SERVQUAL: A Multi-Dimensional Scale for Perceptual Measure of Service Quality in the Mobile Telecommunication Industry

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ABSTRACT

This study broadly measures the customer's service quality perception toward different mobile service companies. SERVQUAL model with additional two dimensions Competitive Advantage and Network Quality was used as an instrument in the study. Factor Analysis along with MANOVA was used for analysis. Primary data was collected through the distribution of questionnaires to respondents in the working capital region of Uttarakhand, Dehradun. Results from Factor analysis explains that there is a significant difference in customer's perception for overall service quality of different mobile service companies. There was a significant MANOVA effect confirming difference in perception & level of understanding about service quality dimensions among the subscribers.

Keywords : *Service quality, SERVQUAL, Perception.*

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INTRODUCTION

Today in the highly competitive business scenario, survival of most of the business depends on the high-quality service delivery. Service Quality concept was highlighted first in the year 1980 when it was generalized by academicians & scholars that better service quality assures to ascertain competitive advantage (Vender et al. 2002). Telecommunication sector is one of the rapidly booming service sectors of the country, delivery of high quality service in this sector can lead to growth and long-term development of any country. Service sector has always been a significant contributor in GDP of the country. Service quality differs from the quality of goods due to three unique features of services: heterogeneity, inseparability and intangibility for production and consumption. Service quality is found to be one of the significant contributors of customer satisfaction as a result of which it is having high importance in service sector. A Large number of research has been carried out in the past which is bridging the gap between service quality and satisfaction. Service quality is required for creating customer satisfaction and for fulfilling customer perceptions and expectations. In today's competitive world, quality service is a key to success and survival of the business.

Service quality can be defined as a basis of the differences between the expectation and competence among the important quality dimensions. (Kotler & Keller, 2009) define service as "any intangible act or performance that one party offers to another that does not result in the ownership of anything". Service can be defined as an intangible offer by one party to another in exchange of money for pleasure. Service quality can be defined as expectations of the customers towards the service or products. Service quality is the consequence of human interaction between the service provider and the customer. Marketers realized that to leverage service quality as a competitive advantage, the first need is to correctly identify the antecedents of what the consumer perceives as "service quality". Zeithaml, Parasuraman, and Berry proposed a service quality scale (SERVQUAL), a generic instrument that has five service quality dimensions: Responsiveness, Assurance, Empathy, Tangibility and Reliability. Responsiveness means willingness of employees to provide service and giving prompt service. Assurance includes knowledge and courtesy of employees and their ability to carry trust and confidence. Empathy covers caring, individualized attention that the firm provides to its customers. Tangibility means the physical evidence, representations of the service and the inculcation of other customers in service facility. Reliability includes uniformity in performance and dependability, accuracy in keeping records and accomplishment of services right with in the stipulated time. SERVQUAL is a multiple-item scale designed to measure customers' service quality expectations and perceptions. SERVQUAL instrument consists of 22 declarations for measuring consumer perceptions and expectations about service quality. Perceived service quality results from comparison of consumer expectations with their perceptions of service delivered by the service providers (Zeithaml et al., 1990). As per (Wilson, 2008), service quality is a focused evaluation about the customer perception of reliability, assurance, responsiveness, empathy and tangibles while satisfaction is more inclusive and it is influenced by the perceptions of service quality, product quality, price and other situational and personal factors.

Indian telecommunication sector has shown a tremendous growth since 1990s and now has become the world's most competitive and one of the fastest growing tele-communication markets. Socioeconomic development of India has always been supported by telecommunication and this is one of those sectors which has played a significant role in narrowing down the rural-urban digital divide among its customers. India is world's second largest mobile phone user with more than 975.78 million users. Prevailing strong user base in this part of the globe generally avails two different types of services, Prepaid and Postpaid which are broadly understood with low and high level of commitment respectively.

As per the report of Department of Telecommunication India is divided into 22 Telecom Circles or Service Areas, which is further classified into four groups namely 'Metro', 'A', 'B', and 'C' circles. 'Metro circles' cover highly dense metropolitan cities. Further 'A', 'B', and 'C' circles comprise of geographic territories of varying population density. 'A' circles are the largest in terms of population coverage and 'C' circles contain the smallest population density. The Uttarakhand is divided into two administrative divisions Garhwal & Kumaon. Uttarakhand Telecommunication sector consist of 13 revenue districts, 7 from Garhwal region and 6 from Kumaon region. Since its inception from the year 2001 many new services were launched like Cellular mobile telephone service, Internet, ISDN etc. Majority of the geographical area under Uttarakhand Telecom sector is hilly region because of which Dehradun is considered as working capital region. Seven mobile service providers (BSNL, Airtel, Idea, Vodafone, Uninor, Tata Docomo & Reliance) operate in the working capital region of Uttarakhand.

The present study is driven by the need to empirically analyze service quality of mobile service providers in Dehradun. SERVQUAL model with slight modification was used to measure service quality perception among consumers. The study aims to identify consumer perception about select service quality dimensions and the consumer differentiation amongst service quality parameters.

EVIEW OF LITERATURE

The Service Quality studies have gained momentum in the past few years because of its contribution towards the long-term profit. Quality of services is entirely different from quality of goods. The reason behind this difference is the characteristics of the service like heterogeneity, inseparability, perishability and intangibility. Quality of service has a direct impact on institution such as superiority in performance (Poretla and Thanassoulis, 2005), high revenue (Kish, 2000; Duncan and Elliot, 2002), market share (Fisher, 2001),

enhancing customer relations, loyalty and corporate image (Newman, 2001; Caruana, 2002; Ehigie, 2006).

There was a general thought among researchers that service quality is a multi-dimensional phenomenon (Cronin and Taylor, 1992). There has always been a need for an appropriate scale for measuring consumer perception for service quality. One of the widely used and acknowledged instruments to measure service quality is SERVQUAL propounded by Parasuraman et al. (1988). It comprises of the following five dimensions Tangibility, Reliability, Responsiveness, Assurance, and Empathy. A similar model was developed to measure service quality named SERVPERF (Cronin and Taylor, 1994). Another instrument was developed to measure this multidimensional construct named ARCHSECRET (Vaughan, 2001). Numerous studies conducted in the past proves the appropriateness of SERVQUAL as an instrument to measure service quality.

SERVQUAL was tested by McKay et al. (1989) in his studies on Canadian Municipal Park and the results included the same five service quality dimensions which confirmed the reliability of the scale. Carman (1990) in his study on 800 consumers from four different firms found the stability of SERVQUAL dimensions to be impressive. A study conducted by Heung and Qu Hailin (2000) on 630 restaurant customers, service quality perception using SERVQUAL instrument identified satisfactory level of reliability for the scale. Brady and Robertson (2001) employed SERVQUAL to test the service quality received from travel agencies & found it to be a reliable and valid model to measure service quality. With the wider acceptance of SERVQUAL in measuring service quality, it has been predominantly employed in different service sectors like Telecommunication, Education, Banking Services, Healthcare etc. (Keuh and Voon, 2007). Buttle (1996) also mentioned about several researcher studies using the SERVQUAL in different industries namely Retailing, Restaurants, Banking, Telecommunication Industry, Airline catering, Local Government, Hotels, Hospitals, and Education.

Ostrowski et al. (1993) in their study on airline companies compared the promotional offers and concluded that company with better perceived service quality will have more number of customers. Akan, (1995) in his study on four star hotels using SERVQUAL model concluded that courtesy and competence along with assurance were found to be the most important factors affecting the perceptual service quality of customers. Angur et al. (1999) applied SERVQUAL in the retail banking industry to measure perceptual service quality of two major banks in India. Findings of the research indicated that respondents showed a high level of understanding toward Responsiveness and Reliability followed by Empathy and Tangibility. Assurance was perceived as the least important criterion for measuring service quality. The difference between the service quality of public and private hospitals in Turkey was analyzed and the outcome of the research indicated that patients in the public hospitals were more satisfied in comparison to private hospitals (Taner and Antony, 2006) . Negi (2009), used SERVQUAL in Telecommunication Industry to examine customer satisfaction through perceived service quality and identified that Empathy, Reliability and Network Quality were significantly effecting overall service quality and customer satisfaction of mobile services.

As per Leisen and Vance (2001), SERVQUAL has been used with minor modifications internationally in many service sectors to measure service quality. International application of SERVQUAL was generally hindered by culture. The influence of cultural difference should be considered while applying SERVQUAL to measure service quality in different countries (Kettinger et al.1994). SERVQUAL model was used by Kumar et al. (2009) in their research to examine the influence of critical factors in delivering service quality of banks in Malaysia. SERVQUAL model was modified & changed to six dimensions: Tangibility, Reliability, Responsiveness, Assurance, Empathy and Convenience. Convenience was considered because it was observed as the most significant element of satisfaction for banking customers in Malaysia. After they carried out this study, they identified that there are four factors which affect the customer satisfaction and they are: Convenience, Competence, Reliability and Tangibility. In the outcome of the study, the author recommended that bank requires to be more competent in delivering services, providing assurance and facilitating customers with convenience. Curry et al. (2002) applied SERVQUAL instrument in physiotherapy services in Scotland. They considered five service quality dimensions along with five other dimensions, in total ten dimensions to measure service quality. The study was related with measuring expectation and perception gaps. Based on the outcome of the study it was recommended that there is need for improvement in physiotherapy service with assurance & empathy being perceived as very important elements for service quality perception.

Under different cultural context, SERVQUAL has been widely used in Telecommunication Industry with high reliability and validity. (Stafford et al.1998, Hoffman & Bateson 2001, Sureschander et al.2002, Tyran & Ross 2006). Johnson et al. (1995) conducted research on measuring the perception and expectation of the service quality of mobile service providers in the UK. They also highlighted the importance of expected service quality. Van Der et al. (2002) undertook a study on service quality using SERVQUAL of mobile service companies. Outcome of the research indicated that there is no clear differentiation in customers' mind about the three service quality dimensions Responsiveness, Assurance and Empathy, since all of them loaded on a single factor. The two factors Tangibility and Reliability were clearly differentiated by customers. Wang and Lo (2002) conducted a study on service quality of mobile service companies and identified Network and after sales service to be the most significant factor. A study by Sridhar and Piyush (2004) identified that competitiveness of business depends on service quality. They also identified that infrastructure and customer service are the important determinants of service quality. Quality & infrastructure mainly includes network coverage, voice quality, call completion rate and call drop etc. A research study focusing on satisfaction of mobile phone users among 434 customers in Brazil indicated high rating for quality of Connections,

Ambience of outlets, Coverage and customer services (Souki and Filho, 2008). TRAI (2008) conducted a service quality study based on customer satisfaction for 11 mobile service operators. The dimensions for the survey are availability of network, customer care support, VAS, billing and sales. Based on these dimensions only five service operators achieved the service quality benchmark of 90%. Khan, M. A. (2010) studied the user's perceptual service quality about mobile telephone service providers in Pakistan. Questionnaire was designed using five SERVQUAL dimensions with additional dimension network quality and convenience. Network quality and Convenience were found to have the highest significance.

Uttarakhand and West Uttar Pradesh comprises of several industries & sectors. Certain service quality studies have been conducted in these industries & sectors. Sahney et al. (2004) in their study on total quality education used SERVQUAL model to ascertain quality of institutions from student's perspective. SERVQUAL was then used to identify the gap between expectation and perception of students which further lead to the identification of minimum number of quality components to bridge the gap between expectation and perception of students. Singh et al. (2014) undertook service quality gap analysis among customers of commercial bank using ex-post-facto survey. This study was conducted in different districts of Uttarakhand with a sample size of 273. Result of the study explained significant difference in the expectation and perception of customers leading to dissatisfaction. To understand, customer satisfaction in the two-wheeler automobile companies, Khan et al. (2015) conducted a study using SERVQUAL model in major cities of Uttar Pradesh. Data was collected through structured questionnaire. The results of the study indicated that automobile service company produces significant gap in consumer's expectation and perceived service quality. Sharma et al. (2015) in their research studied satisfaction and attitude of prepaid and post- paid customers of mobile telecommunication and the factors affecting the choice of mobile service providers. The study was conducted in the state of Uttarakhand with a sample size of 600. Data was collected through structured questionnaire. Outcome of the study revealed that most of the customers are using prepaid because of freedom, flexibility, monitoring and control.

An intensive and thorough literature review suggests that a lot of research has been done with the use of SERVQUAL in various industries/ sectors. Most of the studies were done in relevance with the gap analysis and very few studies focussed on the perceptual measure of service quality especially in the region of Uttarakhand. It has been observed that the application of SERVQUAL largely depends upon the national culture because of which the dimensions of SERVQUAL are generally modified when applied internationally. Paucity of literature focusing on the usage of modified SERVQUAL instrument in measuring perceptual service quality for the telecommunication sector in the Uttarakhand region has been the motivation for this study. The study measures the significance & the level of understanding for service quality dimensions among customers and tries to bridge the gap in literature.

ESEARCH OBJECTIVE AND SCOPE OF THE STUDY

Measuring Service Quality is imperative for service sector as it helps to differentiate services in the minds of customers. This study was undertaken with a viewpoint to measure consumer's perception towards the service quality of mobile service operators in Dehradun, Uttarakhand. Perceptual aspect of service quality was measured through SERVQUAL with the following objectives:

- To examine as to what extent customers differentiate between the service quality dimensions of different service providers.
- To analyze the customers level of understanding with different service quality dimensions.

ESEARCH METHODOLOGY

SERVQUAL model (acronym for Service and Quality) is a measure of how customers perceive a company's quality of service when they receive it. Globally accepted five SERVQUAL dimensions: Responsiveness, Assurance, Empathy, Tangibility and Reliability developed by Parasuraman, Zeithamal, and Berry (1985) along with the additional dimensions Network Quality and Competitive Advantages propounded by Wang et al.(2004), Pezeshki et al.(2009) and Johnson and Sirikit (2002), in special relevance to mobile service industry were considered in the study. Wang et al.(2004) & Pezeshki et al. (2009) emphasized that call quality and strength of network defines network quality which is one of the significant contributors towards developing mobile service quality perception among customers. Wang et al.(2004) used network quality as a component of service quality perception in their study for Chinese tele-communication industry. Johnson and Sirikit (2002) in their study on Thai telecommunication industry highlighted that telecom sector can attain high profit and enhance its performance through competitive advantage which can be developed through better service, price & promotional strategies in comparison to their competitors.

This study is based on the primary data collected through a structured questionnaire designed on 7 point Likert scale (1 = completely agree, 7 = completely disagree). The questionnaire includes seven service quality dimensions, five dimensions of SERVQUAL model with additional two dimensions Network Quality and Competitive Advantages. The questionnaire comprises of total 24 statements based on Responsiveness, Assurance, Empathy, Tangibility, Reliability, Network Quality and Competitive Advantages. To have better understanding of empirical analysis the construct codes are represented in Table 1.

Sample for research includes diverse demography of respondents from the capital region of Uttarakhand, Dehradun. Dehradun being a capital region, consists of a vast number of telecom users of varied demographics. Telecom

TABLE 1 CONSTRUCT CODE

Sr. No.	Construct	Code	Statement
1	Tangibility	T1	The customer service is available as per your convenience.
2		T2	The Physical facilities of your service provider are visually appealing.
3		T3	The appearance of staff & usage of up to date equipments by your service provider.
4	Reliability	R1	Service provider shows interest in solving your problem
5		R2	Service is provided on time
6		R3	Service provider fulfills all its commitment
7		R4	Service executives provide accurate information
8	Empathy	E1	Service executives provide individualized attention
9		E2	Service provider keeps customer's best interest at their heart
10		E3	The service provider's operating hours suits you.
11		E4	Service operation is based on customer's needs
12	Responsiveness	Rs1	Service executives are willing to help customers
13		Rs2	Service provider gives prompt service
14		Rs3	Service support is easily accessible
15	Assurance	A1	You feel safe while availing service from your service provider
16		A2	Courtesy & professionalism of your service provider attracts you
17		A3	Service provider protects confidentiality of your personal information
18	Competitive Advantages	Ca1	Your service provider provides better price in comparison to others
19		Ca2	Your service provider provides better offers in comparison to others
20		Ca3	Your service provider provides better service in comparison to others
21		Ca4	Your service provider provides wider product assortment in comparison to others
22	Network Quality	Nq1	Your service provider has strong network connectivity
23		Nq2	Your service provider provides good call quality
24		Nq3	Your service provider has wider coverage

users in this region include students, professionals and individuals from different background. It was the researcher's interest to include sample based on varied socio economic parameters. Non-probability convenience sampling was used in the study. Dehradun being an education hub with a high growth of educational institutions in recent past, led to the convenience based selection of students from both graduate & post graduate courses. Professionals from private as well as public sector were selected and the same procedure was followed for business personnel & others as well. Questionnaires were distributed to the selected respondents. In total 670 questionnaires were distributed to the respondents & 626 questionnaires were returned. During verification, it was found that 600 questionnaires were complete in all respect. In order to make the objective of the study clear to the respondents and for the sake of simplicity, only perception about the service quality of respondents was measured through questionnaire and the expectation part was not included in the study (Lai et al. 2007). Both descriptive and inferential statistics has been used for data analysis. SPSS software was used for the statistical analysis of the data.

ATA ANALYSIS

Respondents Profile

A total of 600 responses were analyzed to measure consumer perception towards the service quality of mobile service providers. The demographic characteristics of the respondents can be seen from the Table 2.

TABLE 2 DEMOGRAPHIC CHARACTERISTICS

Sr. No.	Respondents	Characteristics	% of Respondents
1		**Gender**	
	Male		61.5
	Female		38.5
2		**Age Group**	
	15-30		76.7
	31-45		18.2
	46-60		3.8
	60+		1.3
3		**Occupation**	
	Services		40.0
	Business		11.0
	Student		31.3
	Other		17.7
4		**Service Usage Duration**	
	less than 3 months	3.3	
	3-6 months		21.8
	1-2 years		7.8
	2-3 years		40.6
	more than 3 years	26.5	
5		**Service Provider**	
	Airtel		16.7
	Uninor		5.8
	Tata Docomo		5.5
	Reliance		5.3
	Vodafone		7.2
	Idea		10.7
	BSNL		48.8

TABLE 3 RELIABILITY COEFFICIENTS

Dimension	Items	Number of Items	Cronbach's Alpha	Cronbach's Alpha if Item deleted
Tangibility	T1	3	.732	.726
	T2			.528
	T3			.676
Reliability	R1	4	.709	.570
	R2			.656
	R3			.609
	R4			.737
Empathy	E1	4	.709	.557
	E2			.655
	E3			.755
	E4			.602
Responsiveness	Rs1	3	.676	.537
	Rs2			.638
	Rs3			.567
Assurance	A1	3	.805	.804
	A2			.678
	A3			.704
Competitive Advantages	Ca1	4	.780	.721
	Ca2			.737
	Ca3			.707
	Ca4			.744
Network Quality	Nq1	3	.754	.574
	Nq2			.608
	Nq3			.794
Total Scale Reliability			.750	

The demographic profile of the respondents exhibited in table 2 shows that most of the respondents were male (about 61.5 per cent) and rest were female (about 38.5 per cent). Majority of the respondents were within the age group 15-30 years (about 76.7 per cent) and rest (about 23.3 per cent) fall under the age group of 31 years and above. Service personnel comprised of highest percentage (about 40 per cent), followed by students (about 31.3 per cent) with regard to occupation. Majority of the respondents use a specific service provider for a period of 2 – 3 years (about 40.5 per cent) followed by the period of more than 3 years (about 26.5 per cent). Largest portion of the respondents (about 48.8 per cent) was using the services of BSNL, followed by Airtel (about 16.7 per cent), Idea (about 10.7 per cent), Vodafone (about 7.2 per cent), Uninor (about 5.8 per cent), Tata Docomo (about 5.5 per cent) and Reliance (about 5.3 per cent).

Reliability & Factor Analysis

Cronbach's Alpha coefficient was computed to measure the reliability of SERVQUAL instrument. The overall scale reliability, Cronbach's Alpha is 0.75, that falls well within the acceptable range. As per the Table 3, Cronbach's Alpha coefficient for all dimensions are within the acceptable range. The value of Cronbach's Alpha for all the seven service quality dimensions ranges in between .676 to .805. The highest level of reliability was shown by Assurance (Cronbach's Alpha coefficient .805), followed by additional dimension Competitive Advantages (Cronbach's Alpha coefficient .780) & Network Quality (Cronbach's Alpha coefficient .754). All dimensions show high level of internal consistency and reliability, except Responsiveness (Cronbach's Alpha coefficient .676) which falls slightly behind the cutoff range .70 as advised in the literature (Nunnally and Bernstein 1994, DeVellis 2003).

As shown in the Table 4, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is .843, which indicates the presence of sufficient inter- correlations in the data set and appropriateness of factor analysis.Bartlett's test of Sphericity is significant at $\chi^2(276)= 7650$, p=.000 which indicates that correlation matrix is not an identity matrix.

TABLE 4 KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.795
Bartlett's Test of Sphericity	Approx. Chi-Square	7650.639
	Df	276
	Sig.	.000

The result from reliability statistics and measure of sampling adequacy, rivals the appropriateness of scales used and data gathered for this study.

Factor analysis was performed to validate the constructs underlying structural model. Only factors with an Eigen value of 1.0 and with factor loading above 0.5 were retained for

further investigation. Result of factor analysis represents that most of the items were with a factor loading above 0.6, that confirmed for high level of significance. The total variance explained by this seven-factor model is 68.18% which is well above 50%.

The values in the table represent the weight and correlation each item has to a factor. From table 5, it can be realized that items from different dimensions are regrouped under the same factor and some items from one dimension are found to fall in more than one factor like E1 and E2.

The three dimensions (Tangibility, Reliability and Responsiveness) of SERVQUAL Model by Parasuraman et al. (1988) were loaded on separate factors, indicating the clear distinction in consumers' mind about these service quality dimensions. The additional dimensions included in the study, Competitive Advantages and Network Quality were also loaded separately, confirming customer differentiation about the constructs.

Items under Empathy E1 and E2 show an overlapping with Assurance. Overlapping explains that the consumers were not able to differentiate between the constructs namely Empathy & Assurance. The Empathy items: E1 Service executives provide individualized attention, E2 Service provider keeps customer's best interest at their heart has significantly high factor loading of .895 & .827 on Assurance which means that consumers consider individualized attention & best interest as a part of Assurance.

Multivariate Analysis of Variance

Multivariate Analysis of Variance (MANOVA) is used for comparing the mean of service dimensions and demographic parameters. Multivariate Analysis of Variance MANOVA is an extension of ANOVA with a condition of two or more dependent variables. ANOVA is generally used to study the significant difference between dependent and independent variables individually, whereas MANOVA examines the significant difference between dependent and independent variables and helps to understand the significant effect of independent variable(s) on dependent variables.

As shown in Table 6 statistically significant MANOVA effect was obtained, Wilks 'λ' = .854, F (21, 1694) = 4.523, p <. 001. The significant F indicates that there is a significant difference among different age group people regarding the perception for

TABLE 5 FACTOR ANALYSIS

Items	Tangibility	Reliability	Empathy	Responsiveness	Assurance	Competitive Advantages	Network Quality
T1	.765						
T2	.811						
T3	.615						
R1		.756					
R2		.522					
R3		.714					
R4		.664					
E1			.475	.895			
E2			.478	.827			
E3			.820				
E4			.715				
Rs1				.578			
Rs2				.633			
Rs3				.809			
A1					.577		
A2					.785		
A3					.889		
Ca1						.758	
Ca2						.729	
Ca3						.802	
Ca4						.770	
Nq1							.697
Nq2							.684
Nq3							.806
Eigen Value %	5.64	3.51	2.21	1.42	1.37	1.15	1.03
Variance	9.16	9.92	6.56	7.28	15.92	10.40	8.92

Note: Factor Analysis- Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.

TABLE 6 MANOVA FOR AGE

Dependent Variable	Source (Age)				F	Significance level
	15-30	31-45	46-60	60+		
Tangibility	3.2362	3.1315	2.2899	4.6667	6.874	.000
Reliability	3.0967	3.0390	2.5543	3.3125	2.098	.099
Empathy	4.7853	4.3624	4.0652	4.3438	4.647	.003
Responsiveness	3.4268	3.2385	2.7826	5.0833	6.958	.000
Assurance	5.0862	4.7920	4.2754	5.0833	2.538	.056
Competitive Advantages	2.9707	3.2982	2.7174	3.1567	2.055	.105
Network Quality	2.9464	3.4404	2.2899	3.2917	6.044	.000

TABLE 7 MANOVA FOR SERVICE DURATION

Dependent Variable	Source (Service Duration)					F	Significance level
	< 6 Months	6–12 Months	1–2 Years	2-3 Years	> 3 Years		
Tangibility	3.0333	3.0051	3.4752	3.4102	2.9790	3.765	.005
Reliability	3.2000	3.1508	3.5532	3.1235	2.7563	6.595	.000
Empathy	4.4375	4.3969	4.3969	4.7263	4.8035	2.146	.074
Responsiveness	3.2000	3.4733	3.2979	3.5720	3.0943	3.578	.007
Assurance	5.8333	4.6285	5.4043	4.8944	5.2495	5.002	.001
Competitive Advantage	2.6625	2.9924	3.1170	2.9671	3.150	9.843	.498
Network Quality	2.7000	2.8626	2.7660	3.4444	2.5996	10.930	.000

TABLE 8 MANOVA FOR OCCUPATION

Dependent Variable	Source (Occupation)				F	Significance level
	Business	Service	Student	Others		
Tangibility	3.0253	3.1014	3.4326	3.1195	2.741	.043
Reliability	3.0758	2.9990	3.2261	2.9410	2.260	.080
Empathy	4.1856	4.6469	4.8159	4.8013	3.818	.010
Responsiveness	3.4848	3.2986	3.5904	3.1824	2.906	.034
Assurance	4.6616	4.7944	5.2908	5.1698	4.638	.003
Competitive Advantage	3.0455	3.0885	3.0293	2.849	1.74	0.529
Network Quality	3.0354	3.2375	2.9060	2.6950	4.331	.005

TABLE 9 MANOVA FOR SERVICE PROVIDER

Dependent Variable	Source (Service Provider)							F	Significance level
	Airtel	Uninor	Tata Docomo	Reliance	Vodafone	Idea	BSNL		
Tangibility	2.906	2.68	2.4949	3.0833	3.5349	4.114	3.20	8.978	.000
Reliability	2.767	2.950	2.4470	2.8359	3.4477	3.562	3.11	7.357	.000
Empathy	5.115	4.05	4.5985	4.6328	3.8488	3.910	4.901	11.27	.000
Responsiveness	2.916	3.60	2.7677	3.3854	4.5349	4.380	3.211	19.09	.000
Assurance	5.726	4.88	5.4848	5.2083	3.5891	3.614	5.201	21.11	.000
Competitive Advantage	3.265	2.72	3.0076	3.3984	2.6744	3.121	2.966	1.773	.102
Network Quality	2.71	3.16	3.3434	2.4583	4.0775	4.218	2.707	19.43	.000

service quality parameters Responsiveness, Assurance, Empathy, Tangibility, Reliability, Network Quality and Competitive Advantages. Four out of seven service quality parameters namely Responsiveness, Empathy, Tangibility and Network Quality showed significant result which means different age group people clearly differentiate among these parameters and the rest of the three parameters were found to be insignificant. Among these parameters, respondents with age group above 60, understand Tangibility and Responsiveness better than any other age group. Respondents between the age group 15-30 years, show a better understanding for the Empathetic behavior of service provider. Respondents with the age group 31-45, give more importance to call quality, wider coverage & connectivity (Network Quality). Response from different age group people reflects that there is little difference in consumer perception about service quality dimensions. Reliability, Assurance and Competitive Advantage were found to be insignificant. Results shown in Table 7, show a significant relationship between

service usage duration and service quality dimensions, (Wilks' λ = .793, F (28, 2125) = 5.035, p <. 001). Two dimensions Empathy and Competitive Advantages were found insignificant but the other dimensions Responsiveness, Assurance, Tangibility, Reliability and Network Quality showed significant results. Respondents with service usage duration 1-2 years showed a better understanding of service quality dimension Tangibility & Reliability. Responsiveness and Network Quality were better understood by service users with the usage duration 2-3 years. Service users with less than 6 month of service usage duration showed highest inclination towards Assurance. Table 8 exhibits the relationship between occupation & Service quality measures. Responsiveness, Assurance, Empathy, Tangibility and Network Quality were found to be significant & statistically significant MANOVA effect was obtained, (Wilks' λ = .692, F (21, 1694) = 4.523, p <. 001). Students perceive better service quality regarding significant service quality dimensions Responsiveness, Assurance, Empathy, Tangibility and Network Quality than any other professional. As per Table 9, except Competitive Advantage, all other service quality dimensions showed significant results. The results are good enough to explain consumer's perceptual differentiation with service quality parameters, (Wilks' λ = .575, F (42, 2756) = 8.217, p <. 001). Result from Table 9 explains that respondents perceive better service quality for Idea in terms of Tangibility, Reliability & Network Quality. Airtel was perceived best in terms of Empathetic behavior and Assurance. Vodafone was perceived better in terms of Responsive behavior of staff. As per the description majority of the respondents were using BSNL but none of the service quality parameters was perceived best for BSNL which means the high number of customers with BSNL does not mean that the customers are happy.

ISCUSSION & IMPLICATION

The objective of the study was to measure consumers' perception towards the service quality of mobile service providers. Five SERVQUAL dimensions Responsiveness, Assurance, Empathy, Tangibility and Reliability followed by two additional measures Competitive Advantages and Network Quality were used to enhance perceptual service quality. A seven point Likert Scale was used to measure response of the respondents.

(It was found that the overall reliability of the scale, 0.75, falls well within the acceptable range.) The individual reliability of dimensions' ranges from 0.676 to 0.805. Assurance showed the highest reliability coefficient of 0.805. Reliability statistics and measure of sampling adequacy proved the appropriateness of scale used and adequacy of sample size for this study. Results from factor analysis indicated that the total variance explained by these seven factors was 68.18%. Most of the items were with a factor loading of above 0.6, confirming for high level of significance. All items except Empathy & Assurance were loaded on separate factors without any overlapping, indicating the clear difference in customers' mind about these service quality dimensions. The Empathy parameters-Individualized Attention, Customers' best interest at their heart has significantly high factor loading on Assurance which means that consumer considers individualized attention & best interest as a part of Assurance. Descriptive statistics explained that majority of the subscribers are from BSNL. Multivariate analysis of variance effect was found to be significant. None of the service quality parameters was perceived best for BSNL. Reason behind the large customer base of BSNL may be that it is the only government owned service operator while the rest are private. BSNL being one of the oldest service providers & high switching cost makes it a more preferred choice of the customers. Dehradun being a capital region, comprises population from the other hilly region of Uttarakhand also. This fact should also be taken into consideration that being one of the oldest service providers BSNL is having a strong presence in other hilly regions too in terms of coverage. However, company may not enjoy its current position in the long run if it does not focus on the perceptual measure of service quality dimensions in this competitive environment. Airtel, Idea, Vodafone and others are making slow inroads in the market by increasing customer's awareness regarding service quality dimensions. In comparison to other service providers Airtel, Idea & Vodafone were perceived better on service quality standards. Airtel being next to BSNL in terms of customer reach provides better service quality on more than one dimension namely Empathy and Assurance. Airtel should work more on the other service quality dimensions in order to increase the customer base. Idea, with relatively lesser number of customers shows maximum understanding on three service quality dimensions Tangibility, Reliability & Network Quality, which is a positive prospect for long term growth. There is no differentiation in consumer's mind about the promotional offers from the different service operators. Consumer perceives that the promotional offer by different service provider is almost similar. Competitive Advantage was not found to be a significant contributor in terms of developing perception towards service quality. Based on the findings of the study, it can also be concluded that almost all service quality dimensions indicate a clear differentiation & significant level of understanding by customers. It can be suggested that mobile service providers in Dehradun should focus more on developing better understanding for service quality dimensions among customers. As a major player in market, BSNL as well as new players like Uninor, Tata Docomo, Reliance should also focus on inculcating service quality dimensions in their service delivery to ensure that customers distinguish their service from that of their competitors. BSNL as a major player should focus more on customer satisfaction and educating their employees to address the problems related to responsiveness, assurance, reliability and empathy. Competitive advantage in terms of promotional offers and price also need to be unique to be distinct in market. Airtel and Idea are performing well but need to focus more on the insignificant service quality parameters to develop loyal customers and retain them for a longer period. This study provides valuable insight about the assessment of service quality mechanism and will help decision makers to improve in the quality of service to remain competitive.

UTURE RESEARCH

There are certain limitations associated with the study like it was limited to Dehradun with restricted sample size which provides for a future scope of research to be conducted in the entire state with a larger sample size. Present study is specific to telecommunication sector & the outcome of the research can't be generalized to other service sectors. Hence it opens the window for conducting similar kinds of studies in other service sectors too.

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