

## Measuring the Customer Satisfaction Level of 3G Services in Bangladesh

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**Abstract:** *The telecommunication industry of Bangladesh has been observing a dynamic shift from talk time based business to data based business. The intervention of 3G services has opened up newer ways to satisfy the consumers. This study tries to measure the level of customer satisfaction of 3G services in Bangladesh. The purpose of this research is to identify the factors that result in greater customer satisfaction. Findings of previous studies related to this issue are taken into consideration in this article. Fifteen (15) correlated variables are selected from related literatures. Factor analysis has been conducted to reduce the number of total variables. Bartlett's test of Sphericity has been used along with the Kaiser-Meyer-Olkin (KMO) statistic. Apart from factor analysis, some other frequency tables and various diagrams are also developed to describe the market scenario. SPSS 16.0 has been used to analyze the data collected from primary sources through stratified sampling technique.*

**Key words:** *3G Services, Telecommunication Industry, Customer Satisfaction Level, Bartlett's test of Sphericity, Kaiser-Meyer-Olkin Statistic.*

### 1. Introduction

Currently, the world passes every single moment with the help of information technology. At the beginning, Telegraph was only one medium of communication (Marland, 1964). But with the advent of information and communication technology, the scenario has been changed dynamically. People now have a wide range of alternatives available to communicate with their near and dear ones, conduct businesses, and serve other purposes. Mobile phone is the revolutionary invention of modern science. With the help of this, it is possible to communicate at any place of the whole world within the shortest possible time. This report emphasizes on a new contribution of science in the telecommunication industry of Bangladesh, called 3G. Though the 3G services is new in the market and the people of Bangladesh are not that accustomed to it, this study provides a preliminary view of customer satisfaction. The paper starts with background of this study along with objective, significance, and limitations. Next, a detailed review of literatures has been given to identify the variables to be used in this report as well as methodological issues that can be implemented. After that, the methodology used to conduct this study has been outlined. Later, the analytical part followed by findings and discussions have been made. Before concluding remarks, significant numbers of recommendations have been made.

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### **1.1 Background of the Study**

Bangladesh has entered the mobile world through the City Cell Company in 1993. Later on, Grameenphone (GP), Robi (formerly known as Aktel), Banglalink (formerly known as Sheba World), Teletalk, and Airtel (formerly known as Warid) entered the telecommunication market<sup>3</sup>. In the last five years, the use of cellular phones and telecommunication has grown exponentially. As a result, the market has become competitive than any time before. All the market players are trying hard to cut a good edge in the form of price packages, value added services, promotional activities, and the like. The scenario of competition has been changed drastically. Few days ago, the competition was based on various packages of call rates, value added service, etc. But now a day the operators give their attention to other aspects that would increase the standard of living of the people. The launch of 3G services has set a milestone for the operators. The operators want to make their business profitable, but to make it possible; they have to fulfill the need of the customers. At first, Teletalk launched their 3G services on test in the Bangladeshi market in October, 2012 (The New Age, 2014). Crossing the entry barrier of almost 18 months, all of the operators has got the 3G license and started providing 3G based facilities to their customers. According to the Bangladesh Telecommunication Regulatory Commission (BTRC), GP added 16 lakh subscribers, Banglalink 8.31 lakh, Robi 7.82 lakh, and Airtel added 2.3 lakh subscribers after the commercial launch of 3G services. So, a huge number of population are now using 3G and the operators are trying to gather more subscribers to make their business more profitable and sustainable. This notion has set the ideation of conducting the research to find out the optimum satisfaction level of customers till date to check whether the operators are successful in their venture.

### **1.2 Objective of the Study**

The main objective of the study is to measure the customer satisfaction level of 3G services offered by telecommunication operators in Bangladesh. Apart from this, this study also focuses on following specific objectives:

- To understand the 3G penetration in Bangladeshi market
- To track customer needs from 3G value added services
- To find out what aspects of 3G value added service has been served till date

### **1.3 Significance of the Study:**

This study is not just a mere academic study, rather it covers a wide area to serve different group of people. With the help of this research, the authors of this study can determine the satisfaction level of the customers of 3G services as well as they can come to know about the factors that are responsible for this. Talking about other researchers, this study sets a platform for other researchers to gather more knowledge about 3G and conduct their respective further researches by adding or deleting some of the variables what have been used in this study. The paper will help the business world by providing information on what the customers want from 3G value added services. Moreover, they will come to know if they successfully serve the need of the consumers, whether this will

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<sup>3</sup> Source: Mobile Operators in Bangladesh, electronically searched at [www.deshimobile.blogspot.com](http://www.deshimobile.blogspot.com).

be a profitable venture for them and sustainable in the long run. And finally, if the telecommunication operators improve the services, the consumers as well as the society will get better 3G services that will help them improve their lifestyle. Consequently, the telecom operators will be able to hatch greater profit by providing 3G services to the subscribers.

#### **1.4 Limitations of the Study:**

While conducting the study, some limitations can be pointed out that critics may find to demean as well as other researchers may find to reestablish. A total of 15 variables have been used in this study considering the perspective of telecommunication services in Bangladesh. There can be some other variables that may influence customer satisfaction. The market penetration of 3G is still not that matured. Even many operators still could not run this service in a full swing up to the capacity. Thus, this study may lack reliability as it is based on early adopters. Moreover, this study has been conducted using factor analysis. There are many other statistical tools and analyses that may be helpful.

## **2. Literature Review**

The number of researches focusing on customer satisfaction is voluminous. Different researchers tried to measure customer satisfaction on various issues. This study emphasizes on the customer satisfaction of 3G services launched by telecommunication operators of Bangladesh. Five of total six operators have already launched 3G value added services and it is high time to anticipate whether the operators are properly serving consumer needs. This section firstly identifies independent variables from related literatures and then finds various statistical aspects that can be used to measure customer satisfaction in relevant field.

### **2.1 Identification of variables**

While measuring the customer satisfaction of the services provided by the telecommunication operators, one study showed that friendly and courteous behavior of knowledgeable employees has been found to be the most prominent factor (Hokanson, 1995). The study also revealed that the accuracy in billing system, pricing of services, value provided to the customers, and faster service delivery are other factors responsible for customer satisfaction in telecommunication industry. Another study highlighted on social status of the consumers associated with telecommunication operator as the most significant aspect to satisfy the consumers (Rani et al., 2012). Apart from this, price package and simplicity of service design are found to be influencing factor for increased customer satisfaction. A model has been developed by (Wang et al., 2004) where customer satisfaction for 3G services offered by telecommunication providers has been shown to be a result of service quality, information quality, and system quality ((DeLone & McLean, 2003).

A rigorous study has been conducted in order to find out the factors responsible for customer satisfaction of 3G services in India. Based on that study, customers desire thorough care from the employees, fast recovery of service failure, compensation when needed, favorable tariff and data plan, customized promotional offerings, and other value

added services as points of difference from other competitors (Jamil, 2011). As musts in service delivery, they require greater and stronger network coverage and recharge points at convenient locations. Some new factors have been found in one study where subsidized handset and technological adoption are emphasized mostly (GSMA, 2011). As 3G service allows consumers to browse internet at high speed, it should enable consumers to get access anytime of the day ensuring fullest security of personal information and web surfing along with keeping back up data in case consumers need it (Zarife, 2009).

Based on the aforementioned study conducted on the problem at hand, some variables have been taken directly from the literature that would influence the customer satisfaction of 3G services in Bangladesh. For the perspective of Bangladesh, the variables that can be derived from literature in this study are timely usage of 3G services, reasonable price plan, 3G related value added services and promotional offerings, social status due to 3G usage, cheaper than other alternatives, faster internet, wide availability of network coverage and recharge points, use of updated technology, and online security. Along with this, some other variables have been included in this study that might have impact in customers' satisfaction of 3G services. These variables are billing accuracy of 3G packages, quick connectivity to 3G service whenever available, notification on 3G connection, and usage based pricing.

## **2.2 Methodological Issues**

As the number of related researches is many, so does the methodological issues used in those researches. One of the simplest ways to measure customer satisfaction is to use Customer Satisfaction Index (CSI) by comparing customer needs with products and services belonging to same industry (Angelova et al., 2011). In the USA, a common indicator is used to evaluate the quality of products and services based on the American Customer Satisfaction Index (ACSI) that enables consumers to measure their satisfaction among products from different industries. This index is properly monitored by the US government where consumers rate products on a 1-10 scale (Cassel, 2006). By using Structural Equation Modeling (SEM), a structure can be developed to define the satisfaction level as a result of different components that are considered to be relevant for explaining the overall satisfaction and the data are collected in a continuous scale in order to understand the actual gap in the responses and replicate the scenario in the structure.

The extent of customer satisfaction can be presented in an equation as the summation of standardized quality and customized quality, each multiplied with its relative importance (Khattar, 2006). Customer Satisfaction Rating can be obtained through a questionnaire for individual product based on experience and objective judgment, although this rating can be influenced by emotional bias. To remove such problem, it has been highly recommended to collect samples based on cluster technique to ensure heterogeneity within each cluster (Chemuturi, 2007). In order to measure customer satisfaction through survey, it has been suggested to survey over 1000 respondents from larger population including various demographic and attitudinal queries. After finding the key drivers or variables affecting customer satisfaction, multiple regression can be used to find relative importance of each of these variables. Presenting the findings through bubble charts

make it easier and simpler to communicate with the audience and point out the weaker areas that companies can improve to ensure customer satisfaction. While measuring customer satisfaction for a longer period of time, the Best Value Performance Indicator Survey technique has been developed to compare product and service performance and corresponding satisfaction associated with it (Anderson et al., 1997).

Based on the literature and theoretical aspects, different techniques to measure customer satisfaction has been found. This study considers factor analysis in order to find the key determinants out of all the variables found through literature.

### **3. Methodology:**

This study bases mainly on quantitative research to describe the market scenario of current telecommunication industry. Thus, this study is a descriptive research that has been conducted using primary data mostly and collecting secondary data to a very minimal extent. The primary data have been collected through surveying the respondents and the secondary data have been collected from different websites. The target population of this study includes all subscribers of mobile operators and the sampling frame has been short listed based on the usage of 3G services in the divisional cities of Bangladesh. The initial sample size of the study was 60 which are then rounded to nearest decimal considering 95% incidence rate and 95% completion rate. Thus, the final sample size becomes 66<sup>4</sup>. The samples have been collected through stratified sampling technique where the entire respondents were grouped into four strata (student, businessmen, service holder, and others). Later, from each stratum, a predetermined number of respondents, emphasizing on students and service holders as the key market of 3G services, have been collected randomly. The questionnaire prepared to collect data included some MCQ based demographic questions followed by research topic oriented purposive questions on which the respondents were asked to put their agreement or disagreement based on a 5-points likert scale. Factor analysis, along with some pie charts, frequency tables, and other diagrams, has been used to analyze the data. The collected data have been analyzed using SPSS 16.0 and taking support of MS Excel 2007.

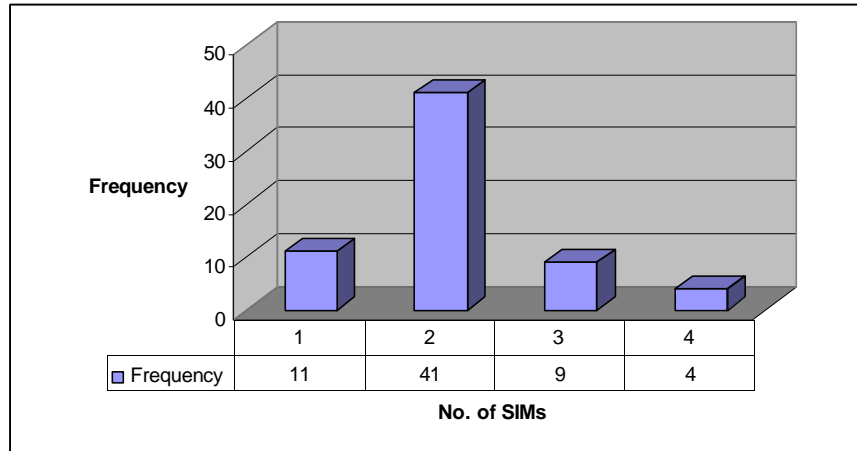
## **4. Data Analysis**

### **4.1 Demographic Analyses**

Though this study mainly focuses on factor analysis in order to find out whether the customers are satisfied with 3G services. Apart from this, some other demographic analyses have been made that would provide the readers and other practitioners to get a brief idea about the market.

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<sup>4</sup> Out of total 66 respondents, 58 were Male and 8 were female; 55 belonged to 20 to 30 years, 8 belonged to 30 to 40 years and 3 were over 40 years old; and 27 were Students, 3 were Businessmen, 33 were Service Holder, and 3 Others.



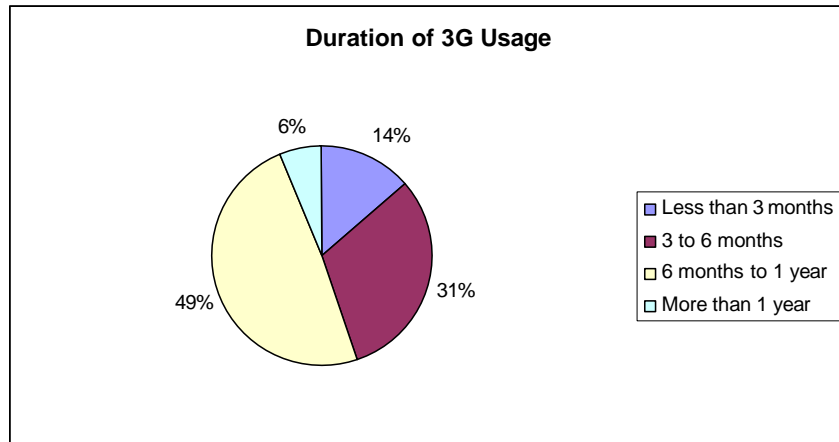
**Figure 1: Number of Operators**

The figure above shows that most of the respondents (41 out of 66) use 2 SIMs of different operators. The number of single SIM user is not that significant (only 11 out of 66). One astonishing fact is that there are some subscribers (4) who use 4 SIMs of different operators for various purposes.

	1st Operator	2nd Operator	3rd Operator	4th Operator
<b>GP</b>	25	6	2	
<b>Airtel</b>	16	20	3	
<b>Banglalink</b>	3	14	4	2
<b>Robi</b>	20	13	2	
<b>Teletalk</b>				2
<b>Citycell</b>			1	

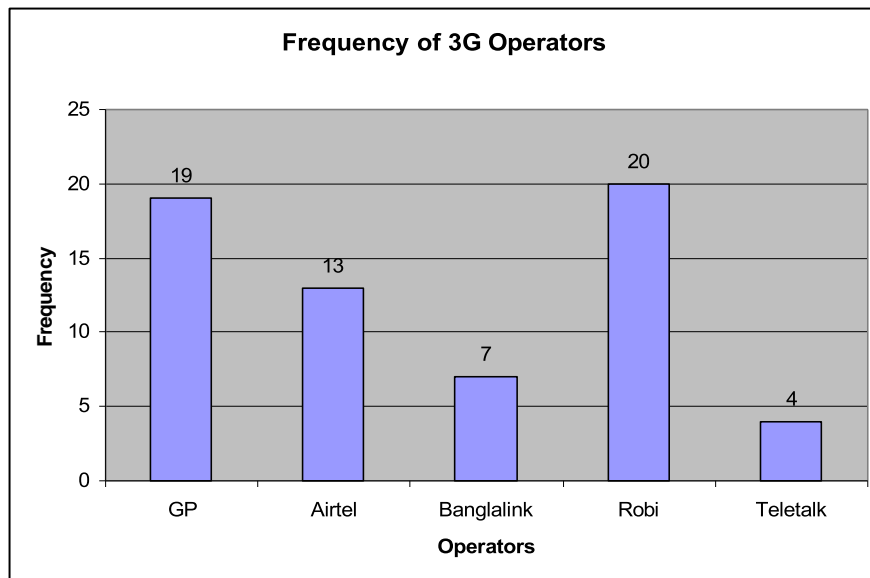
**Table 1: Comparison of Network Operators as Usage Basis**

The table above shows that most of the respondents (25) use GP as their 1<sup>st</sup> SIM operator followed by Robi (20) and Airtel (16). As the 2<sup>nd</sup> operator, respondents prefer Airtel mostly (20) with almost equal choice of Banglalink and Robi (14 and 13 respectively). There are very insignificant number of subscribers use 3 or 4 operators. It can also be seen that the selection of Citycell and Teletalk remains at last stages out of all operators.



**Figure 2: Duration of 3G Usage**

The pie-chart above gives a brief of the duration of using 3G services of the respondents. Out of all the respondents, 49% of them are using 3G for more than 6 months but less than 1 year and 31% of them are using it for more than 3 months but less than 6 months.



**Figure 3: Frequency of 3G Operators**

The table above presents the frequency of 3G users of different operators. It is apparent that Robi is leading the 3G market with maximum frequency (20 out of 66) followed by stiff competition from GP (19 out of 66). Though Teletalk is the pioneer in this market, they are lagging far behind (4 out of 66).

#### 4.2 Factor Analysis

In this study, 15 variables have been taken into consideration. The variables are derived from reviewing the literature on related subject matter. And for the factor analysis to be appropriate, the variables must have to be correlated. These variables are as follows:

- V1 – Billing Accuracy
- V2 – Timely Manner
- V3 – Reasonable Price
- V4 – Additional Features
- V5 – Quick Connection
- V6 – Social Status
- V7 – Cheaper than Alternatives
- V8 –Faster Internet
- V9 – Promotional Activities
- V10 – Availability
- V11 – Easy Recharge
- V12 – Updated Technology
- V13 –Regular Notification
- V14 –Internet Usage Based Pricing
- V15 –Online Security

Bartlett’s test of sphericity has been used to test the null hypotheses that the variables in the study are not correlated. In other words, the null hypothesis states that the population correlation matrix is an identity matrix. In an identity matrix, all the diagonal terms are 1 and all off-diagonal terms are 0. The test statistic for sphericity is based on a chi-square transformation of the determinant of the correlation matrix. A large value of the test statistic will favor the rejection of the null hypotheses. If this hypothesis cannot be rejected, the appropriateness of the factors will be questioned. Another useful statistic is the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. This index compares the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients. Small values (below 0.5) of the KMO statistic indicate that the correlations between pairs of variables cannot be explained by other variables and that factor analysis may not be appropriate.

#### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.647
Bartlett's Test of Sphericity	Approx. Chi-Square	314.825
	df	105
	Sig.	.000

**Table 2: KMO and Bartlett’s Test**

Consequently, from the above table, it is apparent that factor analysis is appropriate. Here, the KMO value is **.647**, which is between 0.5 and 1.0, and the approximate chi-square statistic is **314.825** with **105** degrees of freedom, which is significant at the **0.05**



levels. Therefore, the null hypotheses can be rejected and the alternative hypotheses that all variables are correlated to each other can be accepted. To analyze the variables ranging from V1 to V15, factor analysis has been used for data reduction. This analysis divulges the most important factors that contribute to satisfaction of 3G services of telecommunication operators in Bangladesh.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.716	24.774	24.774	3.716	24.774	24.774
2	2.636	17.572	42.347	2.636	17.572	42.347
3	1.414	9.423	51.770	1.414	9.423	51.770
4	1.182	7.882	59.652	1.182	7.882	59.652
5	1.024	6.825	66.478	1.024	6.825	66.478
6	.898	5.984	72.462			
7	.840	5.600	78.062			
8	.675	4.502	82.564			
9	.589	3.927	86.491			
10	.524	3.496	89.987			
11	.483	3.222	93.209			
12	.364	2.423	95.632			
13	.277	1.848	97.480			
14	.220	1.467	98.948			
15	.158	1.052	100.000			

**Table 3: Total Variance Explained**

From the above table, only 5 factors have been extracted, as cumulative percentage is greater than 70% at this point and eigenvalue is greater than 1.0 (it is recommended that factors with eigenvalues greater than 1.0 should be retained) that indicates the adequacy of the analysis using derived factors.

**Rotated Component Matrix**

	Component				
	1	2	3	4	5
q8a_Billing_Accuracy	.087	.053	.027	.055	<b>.801</b>
q8b_Timely_Manner	.299	.090	<b>.416</b>	.379	.252
q8c_Reasonable_Price	<b>.516</b>	-.012	.358	.490	-.100
q8d_Additional_Features	-.084	-.086	<b>.518</b>	.510	-.376
q8e_Quick_Connection	<b>.629</b>	.181	.165	.067	-.491
q8f_Social_Status	.307	-.201	<b>.791</b>	-.033	.091
q8g_Cheaper_than_Alternatives	-.050	.172	-.100	<b>.654</b>	.278

q8h_Faster_Internet	<b>.819</b>	.025	.114	-.133	.140
q8i_Promotional_Activities	.153	.163	.076	<b>.682</b>	-.091
q8j_Availability	<b>.771</b>	-.272	.114	.174	.210
q8k_Easy_Recharge	-.041	<b>.568</b>	-.248	.457	-.051
q8l_Updated_Technology	-.020	<b>.867</b>	.035	.109	.014
q8m_Regular_Notification	.114	.362	<b>.766</b>	-.029	-.105
q8n_Internet_Usage_Based_Pricing	<b>.740</b>	-.392	.131	.164	-.102
q8o_Online_Security	-.250	<b>.713</b>	.177	.136	.072

**Table 4: Rotated Component Matrix**

The extracted 5 factors can be interpreted in terms of the variables that load high coefficients. From the rotated component matrix table, factor 1 has high coefficients for Faster Internet (.819), Availability (.771), Internet Usage Based Pricing (.740), Quick Connection (.629), and Reasonable Price (.516). Thus, factor 1 can be entitled as “**Convenient Usage**”. Factor 2 has high coefficients for Updated Technology (.867), Online Security (.713), and Easy Recharge (.568). Thus, this factor may be labeled as “**Logistical Support**”. Factor 3 has high coefficients for Social Status (.791), Regular Notification (.766), Additional Features (.518), and Timely Manner (.416). Hence, this can be tagged as “**Delight Factors**”. Again, Factor 4 has high coefficients for Promotional Activities (.682) and Cheaper than Alternatives (.654). So, this factor can be named “**Promotional and Competitive Pricing**”. Finally, Factor 5 has very high coefficients for Billing Accuracy (.801). Thus, the fifth factor can be named as the variable indicates “**Billing Accuracy**”.

## 5. Findings and Discussion

The value of KMO and Bartlett’s test of sphericity has been found to be significant (.000) at 0.05 level. This indicates that customers are satisfied with the 3G services so far. From the detailed analysis derived from conducting factor analysis, five major factors are found responsible for the customer satisfaction about 3G services offered by telecommunication operators of Bangladesh. The first factor of ‘*convenient usage*’ indicates that people want to get 3G connection quickly and at a higher speed. At the same time, they want available 3G connections everywhere at a reasonable usage-based price. The second factor of ‘*logistical support*’ means that 3G subscribers want the telecom operators to update technology frequently along with ensuring online security of subscribers’ personal information. Moreover, they desire ease in recharging their accounts. Thirdly, the ‘*delight factors*’ indicate that customers aspire to receive additional features and regular notifications of 3G services and get access to it in a timely manner. Even, they think using 3G services gives them a unique social status. The fourth factor of ‘*promotional and competitive pricing*’ points out at cheaper price plan compared to competitors and promotional offerings initiated by the operators to delight the subscribers. The fifth factor highlights on ‘*billing accuracy*’ so that consumers have to pay the fair rate without any hidden charges and conditions.

## 6. Conclusion

With the successive growth of information technology, the lifestyle of people is becoming easier and simpler. In order to sustain in the market profitably, business firms also try to delight the consumers with newer product and service offerings. The same thing goes true in case of telecommunication industry of Bangladesh. There is stiff price competition going on backed by severe value added services based competition. 3G services is the latest war tool and five of total six operators are striving hard to grab the market share as much as possible. This study reveals that the operators are successful in fulfilling the needs of consumers about 3G services. And their satisfaction mainly bases on how conveniently they can use this service, how well firms are providing logistical supports, what delighting factors are provided apart from key service offerings, how competitive pricing is offered and promotional activities are undertaken, and how accurately they are paying the bill. For any operator to stand out in the crowd of competitors, it must have to ensure these five factors as a must to ensure me-too selling product and go for additional services offerings to retain the customers and make them loyal.

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