

A sustainable Customer Satisfaction Model based on new dimensions of SERVQUAL & SERVPERF in today's Telecom world: An empirical approach

Saumya Choudhury

*Principal Consultant: Ericsson Global Consulting
Lovely Professional University, Phagwara, Punjab, India*

Abstract

SERVQUAL & SERVPERF are the two most popular service quality evaluation methodologies predominantly used for modeling the impact of service quality on customer satisfaction. These models are functioning since 1985. The purpose of the study is to investigate thoroughly the tried & tested multi-dimensional research instrument tool such as **SERVQUAL & SERVPERF**, as the means to capture the service perceptions in customer minds with respect to five dimensions to assess the end game "**Customer Experience**". Moreover, the question is, why do we need another framework which delve into yet another construct with the realm of completely different set of considerations. The researchers from industry as well as from academia working in the area are very much aware of the lacuna exists in the area of customer expectation, service quality standards, service performance and service delivery so as the validity of the models in today's technology scenario, as well as to debate on the very inner structure and redefining those to make those contemporary to the exact ask for the recent telecom world. The objective is to establish the hypothesis of how the improving service quality & performance could lead to greater customer satisfaction based on the new scale. As a part of the study, a customer survey result will be analyzed to understand the direct link, if any, in between **SERVQUAL & SERVPERF** and customer satisfaction.

Keywords 1

SERVQUAL & SERVPERF, Service quality dimensions, service performance dimensions, Cronbach Alpha, Multiple Linear Regression Model.

1. Introduction

The new service mantra is what value can be delivered to the customer; how the services can be offered which can be customizable according to the need to get the customer positive approval on the services offered; as a result of that customer would consume the service more often and perhaps even purchase more than they usually do in other situations. For any organization this means enhanced competitiveness. Services can also be offer as hybrid for example a typical car services company where with the services are done along with the changes of the spare parts if need be.

Customer approval for a product or service is essentially the reaction to the liking or disliking based on the perception of that offering's performance (or outcome) to that of expectation. Customers, within the

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EMAIL: e08saumya@iima.ac.in (Saumya Choudhury)

ORCID: 0000-0001-5711-834X (Saumya Choudhury)



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bounds of their resources, want to buy a product or service from which, they believe they would get the highest return-on-investment. In a way customer satisfaction is tightly coupled with the product and/or service quality & performance. These are constantly tested in customer mind at each of the service encounter. If customer is not satisfied with the kind of answer that they are getting during their encounters with the service provider or the performances are very poor, customers will have the tendency to leave the service provider in search for a better one. Service Quality & Performance is nothing but an assessment of the delivered service that conforms to the customer expectations.

In telecommunication, a communication service provider’s (CSP) job is essentially enabling the consumers to avail basic and advanced communication services like telephony, internet and content consumption against a fixed (wired and wireless) and/or mobile. Service quality & performance in telecom world broadly discuss about level of satisfaction of the rendered services by the CSPs. This is broadly dependent upon the infrastructure (network and IT) of the CSP (whether they own it or on rent or revenue share model) and on their business model. Often the Service performance is measured by the term of QoS (Quality of Service). The standard framework like SERVPERF and SERVQUAL can be used for measuring service quality.

Parasuraman, Zeithaml and Berry (PZB’s1988) led to the development of a multi-dimensional research instrument, called SERVQUAL, designed to capture consumer expectations and perceptions of a service along the five dimensions Based on this service quality model researchers identified five determinants of service quality, like Reliability, Responsiveness, Assurance, Empathy, Tangibles. However, SERVQUAL framework couldn’t become flawless and there came the other framework called SERVPERF that measure the same quality as an attitude instead of satisfaction. It is a modification of SERVQUAL and used the same five determinants of service quality.

In telecom, research shows [4] that service outcomes are influenced by many environmental factors such as pricing, Inconvenience of services, Communication failures, alert failures, tough competition, ethical problems, involuntary transfer of plans that cause customers to switch services etc. Uninterrupted and convenient service delivery is the ideal scenario for any service organization. Marketing research further revealed a comprehensive set of guidelines to improving service quality. continuous feedback and improvement, basic service, proper service design and recovery constitute the aforesaid guidelines and stress upon managing customer expectations and incorporating Self-service technologies.

Table 1: Idea in Brief: The Problem Statement, The Argument, The Probable Solution

The Problem	The Argument	The Probable Solution
SERVQUAL and SERVPERF are running for ages for service organization and the two most prominent scales forming the origins of service quality assessments in different service sectors but are they able to accurately asses the QoS in telecom sector? Can those five dimensions be able enough to justify any customer satisfaction /dissatisfaction?	The telecommunication sector is going through a major change with the advent of newest technologies, virtualization of communication network and services, arising complexities with related data and delivery models. Newer technologies coined the terms like cloudification, smart network, IoT, zero-touch-provisioning etc., are ready to change the telecom service world by leaps and bounds.	As the new technologies being implemented, the modification is getting faster than what was expected. Automation makes human interactions redundant with no error in regular operational work, zero downtime, 24/7 available workforce etc., which make the modification even less popular within the employees. With this new condition, the re dimensioning is the need of the hour to make those suitable with

		the telecom scenario. Based on the new customer parameters given in TM Forum [4], we have identified six dimensions for SERVQUAL which Awareness, Trust, Personalization, Fulfillment, Assurance and Remodeling are and for SERVPERF five dimensions are there which are Trust, Personalization, Fulfillment, Assurance and Remodeling. The items under the dimensions are designed accordingly to capture the customer sentiment.
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2. Research Methodology

The main purpose of the study is to validate the practicality, fitness, and validity of the SERVQUAL & SERVPERF methodologies while modeling the service quality impact on customer satisfaction and loyalty in case of telecom service company, the innate structure of those methodologies and their appropriateness in terms of influencing factors.

A specific questionnaire has been designed to measure the Service level from different telecom operators mainly from India in the frame of the above-mentioned dimensions for both SERVQUAL & SERVPERF. The questionnaire has been distributed amongst the users to capture the survey results. Expectations are assessed by using Likert scale only. This questionnaire-based survey is distributed among 300 persons out of which all 300 responses are collected.

The data collected in two different forms one for the demographics and another for the customer's answers against each of the items under the dimensions.

The demographic data is shown below:

Table 2: Demographic data as part of Survey

Attribute Name	Attribute Description	Variable Name	Values
Service Provider (SP)	Name of the Communication Service Provider	D1	Vodafone-Idea , Bharti-Airtel , Reliance Jio , BSNL
Service Used	Kind of Service used by consumer	D2	Mobile, Fixed Line, Broadband, Other
Mobile/Broadband Service Type	Radio Access Type	D3	2G, 3G, 4G, 5G
Service Class	Mode of service	D4	Pre-paid, Postpaid
Country Name	Name of the country of the consumer	D5	Free Text
City Name	Name of the city name of the consumer	D6	Free Text

Age Group	The different age buckets	D7	< 18 , >= 18 and < 25 , >= 25 and < 35 , >=35 and < 45 , >= 45 and < 55 , >= 55
Gender	Gender of consumer	D8	Female, Male, "Prefer not to say"
Marital Status	Marital Status of the consumer	D9	Married, Unmarried, Divorced, Widow
Engagement	The profession of the consumer	D10	Student, Professional, Business, Teacher, Retired, Housewife, Not working

The dimensions are shown below:

Table 3: Service Quality dimensions

SERVQUAL (ATPFAR)
1. Awareness
2. Trust
3. Personalization
4. Fulfilment
5. Assurance
6. Re-modelling

Table 4: Service Performance dimensions

SERVPERF (TPFAR)
1. Trust
2. Personalization
3. Fulfilment
4. Assurance
5. Re-modelling

As mentioned above the survey data mainly used Likert Scale (1-5) for non-demographic dimensions. Cronbach's Alpha test has been applied on the survey data to check the reliability or internal consistency of the 38 variables for SERVQUAL and 32 variables for SERVPERF. This is co-efficient of reliability. Both R Studio and SPSS has been used on the actual and standardized data to obtain the reliability scores. The expected value of Alpha should lie between 0.80 and 0.90 and we got result which is very much within the desired range.

Table 5: Reliability Statistics

SERVPERF		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.887	0.872	32
SERVQUAL		

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.898	0.889	38

Converting regular customer into loyal customer to increase the NPS (net promoter score) is essential in Marketing, to make them as brand ambassador and can act as a genuine influencer. According to Pareto Principal or “80/20” rule, 20% of these loyal customers represent 80% of the sales. Based upon the literature study in the area of customer experience, several white papers, journals and Webinars from HBR, McKinsey and CX Research Gate have been read and the need of few prudent categories comprising of the available non-demographic variables has been understood to form some pre-conceived models before the analysis as per the customer value matures over the period. These models give the flexibility to assimilate the parameters from these identified determinants of service quality. The segregation of subscribers helps to get the insight of fitment of parameters congruent to each segment and justifies the framed survey questions. The models are representative of the length of time one subscriber spends on the network starting just from a rookie to become an engaged customer to fully advocating the services to other prospects to the state of customer delight. Hence, basis on the activity four models have been chosen such as “Consumption”, “Engaged”, “Advocacy” and “Satisfaction”. The “Advocacy” and “Satisfaction” are the most desired states for any service providers as these states would have significant contribution to the revenues. It can be depicted as below:

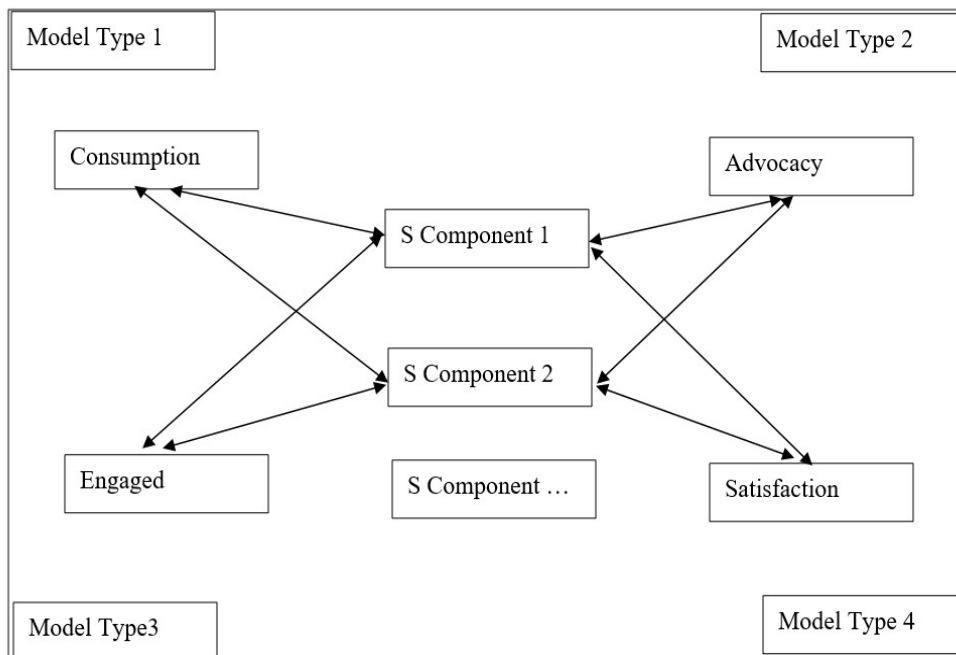


Figure 1: Proposed Model

Some worth noting demographics data of the survey are the following:

- 93% of the respondents are from Vodafone, Airtel and Reliance.
- 98 % of the respondents are using mobile services.
- 95% of the respondents are using 4G.
- 67% of the respondents are using postpaid connection
- 59.7% of the respondents are from age group between 35 and 45.

- 78.7% respondents are male.
- 80.7% respondents are married.
- 66.3% respondents are working professionals.

Following hypothesis can be formed based on the data collected:

On Age Group:

H0: There is no difference in the effect of overall customer satisfaction amongst the different Age Groups

H1: There is the significant difference in the effect of overall customer satisfaction amongst the different Age Groups

On the Relation between Dimensions & Overall Customer Satisfaction:

H0: There is no significant relation between overall customer satisfaction and the five dimensions of the SERVPERF and/or the six dimensions of the SERVQUAL.

H1: There is significant relation between overall customer satisfaction and the five dimensions of the SERVPERF and/or the six dimensions of the SERVQUAL.

Multiple Linear Regression (MLR) has been used to understand the effect of the dimensions used against the different assumed models namely Consumption, Engaged, Advocacy and Satisfaction respectively. Here, the specific combinations of independent variables have been used to create the weighted average scores for each of the models to use them as dependent variables to do the regression with respect to the **standard weighted average scores**. **R Studio** has been used to produce the regression results. Below are the results for SERVPERF and SERVQUAL.

Table 6: Multiple Linear Regressions for the proposed models using perception score and five components for assessing service quality (SERVPERF)

	Model 1		Model 2		Model 3		Model 4	
	Consumption		Engaged		Advocacy		Satisfaction	
	Standardized Co-efficient		Standardized Co-efficient		Standardized Co-efficient		Standardized Co-efficient	
	Beta	p	Beta	p	Beta	p	Beta	p
Trust	0.15501 0.000302 ***		0.10836 0.025122 *		26651 2.39e-10 ***		0.27159 3.84e-09 ***	
Personalization	0.24267 ***	3.32e-09	0.17189 ***	0.000172	0.23320 ***	2.93e-09	0.33581 2.86e-14 ***	
Fulfillment	0.14879 **	0.002507	0.05401	0.330737	0.05322	0.25551	0.01010 0.844388	
Assurance	0.20529 10 ***	7.37e-	0.27094 ***	1.50e-12	0.08860 **	0.00436	0.25342 1.02e-12 ***	
Re-Modelling	-0.06924 0.037576 *		0.29353 ***	1.24e-13	0.29647 ***	< 2e-16	0.13477 0.000142 ***	
Multiple R²=	0.6972		0.6633		0.6879		0.7504	

Anova F test. P<0.01	130.3 on 5 and 283 DF, p-value: < 2.2e-16	111.5 on 5 and 283 DF, p-value: < 2.2e- 16	124.8 on 5 and 283 DF, p-value: < 2.2e-16	170.2 on 5 and 283 DF, p- value: < 2.2e- 16
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The calculated regression results of SERVPERF depicting the following:

- **All 5 (six)** dimensions are significantly contributing to overall satisfaction score when **Consume** model is used
- **SERVPERF perception gap score** explains 69.72% on the variation of customer consumption, 66.33% on the variation of customer engaged, 68.79% on the variation of customer advocacy, 75.04% on the variation of overall satisfaction
- **Re-modelling** dimensions have no significant contribution to overall satisfaction score in case of customer **Consumption** model
- **Fulfillment** dimension has no significant contribution to the overall satisfaction score when using customer **Engaged**, customer **Advocacy** and overall **Satisfaction** models
- For all models the **ANOVA** results seem to be satisfactory (p-values are well below 0.01 at 99% CI) and Multiple values imply that more than 66% variations of the overall satisfaction scores are explained by these 5 (five) dimensions.

Table 7: Multiple Linear Regressions for the proposed models using perception expectation gap score and six components for assessing service quality (SERVQUAL)

	Model 1		Model 2		Model 3		Model 4	
	Consumption		Engaged		Advocacy		Satisfaction	
	Standardized Co-efficient		Standardized Co-efficient		Standardized Co-efficient		Standardized Co-efficient	
	Beta	p	Beta	p	Beta	p	Beta	p
Awareness	0.18018 6.417 5.85e-10 ***		0.325300 < 2e-16 ***		0.09607 0.000754 ***		0.20739 9.70e-12 ***	
Trust	0.10000 0.014268 *		0.009042 0.82403		0.23718 1.58e-08 ***		0.20827 1.33e-06 ***	
Personalization	0.22020 1.06e-08 ***		0.131326 0.00052 ***		0.22122 1.05e-08 ***		0.30994 3.56e-14 ***	
Fulfillment	0.15895 0.000582 ***		0.072347 0.11501		0.05864 0.202359		0.02179 0.646540	
Assurance	0.17034 6.14e-08 ***		0.207838 7.18e-11 ***		0.06996 0.023667 *		0.21319 1.13e-10 ***	
Re-Modelling	-0.08158 0.009126 **		0.271255 2.55e-16 ***		0.28989 2e-16 ***		0.12057 0.000228 ***	

Multiple R²=	0.7358	0.7716	0.7003	0.7884
Anova F test. P<0.01	F-statistic: 130.9 on 6 and 282 DF, p-value: < 2.2e-16	F-statistic: 158.8 on 6 and 282 DF, p-value: < 2.2e-16	F-statistic: 109.8 on 6 and 282 DF, p-value: < 2.2e-16	F-statistic: 175.1 on 6 and 282 DF, p-value: < 2.2e-16

The calculated regression results of SERVQUAL depicting the following:

- **All 6 (six)** dimensions are significantly contributing to overall satisfaction score when **Consume** model is used.
- **SERVQUAL perception-expectation gap score** explains 73.58% on the variation of customer consumption, 77.16% on the variation of customer engaged, 70.03% on the variation of customer advocacy, 78.84% on the variation of overall satisfaction.
- **Trust and Fulfillment** dimensions have no significant contribution to overall satisfaction score in case of customer **Engaged** model.
- **Fulfillment** dimension has no significant contribution to the overall satisfaction score when using customer **Advocacy** and overall **Satisfaction** models.
- For all models the **ANOVA** results seem to be satisfactory (p-values are well below 0.01 at 99% CI) and Multiple values imply that more than 70% variations of the overall satisfaction scores are explained by these 6 (six) dimensions.

Hypothesis Testing:

On the age group:

H₀: There is no significant difference in service satisfaction score among the age groups.

The Sig value is less than 0.05 at 5% level of significance. So, we reject the null hypothesis and conclude that there is a significant difference in service satisfaction among the age groups of the customer responded for SERVPERF.

Table 8: Anova Result (SERVPERF)

ANOVA					
SERVPERF Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.749	4	2.437	7.029	0.000
Within Groups	102.288	295	0.347		
Total	112.037	299			

ANOVA test has been carried out for the overall satisfaction score with respect to the different age groups. The p-value of the F-statistic is very much less than 0.05 at 95% CI and therefore, the Null hypothesis has been rejected. There is a significant difference in the effect of overall customer satisfaction amongst the different Age Groups. Below table shows the ANOVA results

Table 9: Anova result (SERVQUAL)

ANOVA					
SERVQUAL Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.006	4	1.752	5.891	0.000
Within Groups	87.714	295	0.297		
Total	94.720	299			

On the Relation between Dimensions & Overall Customer Satisfaction:

H0: There is no significant relation between overall customer satisfaction and the five dimensions of the SERVPERF and/or the six dimensions of the SERVQUAL.

Correlation analysis were performed to find relationship between five dimensions of the scale and the overall customer satisfaction. The Results are summarized below in tabular format.

Table 10: Correlation between Five dimensions and Customer satisfaction (SERVPERF)

Correlation		Overall Satisfaction
Trust	Pearson Correlation	.716**
	Sig. (2-tailed)	0.000
	N	300
Personalization	Pearson Correlation	.556**
	Sig. (2-tailed)	0.000
	N	300
Fulfilment	Pearson Correlation	.787**
	Sig. (2-tailed)	0.000
	N	300
Assurance	Pearson Correlation	.837**
	Sig. (2-tailed)	0.000
	N	300
Re-Modelling	Pearson Correlation	.307**
	Sig. (2-tailed)	0.000
	N	300
Overall Satisfaction	Pearson Correlation	1
	Sig. (2-tailed)	
	N	300

All the five dimensions are statistically significant at 1% level of significance. So, it proves that all the five dimensions are correlated with the overall customer satisfaction.

Table 11: Correlation between Six dimensions and Customer satisfaction (SERVQUAL)

Correlation		Overall Satisfaction
Awareness	Pearson Correlation	.579**
	Sig. (2-tailed)	0.000
	N	300
Trust	Pearson Correlation	.666**
	Sig. (2-tailed)	0.000
	N	300
Personalization	Pearson Correlation	.572**
	Sig. (2-tailed)	0.000
	N	300
Fulfilment	Pearson Correlation	.748**
	Sig. (2-tailed)	0.000
	N	300
Assurance	Pearson Correlation	.799**
	Sig. (2-tailed)	0.000
	N	300
Re-Modelling	Pearson Correlation	.367**
	Sig. (2-tailed)	0.000
	N	300
Overall Satisfaction	Pearson Correlation	1
	Sig. (2-tailed)	
	N	300

All the six dimensions are statistically significant at 1% level of significance. So, it proves that all the five dimensions are correlated with the overall customer satisfaction.

3. Conclusion

Based on the data analysis it can be concluded as follows:

- The overall dimensions of SERVQUAL & SERVPERF have significant impact on customer satisfaction.
- Individually all the dimensions, Awareness, Trust, Personalization, Fulfilment, Assurance, Re-Modelling irrespective of SERVPERF or SERVQUAL model have strong links to customer satisfaction.
- Out of five dimensions Trust and Assurance is has the higher impacts compared to Fulfilment and Re-Modelling in SERVPERF.

- Out of five dimensions Awareness and Assurance is has the higher impacts compared to Fulfilment and Re-Modelling in SERVQUAL.
- Regression results shows that feedback capturing process is affecting the satisfaction score in an adverse way in the personalization dimension.

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