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Dimensionality of Service Quality in Mobile Industry

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Abstract:

Dimensions of service quality has always been a matter of debate and discussion as no single opinion fits across all industries. The present research explores the dimensions of service quality by reviewing extant literature and then empirically by using a sample of 530 mobile users from Gwalior in India. This study uses Factor Analysis with Varimax rotation through SPSS and concludes a seven dimensional structure for service quality in mobile industry. Rank Analysis of Different dimensions resulted in Employee Performance being the most important dimension of service quality.

Keywords: Dimensionality of service quality, factor analysis, rank analysis

1. Introduction

Rising per capita income and reduced call tariffs have made mobile services a major and affordable mode of communication in India, thus pushing up the subscriber base to almost 915 million out of which 886 million are mobile phone users and 28 million are landline phone users as per TRAI report April 2014

With entry of more and more service providers in mobile industry in India, the challenge to increase customer base and retain them has pushed the mobile sector into a state of hyper-competition. Mobile companies are leaving no stone unturned to improve their service quality to ensure their customer base. To improve service quality a right understanding about its dimensionality is prerequisite condition and this explains the purpose behind this research work.

2. Objective

The objectives of this research paper are:

1. To define Service Quality
2. To discuss existing concepts about Dimensions of Service Quality
3. To identify various variables which lead to good Service Quality in mobile industry.
4. To analyse the dimensionality of Service Quality in mobile industry in India using Factor Analysis
5. To carry out Rank Analysis of various dimensions on the basis of Variance Explained.

3. Review of Literature

3.1. Service Quality

Service Quality is combination of two words, Service and Quality. As per Hasenfield (1974) service can be defined as actions of an individual or organization that maintain and improve well being or functioning of people. Quality focuses on standard or specification that a generating organization promises.

Parasuraman, Zeithaml & Berry (1988) defined service quality as the customer's overall judgment of the excellence of the service or the difference between one's expectation and the actual service performed.

The American Society for Quality Control defined Quality as "the totality of features and characteristics of a product or service that bear on its ability to satisfy the stated or implied needs". Parasuraman et al., (1994) considered quality as a gap between what customers feel should be offered and what is actually provided.

According to Thomas, Dan R. E., (1978), service differentiation is necessary for the growth and development of service businesses. Ladhari(2009) studied service quality and found it to be top priority of present day business organisations as it give them not only competitive advantage but also play a crucial role in sustaining growth.

Howat et al (2008) & Chen (2008) found that interest of marketers and academicians in service quality is due to its favorable impact on customer satisfaction and customer loyalty. Jonson (2008) stated that there is clear relationship between improving service quality & higher profit.

Seth et al (2005) studied the role of service quality in company performance and attracting new customers.

3.2. Characteristics of Services

Kandampully, (2002) described services as intangible in the sense that they cannot be seen, felt, tasted, or touched. He explained four unique characteristics that differentiate service from a product. These four characteristics are:

1 Intangibility 2 Heterogeneity 3 Inseparability 4 Perishability

Berry, Parasuraman and Zeithaml (1985) were pioneers in service quality research. They carried their research in four different service areas namely banking, stock broking, credit card companies, and household appliances. They came up with ten factors to describe service quality namely 1 Dependability, 2 Willingness, 3 Competence, 4 Availability, 5 Courtesy, 6 Communication, 7 Trustworthiness, 8 Assurance, 9 Empathy and 10 Tangibility.

3.3. Dimensions of Service Quality

Martinez & Martinez (2010) concluded that in past 30 years there has been considerable interest and debate both among academicians as well as practitioner to define and measure service quality.

Lehtinen and Lehtinen (1982) studied service quality and found it to be three dimensional 1. Physical quality 2. Interactive quality 3. Corporate (image) quality. They also found that a comparative analysis revealed that corporate quality tended to be more stable over time in comparison to two other quality dimensions.

Later on in a separate study Lehtinen (1983) described service quality in terms of “process quality” and “output quality”. Process quality is judged by a customer when service is being delivered whereas output quality is judged by a customer after a service has been delivered.

Rust and Oliver (1994). proposed a three dimensional model in which the overall perception of service quality is dependent on a customer’s evaluation of three dimensions of the service encounter:

- (1) The customer-employee interaction i.e. functional or process quality
- (2) The service environment
- (3) The outcome i.e. technical quality

Berry et al. (1994) on the basis of his ten years study of service quality in America concluded that service quality possess many facets. The ten lessons learned from their study are as follows:

- (1) Listening - Businesses must listen to their customers.
- (2) Reliability - Businesses must deliver the promised services dependably and accurately.
- (3) Basic Service - Customers are interested in the basics, fundamentals, and performance; not in promises. They are not expecting “fanciness,” and they are not unreasonable in their expectation.
- (4) Service Design - Customers want a system or systems that give good and reliable customer service.
- (5) Recovery - Businesses must be quick at handling services, efficiently, and fairly.
- (6) Surprising Customers - Businesses should be in position to surprise customers with their uncommon swiftness, grace, courtesy, competence, commitment, and understanding.
- (7) Fair Play - Customers expect that the companies must treat them fairly and become resentful and mistrustful when they perceive things otherwise.
- (8) Teamwork - Various systems within a company should work as an overall team in providing quality service to customers.
- (9) Employee Research - Businesses should collect information from employees about the level of service quality provided to them and, things that hinder the provision of good service quality and also potential problems in providing good service quality.
- (10) Servant Leadership - Top management must lead by serving those who provide direct service to customers and by providing what is needed for good quality service.

Garvin(1988) suggested a multi dimensional model for service quality and emphasized that customer survey can reveal that which dimensions are important for a particular industry. He suggested following dimensions:

- 1.Performance 2. Features 3. Reliability.4.Conformance 5.Durability 6 Serviceability 7 Aesthetics.

4. Research Methodology

4.1. Data Collection

Data was collected from 530 mobile users of different companies using structured questionnaire with closed-ended questions as a response measurement tool.

4.2. Research Instrument Design

A structured questionnaire was developed and responses from customers were measured on 5- point Likert type scale. The questions in the scale were carefully chosen after thorough and extensive literature review

4.3. Measurement Scale

To identify key factors which affect service quality extensive literature review was done which resulted in 30 variables known to influence service quality. A factor analysis of these 30 variables resulted into seven dimensional structure for service quality in present study.

4.5. Statistical Tools Used:

Factor Analysis with varimax rotation was applied to find out different dimensions of service quality. The purpose behind using a factor analysis was to minimise the number of variables of service quality without compromising on the amount of information in the analyses (Steward, 1981).

5. Data Analysis

Once data was collected, data processing and data analysis followed. Gromme 1998 defined Data Processing as activities and technologies which prepare collected data for next stage i.e. data analysis and it includes data checking, data entry, data coding and data editing.

5.1. Descriptive Statistics

The mean value of all questions were computed as 3.56 with standard deviation of .66. The table 1 shows the value of skewness and kurtosis along with mean and standard deviation.

Number of Items	Mean	Std.Deviation	Skewness	Kurtosis
30	3.56	.66	-.998	.073

Table 1: Descriptive Statistics: Service Quality

5.2. Reliability Analysis

SPSS based reliability test was carried out on the thirty items scale to check the reliability. Table generated by SPSS shows the Cronbach's alpha value of .836, which indicates higher value in comparison to .7 which is considered benchmark value as suggested by Nunally (1978). Table 2 shows the output generated by SPSS.

Number of Items	Cronbach's Alpha
30	.836

Table 2: Reliability Statistics: Service Quality

5.3. Factor Analysis

Factor Analysis with varimax rotation was applied to find out different dimensions of service quality. The purpose behind using a factor analysis was to minimise the number of variables of service quality without compromising on the amount of information in the analyses (Steward, 1981).

Before applying Factor Analysis the data was tested to check appropriateness for factor analysis. This was done by using KMO (Kaiser-Meyer-Olkin) test for measuring sampling adequacy and Bartlett's test for sphericity.

The table 3 shows that KMO test gave value of .886 which is far above the minimum desired value of .5.

Kaiser and Rice (1974) in a study suggested appropriate value of KMO as more than .6.

Bartlett's test which was used to check multivariate normality and whether correlation matrix was an identity matrix; this resulted into a significant value (p value less than .05) which further showed appropriateness of data for using factor analysis. (George and Mallery, 2000) found that a significant value (p-value less than .05) indicates that the data do not produce an identity matrix and differ significantly from identity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.886	
Bartlett's Test of Sphericity	Approx. Chi-Square	12539.443
	Df	435
	Sig.	.000

Table 3: KMO and Bartlett's Test: Service Quality

5.3.2. Communalities

The table 4 shows the initial communalities as well as communalities after extraction of all 30 items. The table shows that communalities ranged from .622 to .828 which is far above the minimum value of .5 suggested by Stewart (1981)

		Initial	Extraction
1	My service provider gives me services reliably ,consistently and dependably	1.000	.708
2	My service provider is trustworthy and its employees are honest and believable.	1.000	.745
3	My service provider keeps its promises.	1.000	.708
4	My service provider's employees are easily approachable.	1.000	.824
5	My service provider's employees are courteous, polite and respectful.	1.000	.749
6	My service provider's employees listen to customers and are willing to help them.	1.000	.734
7	My service provider's employees are pleasant, friendly and caring.	1.000	.828
8	My service provider's employees are neat and clean in their office.	1.000	.740
9	My service provider's employees are efficient and caring	1.000	.801
10	My service provider's billing is accurate and easy to understand.	1.000	.810
11	My service provider has reputation and good image.	1.000	.730
12	My service provider is innovative and forward looking.	1.000	.792
13	The advertisements and promotional campaigns of my service provider are effective.	1.000	.796
14	My service provider has sufficient presence in different geographical areas through own offices or dealers, franchises.	1.000	.622
15	My service provider has Physical facilities at their office which are visually appealing .	1.000	.827
16	It is easy and convenient to take up a new mobile connection as well as get recharges and top-ups from my service provider.	1.000	.671
17	My service provider has up-to-date network and low congestion problem even during peak traffic.	1.000	.733
18	My service provider has good call quality in terms of voice clarity and minimal call drop problem.	1.000	.681
19	My service provider has wide coverage area.	1.000	.638
20	My service provider makes efforts to understand the specific needs of customers	1.000	.748
21	My service provider gives individual and personal attention to the customers	1.000	.662
22	My service provider maintains all record accurately.	1.000	.714
23	My service provider accurate and timely information	1.000	.671
24	Services given my service provider are prompt i.e. low waiting time and quick response.	1.000	.810
25	My service provider is sympathetic and reassuring whenever there is a problem.	1.000	.779
26	Working hours of my service provider are convenient for customers.	1.000	.679
27	Services given by my service provider are competitive.	1.000	.778
28	Pricing of services by my service provider are reasonable and competitive.	1.000	.743
29	My service provider gives good range of pricing plans to choose from	1.000	.753
30	Value Added Services (SMS, Ringtones etc.) given by my service provider are comprehensive and competitive.	1.000	.732

Table 4: Communalities: Service Quality

5.3.3. Total Variance Explained

Table 5 shows the output generated by SPSS on extraction with Principal Component Analysis method; it shows total variance explained by all the factors. The seven factor solution accounted for 74.018 percent of the variance. Total variance explained (74.018 percent) by these seven components exceeds the 60 percent threshold criterion commonly used in social science researches (Hair *et al.*, 1995).

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	12.249	40.831	40.831	12.249	40.831	40.831	4.705	15.682	15.682
2	2.306	7.685	48.517	2.306	7.685	48.517	4.071	13.569	29.251
3	2.050	6.833	55.350	2.050	6.833	55.350	3.521	11.735	40.986
4	1.801	6.003	61.353	1.801	6.003	61.353	3.328	11.093	52.080
5	1.343	4.476	65.829	1.343	4.476	65.829	3.011	10.035	62.115
6	1.320	4.400	70.229	1.320	4.400	70.229	1.787	5.955	68.070
7	1.137	3.789	74.018	1.137	3.789	74.018	1.784	5.948	74.018
8	.865	2.884	76.901						
9	.796	2.655	79.556						
10	.704	2.347	81.903						
11	.615	2.048	83.952						
12	.492	1.640	85.592						

13	.490	1.632	87.224						
14	.428	1.428	88.652						
15	.408	1.361	90.014						
16	.353	1.175	91.189						
17	.329	1.098	92.287						
18	.310	1.033	93.320						
19	.266	.888	94.208						
20	.241	.804	95.013						
21	.209	.695	95.708						
22	.195	.649	96.356						
23	.188	.626	96.982						
24	.174	.580	97.562						
25	.164	.547	98.109						
26	.147	.491	98.600						
27	.132	.441	99.041						
28	.112	.374	99.414						
29	.096	.320	99.734						
30	.080	.266	100.000						

Table 5: Total Variance Explained: Service Quality

The Scree plot shown in figure 1 also supports 7 dimension structure service quality.

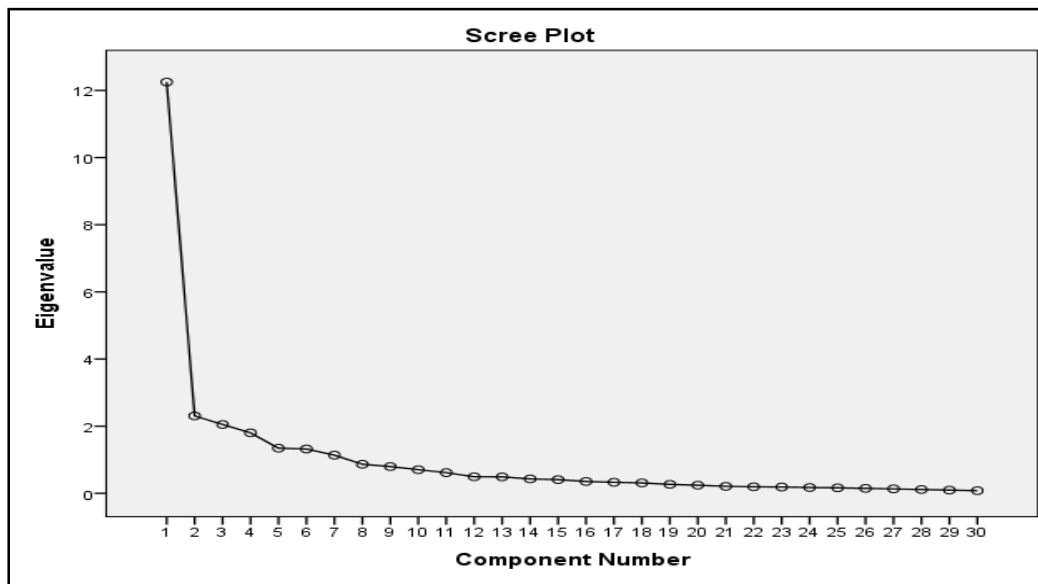


Figure 1: Scree Plot: Service Quality

Inclusion of an item in a factor depended on its factor loading for that particular factor which shows its correlation with that factor. This denotes strength of relationship of the item with the latent construct and predicts convergent and discriminant validity of the scales.(Hair et al.,2006)

5.3.4. Rotated Component Matrix:

Table 6 shows the Rotated Component Matrix for Service Quality generated by SPSS 20.In this table all the items which loaded together for a particular factor are grouped at one place to make interpretation easier.

FACTORS	QUESTIONS	1	2	3	4	5	6	7
FACTOR 1 EMPLOYEE PERFORMANCE	4. My service provider's employees are easily approachable.	.687	.460	.096	.316	.025	.158	.072
	9. My service provider's employees are efficient and caring	.702	.142	.205	.289	.239	.304	.103
	10. My service provider's billing is accurate and easy to understand.	.792	.098	-.162	.283	.215	.140	.025
	11. My service provider has reputation and good image .	.764	.258	.132	-.016	-.036	.005	.245
	20. My service provider makes efforts to understand the specific needs of customers	.661	-.094	.164	.439	.277	.080	-.028
	1. My service provider gives me services reliably ,consistently and dependably	.413	.566	.196	.057	.199	-.251	.271
	2. My service provider is trustworthy and its employees are honest and believable.	.514	.600	.119	.304	-.099	.050	-.047
	3. My service provider keeps its promises.	.286	.619	.197	.335	.279	.107	-.047
	7. My service provider's employees are pleasant, friendly and caring.	.454	.574	.271	.274	.237	.285	.077
	16. It is easy and convenient to take up a new mobile connection as well as get recharges and top-ups from my service provider.	.039	.764	.142	-.054	-.001	.110	.223
	17. My service provider has up-to-date network and low congestion problem even during peak traffic.	.067	.701	.133	.055	.217	.398	-.102
	24. Services given my service provider are prompt i.e. low waiting time and quick response.	.154	.563	.157	.546	.352	.104	-.004
	5. My service provider's employees are courteous, polite and respectful.	.278	.437	.462	.290	.328	.087	.260
FACTOR 3 ASSURANCE	26. Working hours of my service provider are convenient for customers.	.032	.158	.784	.050	.127	-.139	.025
	27. Services given by my service provider are competitive.	.516	.124	.661	-.001	.209	.048	.118
	28. Pricing of services by my service provider are reasonable and competitive.	.426	.079	.613	.030	.404	.086	-.073
	29. My service provider gives good range of pricing plans to choose from	-.020	.158	.760	.274	-.122	.236	.072
	30. Value Added Services (SMS, Ringtones etc.) given by my service provider are comprehensive and competitive.	-.033	.313	.582	.415	.119	.296	.130
	6. My service provider's employees listen to customers and are willing to help them.	.391	.243	.055	.623	.122	.120	.315
FACTOR 4 RESPONSIVENESS	21. My service provider gives individual and personal attention to the customers	.330	-.007	.083	.682	.197	.175	-.111
	22. My service provider maintains all record accurately.	.111	.076	.278	.658	.019	-.145	.407
	25. My service provider is sympathetic and reassuring whenever there is a problem.	.407	.341	.228	.555	.349	-.005	-.125
	23. My service provider accurate and timely information	.388	.205	.196	.377	.508	.145	.136
	12. My service provider is innovative and forward looking .	.058	.180	.342	.256	.746	-.029	.122
	13. The advertisements and promotional campaigns of my service provider are effective.	.173	.098	.015	.107	.843	-.019	.185
	19. My service provider has wide coverage area.	.172	.271	-.233	.286	.353	.422	.311
	18. My service provider has good call quality in terms of voice clarity and minimal call drop problem.	.343	.295	.272	.004	.330	.523	-.141
	14. My service provider has sufficient presence in different geographical areas through own offices or dealers, franchises.	.149	.140	.062	.070	-.105	.738	.114
	8. My service provider's employees are neat and clean in their office.	.194	-.015	.269	.162	.151	.054	.761
FACTOR 7 TANGIBILITY	15. My service provider has Physical facilities at their office which are visually appealing .	-.015	.383	-.304	-.097	.384	.211	.621

Table 6: Rotated Component Matrix Service Quality

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

5.3.5. Factors of Service Quality

On the basis of table 5 which shows the variance explained and table 6 which shows Rotated Component Matrix for service quality following conclusion can be drawn:

1. Factor 1 is linear combination of 5 questions 4, 9, 10, 11 and 20 with Eigen value of 12.24 it explains 40.83% of variance.
2. Factor 2 is linear combination of 7 questions 1, 2,3,7,16,17 and 24, with Eigen value of 2.30 it explains 7.68% of variance.
3. Factor 3 is linear combination of 6 questions 5, 26,27,28,29 and 30 with Eigen value of 2.05 it explains 6.83% of variance.
4. Factor 4 is linear combination of 4 questions 6, 21, 22 and 25, with Eigen value of 1.80 it explains 6.0% of variance.
5. Factor 5 is linear combination of 3 questions 23,12 and 13, with Eigen value of 1.34 it explains 4.47% of variance.
6. Factor 6 is linear combination of 3 questions 14, 18 and 19, with Eigen value of 1.32 it explains 4.40% of variance.
7. Factor 7 is linear combination of 2 questions 8 and 15, with Eigen value of 1.13 it explains 3.78% of variance.

Once the factors were extracted the next task was to name these factors.

1. Factor 1 is named as EMPLOYEE PERFORMANCE as all the 5 questions in this factor directly or indirectly measure the performance of employees of service provider.

2. Factor 2 is named as RELIABILITY as all 7 questions which loaded together to form this factor have reliability of service provider as their focal point.
3. Factor 3 is named as ASSURANCE as all the 6 questions which constituted this factor were meant to check levels of assurance felt by the customers.
4. Factor 4 is named as RESPONSIVENESS as all the 4 questions which loaded together to form this factor were meant to assess responsiveness of service provider's employees towards their customers.
5. Factor 5 is named as COMPETITIVENESS as all the questions in this factor assess the competitiveness of service provider.
6. Factor 6 is named as NETWORK QUALITY as all the questions in this factor were meant to assess network and call quality.
7. Factor 7 is named as TANGIBILITY as both the questions which formed this factor were asked to test physical evidence shown by the service provider.

6. Conclusions

The present study shows that Service Quality in mobile industry is 7 dimensional. Rank Analysis on the basis of Variance Explained resulted in following arrangement in order of their importance for service quality from highest to lowest :

1. Employee Performance 2 Reliability 3 Assurance 4 Responsiveness 5 Competitiveness 6 Network Quality 7 Tangibility
- Thus Employees Performance ranks as most important dimension of service quality in mobile industry and Tangibility ranks as least important dimension.

7. References

- i. Garvin, D. A. (1988). *Managing Quality – The Strategic and Competitive Edge*, The Free Press, New York. 132
- ii. Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W. (2006). *Multivariate data analysis (Vol. 6)*. Upper Saddle River, NJ: Pearson Prentice Hall
- iii. Hasenfeld, Y. & Richard A. (1974). *Human Service Organizations : A Book of Readings*, The University of Michigan Press
- iv. Howat, G., Crilley, G. & McGrath, R. (2008), A focused service quality, benefits, overall satisfaction and loyalty model for public aquatic centres. *Managing Leisure*, Vol. 13, pp. 139-161.
- v. Kaiser, H. F., & Rice, J. (1974). Little Jiffy, Mark IV. Educational and psychological measurement.
- vi. Kandampully, J. (2002). Innovation as the core competency of a service organisation: the role of technology, knowledge and networks. *European Journal of Innovation Management*, 5(1), 18-26.
- vii. Ladhari, R. (2009). Service quality, emotional satisfaction, and behavioural intentions.
- viii. *Managing Service Quality*, Vol. 19 No.3, pp. 308-331.
- ix. Lehtinen, U. and J. R. Lehtinen (1982), "Service Quality: A Study of Quality Dimensions," unpublished working paper, Helsinki, Finland: Service Management Institute.
- x. Martinez, J. & Martinez, L. (2010), "Some insights on conceptualizing and measuring service quality", *Journal of Retailing and Consumer Services*, Vol. 17, pp. 29-42.
- xi. Parasuraman, A., V. A. Zeithaml & Berry L. L. (1988). SERVQUAL: A Multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64 (1), pp. 12 - 40.
- xii. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Alternative scales for measuring service quality: a comparative assessment based on psychometric and diagnostic criteria. *Journal of retailing*, 70(3), 201-230
- xiii. Rust, R. T., & Oliver, R. L. (1994). *Service quality: new dimensions in theory and practice*. London: Sage ,pp.1-19.
- xiv. Seth, N., Deshmukh, S. G. & Vrat, P. (2005). Service quality models: a review',
- xv. *International Journal of Quality & Reliability Management*, Vol. 22 No. 9, pp. 913-949.
- xvi. Stewart, D. W. (1981). The application and misapplication of factor analysis in marketing research. *Journal of Marketing Research*, 51-62.
- xvii. Thomas, R.E. (1978). Strategy is different in service business. *Harvard Business Review*, Vol. 56, Issue:4, pp. 158-165.