



SERVICE QUALITY ASSESSMENT ON TELECOMMUNICATION INDUSTRY: A LESSON FROM BANGLADESH

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ABSTRACT

The success of a service oriented organization mostly depends on the level of customers' satisfaction. This study assesses the customer satisfaction of telecommunication companies in Bangladesh. The study used 400 samples from the capital city, Dhaka and a metropolitan city, Barisal of Bangladesh. A structured questionnaire following SERVQUAL model was used to generate data. At first, factor analysis technique is used to identify the most influential factors and then regression analysis is used to estimate the relationship between factors and the level of customer satisfaction. Results indicate that reliability, empathy and tangibility are the influential drivers of the service quality affecting customer satisfaction. The study suggests that customer will enjoy more satisfaction if the company gives an importance to the development of both its infrastructure and employees in a way that customer can rely on it. It is also recommended that organizations should keep in record and consider all the suggestions retrieved from the customers.

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INTRODUCTION

The emergence of the mobile has benefitted people across all walks of life. Going forward, it is expected to play a significant role in bridging the digital divide between the rich and poor, between near and far, thus in connecting the nation. It has not only become the primary communication medium for people, but also finding numerous uses across various domains. Today, it is being used for banking transactions, making payments, acting as an educational and multimedia tool, etc. However, the urgent need is to deliver services that could enable efficient day to day life for the larger masses efficiently. It can be an efficient mode of spreading governance, and can also be used across verticals such as agriculture and healthcare. The rapid rise of high-end mobile phones (smartphones) has enabled the customers to access and utilize numerous software applications as utility or for entertainment. Telecommunications is now considered an infrastructure essential to a country's economic development and competitiveness. Apart from facilitating communication and various economic activities, telecommunications is an economic sector in itself.

The mobile phone boom worldwide has created jobs and generated income for the government, operators, manufacturers, service providers, and application/content developers. In developing countries, mobile phones serve as the universal access tool, especially for their low-income populations. In every sector of business, telecommunication plays an unavoidable role. Telecommunications technology can reduce geographical distance to an irrelevant factor. E-mail, voice mail, faxing, file transfer, cellular telephony, and teleconferencing allow for full communication, whether among managers, between managers and their staffs, or among different organizations. Thus, telecommunication services are considered as lifeblood of an organization. Telecommunication had been a state monopoly industry until late 1980s in Bangladesh. Privatization of the telecommunications sector began in 1989 when Sheba and BRTA were awarded 25-year licenses to install and operate fixed-wire lines and wireless services in rural areas. The same year, Pacific Telecom Bangladesh got the government's permission to launch the country's first cellular phone and price of the mobile phone was above BDT. 50,000.00 (Bangladeshi Taka Fifty Thousand only). The overall situation in Bangladesh has been improved to some extent by a rapidly expanding mobile market.

Today, the subscribers of the mobile phone industry are increasing by millions per year where the growth of telephone exchange capacity in Bangladesh in the last five years was on an average only 77,000 lines per year. In Bangladesh, mobile phone penetration has reached by 20 percent from an insignificant number. At the end of 2004, the total number of mobile phone users was around 4 million where the number of mobile phone users exceeded 60 million by 2012, bringing the penetration to 40%. The operators in Bangladesh have become extremely aggressive in booming mobile phone market which has created more than a quarter million jobs and a substantial amount of capital to its GDP growth (Mahmud, 2010). Today, Bangladesh has become a significant hub for telecommunication sector. The average revenue from this sector will be more than USD 183 million a year. Telecommunication industries have an importance to the GDP of Bangladesh and it contributed 15.48% in the fiscal year of 2007-08 which is almost double just in last 5 years (8.9% in the fiscal year of 2002-03). It denotes that the contribution of the telecommunication sector is increasing at a larger extent (Hossain et al., 2009).

Undoubtedly, the mobile phone has dramatically transformed peoples' lives in Bangladesh. It is attached to a specific person rather than a place. In addition, the mobile phone is personal and completely in the control of the owner who gives them a sense of autonomy, control access and privacy (Haste, 2005). Mobile operators now provide a variety of services and promotional packages i.e. FNF scheme, off-peak rate, free talk time, loyalty discount on airtime, free SIM replacement, club magnate service, Zem Fun, pulse billing etc. The NWD charge has been halved to BDT. 1.5/minute. Besides, it has also reduced monthly line rent, reinstallation of line charge, name and number charge. But they can't create a positive reflection on consumer attitude and perception on mobile phone companies (Yusuf and Alam, 2007). So, mobile communications can be considered credible if it has the trustworthiness, expertise and attractiveness (Prete, 2007). According to the GSMWorld.com website in 2004, 207 countries had a global system for mobile communication; total subscribers were 1.047 billion whereas in Bangladesh, total subscribers increased from 21.77 million to 34.37 million during the period of 2006-07 (The Telecom Regulator, 2008). At the end of May 2018, the country had 150.73 million active mobile phone users (BTRC, 2018).

The purposes of the study is to shed a light on the level of customer satisfaction and to identify the most influential drivers of customer satisfaction for telecom companies by taking samples from two different cities of Bangladesh. The next section details the literature review of the study, followed by methodology in section 3, description of data in section 4, results and discussions in section 5. Conclusions and recommendations are given in the last section.

Literature Review

The available literature suggested that customer satisfaction basically depend on the service quality (Cronin and Taylor, 1992; Spreng and Mackoy, 1996; Jones and Suh, 2000; Coyles and Gokey, 2005; Ranaweera and Prabhu, 2003; Choi et al., 2004). Service quality is the difference between customers' expectation and their perceived performance of a service. Based on this definition, Parasuraman et al. (1988) developed the SERVQUAL model considering five dimensions i.e.

tangible, responsiveness, reliability, assurance and empathy to measure the service quality in mobile value-added services. SERVQUAL model was also used in different sectors like Banks (Lokeet et al., 2011; Khenget et al., 2010; Dennis et al., 2009; Allred and Lon Addams, 2000 and Jabnoun and Hasan Al-Tamimi, 2003), Online shopping (Bauer et al., 2006), Automobile industry (Andaleeb and Basu, 1994) and Healthcare services (Akhteret et al., 2010 and Taylor and Baker, 1994) etc.

Literatures on service quality of telecommunication industry in the world also prevail. Kim et al. (2004) examined the service quality of mobile communication services in South Korea by call quality, value-added services, and customer support. Research on this subject showed that most of the studies were conducted in industrialized countries such as United State, the United Kingdom, and Japan. Ojo (2010) studied service quality on telecommunication industry in Nigeria and found that there is a positive relationship between service quality and customers satisfaction. He also argued that customer satisfaction helps in customer loyalty and retention. Wang et al. (2004) studied service quality, customer value and satisfaction of China's telecommunication industry and found that customer perceived service quality influence their behavior intentions indirectly by affecting customer value and satisfaction. Johnson and Sirikit (2002) studied service quality of Thai telecommunication industry and found that tangibles are extremely important for Thai telecommunication industry. They also found that service provider's interest differences prevail in a larger extent for which the rating of empathy is very poor. Leisen and Vance (2001) studied cross-national assessment of service quality for telecommunication industry in the USA and Germany. They found that both of the countries differ in terms of their evaluation of service quality dimensions. They also argued that effective service quality design and delivery of global competitiveness are required for a standardized service quality solution. Lai (2004) studied consumer satisfaction of SMS in Singapore and found that perceived value together with tangibles, empathy and assurance are played important role in customer satisfaction. Chae et al. (2002) used connection quality, content quality, interaction quality, and contextual quality to measure the information quality of mobile networking services. Islam and Hossain (2012) studied factors influencing telecommunication marketing in Bangladesh and found that network coverage, capacity of storing numbers and call rate are the influential factors for telecommunication marketing in Bangladesh. The impact of service quality on customer satisfaction in the telecommunication industry has not received adequate research attention in Bangladesh. Thus, there is a major gap in the relevant literature on service quality of telecommunication industry in Bangladesh, which has to be covered by this research. This study investigates the relationship between service quality on five quality dimensions (reliability, responsiveness, assurance, empathy and tangibility) and customer satisfaction.

MATERIALS AND METHODS

A descriptive study has been conducted to identify the characteristics of the dimensions of the service quality and collect the information from the respondents. 400 samples have been collected from the capital city, Dhaka and a metropolitan city, Barisal of Bangladesh representing the most of the other cities through convenient and judgmental sampling

method. The questionnaire is designed based on the SERVQUAL attributes (Appendix 1) under 5-point Likert scale (1=strongly disagree...5=strongly agree). The respondents were asked each of the SERVQUAL attributes individually for measuring the importance of service quality of the telecommunication industries in Bangladesh. Theoretically service quality is measured based on five broader dimensions like reliability, responsiveness, assurance, empathy and tangibility. The definition of five quality dimensions from Bangladesh telecom industry’s point of view is given in Appendix 4. The level of customers’ satisfaction increases if quality of services increases measured in terms of all these dimensions. Service quality is the customer’s judgment of overall excellence of the service provided by the organization that was expected. Thus the conceptual framework for the customer satisfaction through service quality is designed as Zeithaml *et al.*, (2006).

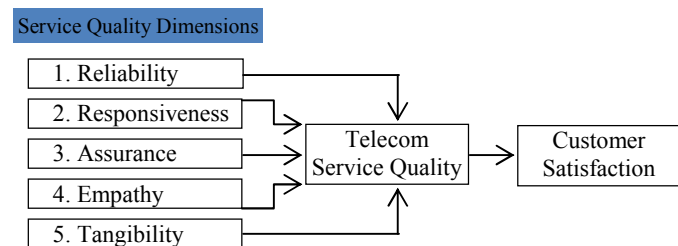


Figure 1. Customer Perception on Telecom Service Quality

Frequency and percentage have also been calculated to find out the status of the respondents about their biographical information like gender and age of the respondents, operator used, duration of usages of an operator etc. KMO statistic, Bartlett’s Test of Sphericity and F-statistics has been used for testing data validity and model fitness. At first, factor analyses have been conducted to identify most influential factors. There are 20 questions in the questionnaire defining the dimension of service quality. Principal component analysis technique (PCA) is used to identify most influential questions for telecom industry in Bangladesh. The factors identified by PCA as most influential drivers are then used for identifying its importance to the customers’ satisfaction by regression technique in the second stage. All the hypotheses were tested with the help of linear regression model. To identify the importance of each of the service quality dimensions in defining telecom service quality the following regression model is used.

$$SERVQUAL = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where, dependent variable, SERVQUAL is the service quality of the telecommunication industries, α is constant, β_i are parameters to be estimated for independent variables, X_i are the dimensions of service quality and ϵ is the error term which the researchers assumed as NIL for this study. Robust estimation is used if heteroskedasticity is found while making final estimation.

Data

400 respondents have been interviewed randomly during the period of 2017-18 from two of the city corporations of Bangladesh. The respondents surveyed on some of their biographical information like gender and age of the respondent, type of operation they used, duration of usages the operator and type of services they are taking from the operator. According to the surveyed data it is seen that 56%

were male (225) and 44% were female (175). 70% respondents are within the age range between 15-35 years who are actively taking services from selected telecommunication companies and the rests are above the 35 years old. It is also seen in the Appendix 2 that most of the respondents are using Grameenphone operator contributed alone by 64% followed by Banglalink 14%, Airtel 10% and so on as on our surveyed data. 2-6 years of using a particular operator is dominated contributed 36% whereas more than 3 years of using a particular operator is the majority (66%). The result infers that most of the surveyed respondents having the connection for a long period of time. The maximum surveyed people (94%) are using pre-paid services (Own estimation, Field Survey: 2017-18).

RESULTS AND DISCUSSIONS

Before model estimation, different tests were performed and tests results are presented in Table 1. The first test is done to see if the samples are adequate and found that the study is valid in terms of sample adequacy since the value of KMO statistic is more than 50%. Second test is done to see if the samples are from populations with equal variances and test statistics indicate that variances are homogenous. The third test (Breusch-Pagan/ Cook-Weisberg) is performed to test if there is any heteroskedascity. The test statistics indicates that the null hypothesis is rejected meaning there is heteroskedasticity. So the simple OLS is not an appropriated technique to use rather robust estimates of regression should be used. The estimates using simple OLS regression is given in the Appendix 3 and the coefficients from robust estimates is given in Table 2 and used for results and discussion of this paper.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.802
Bartlett's Test of Sphericity	Approx. Chi-Square	2270.293
	Df	190
	Sig.	.000
Breusch-Pagan/ Cook-Weisberg	Cook- Chi ² (1)	53.46
	Prob>Chi ²	0.00

Source: Own estimation, Field Survey (2017-18)

From the factor loadings of the SERVQUAL attributes (see appendix 1), it is also seen that maximum attributes have the factor loadings more than 0.500 which indicate that the factors are correctly chosen. Thus all the factors are selected for subsequent estimation with regression. Due to the presence of heteroskedasticity, the regression model is re-estimated with robust standard errors. Estimated coefficient and standard errors are presented in Table 2.

Table 2. Coefficient Table of Robust Estimation

Service Quality	Coef.	Robust Standard Error	P-value
Reliability	0.435 ***	0.073	0.000
Responsiveness	-0.027	0.108	0.804
Assurance	-0.061	0.120	0.612
Empathy	0.414 ***	0.081	0.000
Tangibility	0.240 **	0.109	0.029
Constant	0.296	0.535	0.580
n=400; F-statistic=26.60*** and R-squared=0.270			

Note: *** and ** denotes the statistical significance at 1% and 5% level of significance, Source: Own estimation, Field Survey (2017-18)

The coefficients from robust estimates can be used for results description and discussion since the p-value of F statistics is less than 1%. Furthermore, the value of R-squared is 0.27 indicating that 27% variation of dependent variable can be explained by independent variables included in this model. Therefore, it can be argued that service quality of the telecommunication industry depends on the factors defined by the dependent variables of the model used. But it does not mean that all the factors have significant influence on the dependent variables but only the statistically significant variables. Here *Null hypothesis, H_0 : There is no relationship between service quality and reliability and so on and Alternative Hypothesis: H_1 : There is a relationship between service quality and reliability and so on.* According to statistical significance, only reliability, empathy and tangibility, the three dimensions are found to have statistically significant influence on service quality and the significant values are 0.000, 0.000 and 0.029 respectively.

On the other hand, the rest two dimensions have greater significant value than the p-value 0.10 or 10% level of significance. Here *Null hypothesis, H_0 : There is no relationship between service quality and responsiveness and so on and Alternative Hypothesis: H_1 : There is a relationship between service quality and responsiveness and so on.* It is seen in the Table 2 that p-value=0.804 in the case of responsiveness dimension, which is greater than 0.10 yields the reason for accepting the null hypothesis. So, it can be concluded that this factor has no significant effect on service quality. Similar conclusion may be drawn in the cases of assurance (p-value=0.612), another dimension of service quality. However, theoretically these factors may have significant and influential effect on service quality but for this study these are found ineffective.

Reliability is found to be the most affecting dimension for service quality of telecommunication industries. The coefficient of reliability is 0.435 which denotes that service quality increases if service providers efficiently and effectively maintain promised services, timing of service delivery and error free records. It means that customers will find a specific service provider more reliable if services are delivered timely, keep up promised services and maintain an error free record of customers.

The coefficient of the empathy is 0.414 which denotes that service quality increases if the telecommunication service provider increases providing a-one business hour which is convenient to the customers, giving customers individual attention and caring from their heart. It means that customers' empathy can be achieved by offering convenient business hour, treating individually and having employees with utmost care and consideration for customers. For example it may include economic call rate for business hours, special desk for corporate customers, and trained employee with attitude that "customer first".

The coefficient of tangibility is 0.240 which denotes that the telecommunication service providers can also increase their service quality in relation to this factor. It indicates that service quality increases if the service provider increases usage of modern equipment, visually appealing material, facilities and people. It means that service providers can make their service quality more tangible through use of more modern equipment in processing customers' services. Moreover, it can also use

more appealing materials and facilities and people in their organization for tangibility of services such recruiting employee with very organized outfit and exclusively decorated customer care center.

So, a company may consider these three dimensions and the factors governing these to improve its service quality and for sustainable growth with more satisfied consumers. The results might be different making more factors or dimension statistically significant if respondent and sampling areas are increased which was not possible due to limited financial budgets.

CONCLUSIONS AND RECOMMENDATIONS

Telecommunication sector plays a vital role in our economy by creating job, generating revenues and contributing different type of social programs. It has helped to transform the Bangladesh economy drastically during last few years. The customers are experiencing different problems like frequent changes in call rates, talk time, fall in networks, and weak frequency which makes them more satisfied resulting frequent switching of operators and using more than one operators. Though services providers can overcome most of these, but, they need supports from regulators. Suppose changes in call rates are mostly due to tariffs and levies imposed by the regulator and hence service providers are mostly dependent on regulator. This research is done to identify the factors influencing service quality and customers satisfactions. It is found that maintaining promised services, service delivery timing, individual customer cares, use of modern equipment and facilities are the very few to mention among several factors can improve the service quality.

Based on the findings of this study the following issues can be taken into consideration by the telecom service providers and regulators:

- Maintain promised services and timing of services is critical to satisfy customers.
- Customers' are to be treated and cared individually.
- Should use more modern equipment and facilities in customer handling and service processing.
- More trained, motivated, and committed employees who are directly involve in customer dealing.
- Taxes and levies should be imposed by considering the ability of both customers and service providers.
- Policies influencing the use of more modern equipment and facilities.

The study may be further investigated comparing both public and private telecom services and its service quality. To identify the hedonic pricing of the telecom services may be the scope of the future research. The study concludes only the service quality of telecommunication industry in Bangladesh where customer loyalty and retention were not measured in this study statistically. It may be another scope of research for the further investigation.

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Appendix-1. SERVQUAL Attributes and Their Factor Loadings

<i>Communalities</i>	<i>Initial</i>	<i>Factor Loadings</i>
<i>Reliability</i>		
Providing services at the promised time	1.000	.574
Performing services right the first time	1.000	.686
Maintaining error-free records	1.000	.648
Providing services as promised	1.000	.667
<i>Responsiveness</i>		
Keeping customers informed as to when services will be performed	1.000	.666
Prompt service to customers	1.000	.358
Willingness to help customers	1.000	.536
Readiness to respond to customers' requests	1.000	.589
<i>Assurance</i>		
Employees who instill confidence in customers	1.000	.518
Making customers feel safe in their transactions	1.000	.491
Employees who are constantly courteous	1.000	.439
Employees who have the knowledge to answer customer questions	1.000	.522
<i>Empathy</i>		
Giving customers individual attention	1.000	.613
Convenient business hours	1.000	.550
Employees who deal with customers in a caring fashion	1.000	.673
Having the customer's best interest at heart	1.000	.574
<i>Tangibility</i>		
Modern equipment	1.000	.527
Visually appealing facilities	1.000	.620
Employees who have a neat, professional appearance	1.000	.422
Visually appealing materials associated with the service	1.000	.516

***Extraction Method: Principal Component Analysis

Appendix 2. Basic Information on Telecommunication Industries

<i>Particulars</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Cumulative %</i>
<i>Operator used:</i>			
Grameenphone	254	63.50	63.50
Banglalink	55	13.75	77.25
Airtel	40	10.00	87.25
Robi	38	9.50	96.75
Teletalk	13	3.25	100.00
Total	400	100.00	
<i>Type of service:</i>			
Post-paid	25	6.25	6.25
Pre-paid	375	93.75	100.00
Total	400	100.00	
<i>Duration of usage:</i>			
Less than 1 year	16	4.00	4.00
1-3 years	119	29.75	33.75
3-6 years	144	36.00	69.75
More than 6 years	121	30.25	100.00
Total	400	100.00	

Source: Own estimation, Field Survey 2017-18

Appendix-3. Coefficient Table from Simple OLS Estimation

<i>Service Quality</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>P-value</i>
Reliability	0.435	0.073	0.000
Responsiveness	-0.027	0.093	0.773
Assurance	-0.061	0.093	0.512
Empathy	0.414	0.073	0.000
Tangibility	0.240	0.079	0.002
Constant	0.296	0.390	0.448

n=400, F-statistic=29.41*** and R-squared=0.27

Note: *** indicates the statistical significance at 1% level of significance; Source: Own estimation, Field Survey 2017-18

Appendix-4. Definition of Five Quality Dimensions of Telecom Services

<i>Dimensions</i>	<i>Telecommunication Services</i>
Reliability	Provide SMS and voice call regarding any new services/ offers
Responsiveness	Readiness to respond and prompt services to customers
Assurance	Educated, trained and courteous employees
Empathy	Treat customers individually when asked for any services and consider customers' best interest from heart
Tangibility	Internal reports, dress of the employees, well-decorated office, computerized services
