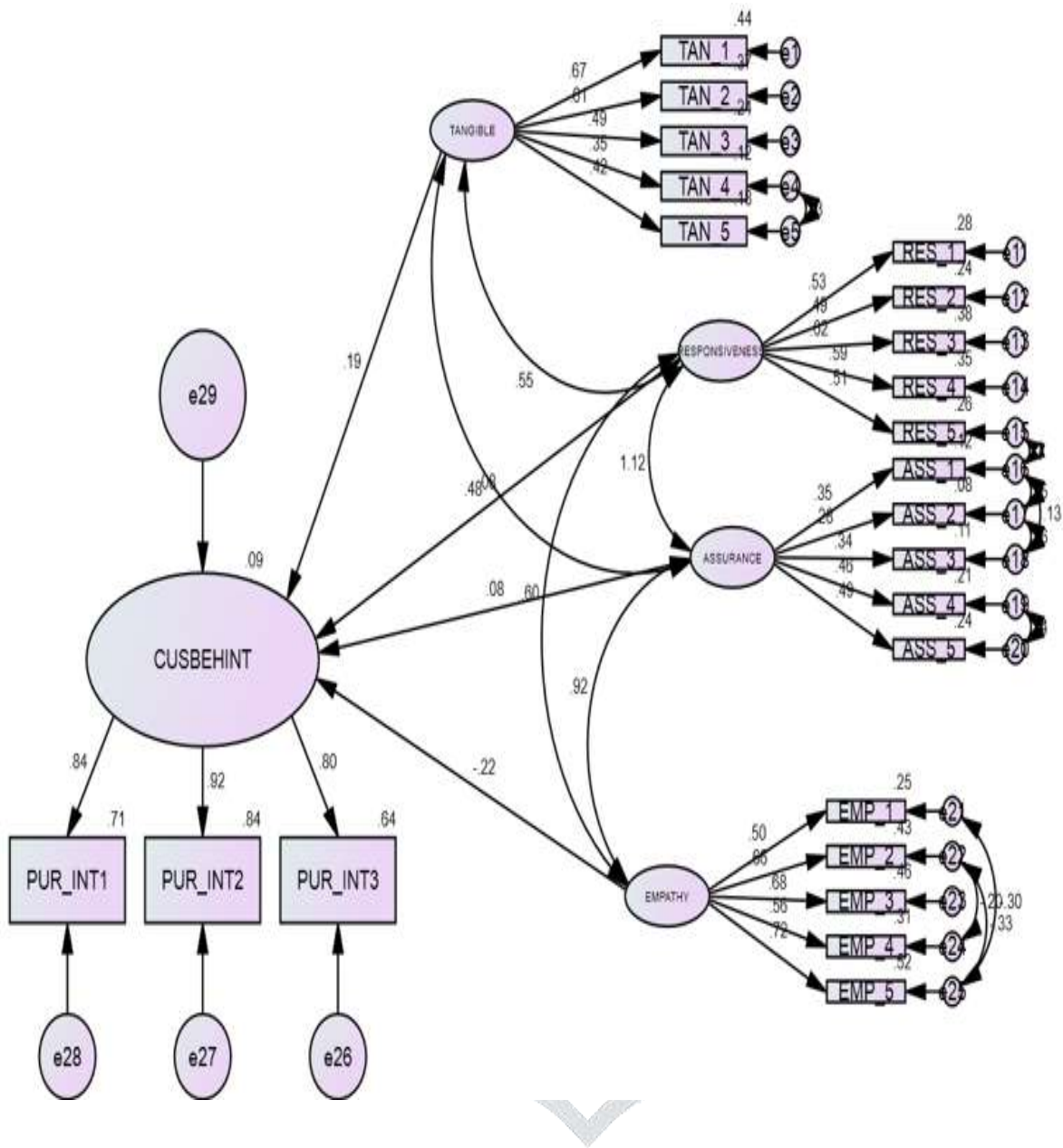


Fig 2: CFA – BSNL DATA



vi) Structural Equation Model (Airtel Data)

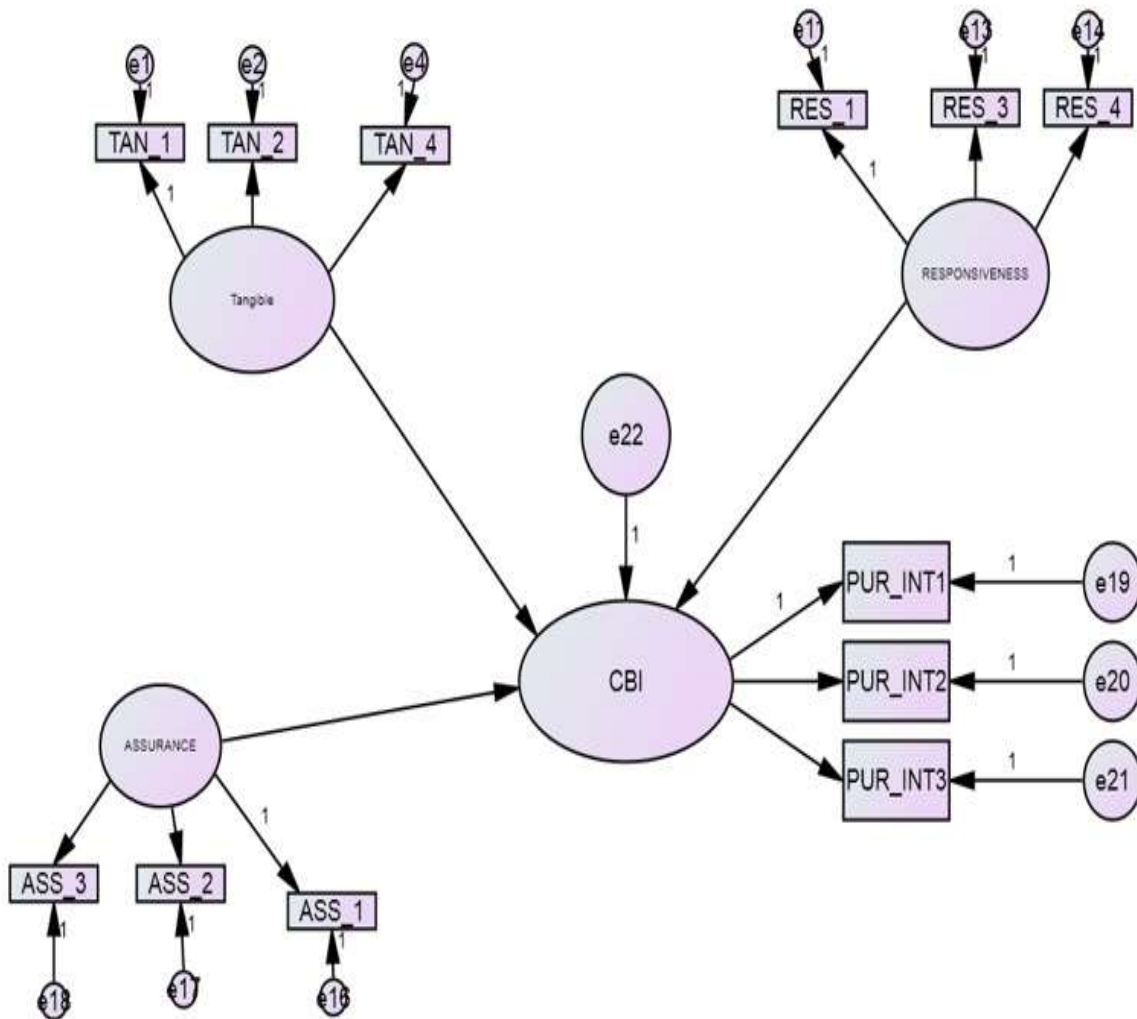
The model was found to be a perfectly good fit.



vii) Structural Equation Model (BSNL Data)

Impact of service quality on customer behavioural Intention

The model was found to be a perfectly good fit.



Conclusion, Findings and Discussion

The aspect of this research revolves around the measurement of service quality of two different telecom service providers in terms of comparison. Under this study, the pattern of research was adopted as the exploratory and quantitative design towards the measurement of causal relationships and to arrive at taking the inferences from the results. The base of this study is the SERVQUAL model which was used for this comparative study research. The findings of the study indicated that the respondents' response rate was almost very high, out of 500 Airtel users, 391 returned the valid questionnaire, and the response rate for the BSNL users out of 450 respondents 389 returned the questionnaires. The study was carried out with only 384 samples, as per the (Krejcie and Morgan, 1970). The responses of the 384 respondents on both the telecom companies were put to the analysis and the results were interpreted in the sequence of demographic profile, common method variance, reliability analysis using the base of Cronbach's alpha values, confirmatory factor analysis, constructs validity (Convergent and discriminant validity). Under the convergent validity, the average variance extracted and constructs reliability was measured. Further, as a part of validity checking the discriminant validity was also measured by using the correlation method with squared inter-constructs correlations (SSIC). Finally, the causal relationship was measured by using SEM in both the cases and then the standardised regression weight was compared for the study and arrived at the findings. The findings of the common method variance suggest that the cumulative variance explained by the 28 variables in a combination of independent and dependent variables was 21.374 for the AIRTEL and for BSNL data it was 22.070. The comparative analysis indicated the common method variance of 21.374 % in case of Airtel respondents and 22.070% in case of BSNL respondents. From the given data, an inference can be taken positively towards the Airtel

data responders i.e. the respondents of Airtel data responders signifies that they have responded properly comparatively to BSNL data responders. There is difference of three basis points i.e. $(21.374 - 22.070 = 0.696)$. It shows that the AIRTEL questions were more effectively answered. Overall results of both the data indicate that there exist biasness but within the prescribed limits (Malik, 2016). The results of the measurement model in terms of comparison of Airtel and BSNL data indicates that there were many independent variables and dependent variables (29 in numbers) all were analysed construct wise and the findings suggest that the goodness of fit indices of Airtel data and BSNL data The variance explained under SEM is required to be seen in the light of the validity table under the measurement model. The finding of the study suggests that in the overall comparison the Airtel is better service provider than the BSNL, as responded by the customers.

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