# Factors Influencing 3G Internet Usage Satisfaction of Youth in Dhaka Metropolitan area

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**Abstract-** *3g or the third-generation mobile network refers to higher speed in data transfer than the previous second generation internet service. The usage of 3G internet data was particularly popular among the youth in Dhaka urban metropolitan area. Various factors – speed, coverage, price, activation process, value-added service etc. affected the customer satisfaction with 3G internet usage and resulted into brand choice. Eventually, higher satisfaction level determines the customer retention for the telecommunication companies. In order to ensure higher consumer satisfaction the companies thus need to focus on 'Product Quality' as well as 'Customer Centricity' of their 3G offerings.*

**Keywords-** *Customer satisfaction; internet; 3G; customer retention; Product quality; customer centricity*

## 1. INTRODUCTION

3G is the third generation mobile network which provides customer video call and better data speed than EDGE (second generation internet service). It was first launched in Japan in 2001. In Bangladesh, Teletalk- the government owned mobile operator- was the first operator to launch 3G as pilot run in October 2012. In September 2013, the auction of the 3G spectrum for commercial usage of four major private mobile operators – Grameenphone, Banglalink, Robi and Airtel held and the four operators paid $525million to the Bangladesh Telecommunication Regulatory Commission (BTRC) to secure licenses. Grameenphone and Teletalk bought 10 Mhz, while Banglalink, Robi and Airtel each bought 5Mhz. In late 2013, Grameenphone, Banglalink, Robi and Airtel launched 3G commercially. Currently, as of September 2014 (give data of 2015), most of the major districts and metro areas are under the coverage of 3G.

## 2. LITERATURE REVIEW

Six mobile operators are currently operating in Bangladesh and combined they have 116.8 million subscribers (BTRC, July 2014). Several studies have been conducted for determining the factors influencing satisfaction with mobile operators. Ericsson Consumer Lab conducted a study across 40 countries and it concluded that across the world, there is notable variation in levels of user satisfaction with mobile operators. Speed of the mobile network is considered one of the most important factors associated with a high level of satisfaction. Other factors are coverage of network, customer service and price. A recent study conducted by Sylhet International University shows that in Sylhet metro area, customers gave more importance on strong and wide network coverage, lower call charges, and faster internet features when it comes to choosing mobile operators. However, the respondents of the survey were selected through convenience sampling and hence the results might be biased for low reliability and for a being non-representative sample of the target population. Another study was conducted with random respondents at marketplaces, educational institutions, pedestrians, government and private institutions in Dhaka, Chittagong and Rajshahi, which concluded that price had the most significant positive impact on consumer selection of telecommunication service provider, followed by quality of network and promotional activity (Haque, Rahman and Rahman, 2010)[4].

On the other hand, existing customers switch to other operators in order to get low call charges, wide and strong network coverage, and other service incentives (Hasan and Dey, 2013)[5]. Similarly, a quantitative study on university students in Ghana found that the basic reason for changing mobile service operators is cost savings and network reliability, followed by peer group influence and social reputation (Keelson, 2012)[6]. A study on Malaysian big city dwellers found that Malaysian telecom customers perceived price or call rate to be the most important factor,

followed by service quality, service availability, and promotion (Rahman, Haque and Ahmed, 2010)[8]. While a study by the University of Belgrade shows that in Eastern Europe, students attributed internet as the key factor (Kuzmanovic, Radosavljevic, and Vujosevic, 2011)[7]. In contrast, in Mumbai, youth attributed call rate as the prime factor, but that study was conducted in 2004 and findings may not be valid under current situations (Macro. 2004). Meanwhile, Customer satisfaction is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals." (Farris, Paul W.; Neil T. Bendle; Phillip E. Pfeifer; David J. Reibstein (2010)[1].

## 3.  CONCEPTUAL MODEL

With this background information, a conceptual model linking 3G user's knowledge about various aspects of product quality and service quality with his/her satisfaction level and retention with mobile operator *Figure 1* was developed. The model will enable to understand correlations of the 3G usage factors with the user satisfaction level, identify the underlying components of the 3G usage factors, assess associations of the underlying components with satisfaction level & identify the relationship between satisfaction level and retention with the operator. To substantiate the model with data, a survey in Dhaka metropolitan area was conducted to identify which aspects of the product quality and service quality are associated with the overall satisfaction of youth mobile phone users. The factors were derived from the seven Ps of marketing mix. The P's are product, price, place, promotion, people, process and physical evidence.
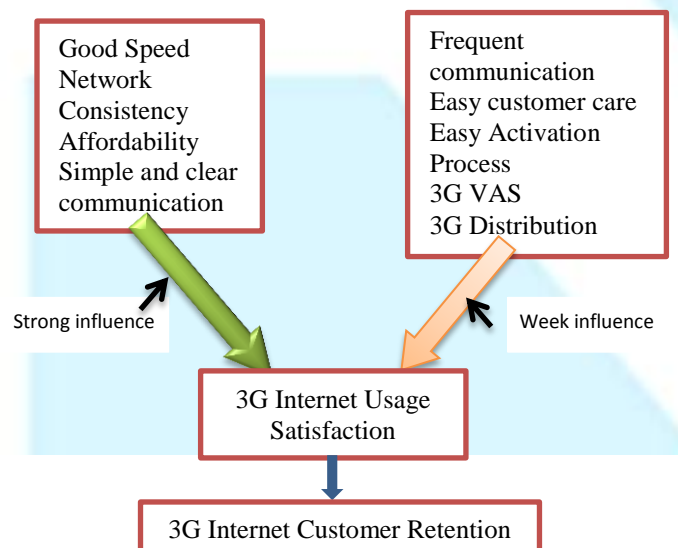


**Figure 1: Satisfaction factor model of youth 3G consumers in Dhaka Metro**

## 4.  METHODOLOGY

Study site, time and sample: The study deals with the satisfaction of 3G youth users in Dhaka metropolitan area in 2014. The size of the 3G users aged 16-29 in Dhaka metro was estimated from the five product mangers' insight, which was approximately 3 million. Due to resource constraint, a non-probability quota based sampling was followed for selecting 150 3G users, 30 from each mobile operator *Table 1*. The selected users were composed of equal number of 'college students', "university students' and 'professionals' quota.

**Table 1: Distribution of the sampled 3G users aged 16-29 years by user characteristics and mobile operator**

| User's characteristics | Grameen phone | Robi | Bangla link | Airtel | Teletalk |
|---|---|---|---|---|---|
| College Student | 10 | 10 | 10 | 10 | 10 |
| University Student | 10 | 10 | 10 | 10 | 10 |
| Professional | 10 | 10 | 10 | 10 | 10 |
| Total | 30 | 30 | 30 | 30 | 30 |

Questionnaire development: The questionnaire consists of 16 questions was developed and finalized after field testing. These questions were consisted of various statements related to product quality and user's perception about quality of service. The users (as respondents) were asked to put their level of agreement or disagreement with the statement. A semantic differential scale was used. The first question asked respondents to put score of his/ her satisfaction of overall 3G service. His or her satisfaction can range from 1 to 7. The next 15 statements were various factors affecting satisfaction- such as − speed of network, network consistency, price, quality of communication, frequency of communication, customer care, activation process, 3G value added service (VAS) and 3G distribution - and respondents were asked to put their level of agreement or disagreement with the statements.

Field operation: A face to face survey was conducted with 150 3G users of five mobile operators (Grameenphone, Robi, Banglalink, Teletalk and Airtel) living in Dhaka metro. Dhaka metro area consists of 22 thanas and 3G users were selected from every thanas.The internet services of Citycell, WiMax operators and broadband connections were not in the scope of the study. Secondary data were collected from text books, academic journals and websites.

## 5.  DATA ANALYSIS

Correlation is used to test the hypothesis. Correlation less than 0.00-.2 is considered as no relation, .2-.5 is considered as low correlation and .5-.7 is considered as moderate correlation and above .7 is high correlation.

Cornbach's Alpha is used to indicate reliability. The value higher than .9 indicate high internal reliability, .7-.9 indicates good reliability, .7-.5 indicates acceptable and below .5 indicated poor internal reliability. Correlation of the between overall satisfaction score with different aspects of the product quality scores and service quality scores were calculated. An aspect is considered to influence satisfaction if the correlation coefficient is more than 0.5.

To measure the loyalty between the service provider and the customer, Net Promoter Score (NPS) is used. NPS is based on the fundamental perspective that every company's customers can be divided into three categories: Promoters, Passives, and Detractors and that by asking one simple question — how likely is it that you would recommend to a friend or colleague?. In the NPS measurement system, customers respond on a 0-to-10 point rating scale and are categorized as follows:

- Promoters (score 9-10) are loyal enthusiasts who will keep buying and refer others, fueling growth.
- Passives (score 7-8) are satisfied but unenthusiastic customers who are vulnerable to competitive offerings.
- Detractors (score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth.

Different indicators reflect specific aspects of product quality and service quality. A few independent combinations of these indicators may represent product and service quality than the individual indicators do alone. These were extracted using the principal components method, like factor analysis, which is a dimension-reducing technique. The criterion for number of components to be extracted is that the eigenvalue (variance explained) of each has to be equal to or greater than one. The extracted components are then rotated by the varimax method. The aim of the rotation (Varimax with Kaiser Normalization) is to simplify the loadings in the sense that each loading should ideally be close to, or far from, zero so that it is clear that whether a given component has an effect on a particular variable.

The components scores were obtained for each 3G user using the principal components method with a varimax rotation. These components scores are random variables with known parameters. The higher the score the higher is the quality of the product and service. Finally, associations of the component scores with the overall service quality and retention with the operator were estimated using multiple regression technique

## 6. RESULTS

### 6.1 Reliability Testing

**Table 2: Cornbach's Alpha table**

| Cronbach's Alpha | N of Items |
|---|---|
| .912 | 15 |

The Alpha coefficient is .912. This indicates the items to have high internal consistency. Since reliability coefficient of .70 and higher is considered acceptable, the data collection is reliable.

**Correlation co-efficient**

**Table 3: Pearson correlation coefficients of good speed, network consistent, price, simple and clear advertisement, frequent communication, easy customer care and VAS with satisfaction (*significant at p<0.001.)**

| Name of factor variable | Sample size | Correlation coefficient (r) |
|---|---|---|
| Good speed | 144 | 0.756* |
| Network consistency | 142 | 0.708* |
| Affordability or price | 142 | 0.660* |
| Simple and clear advertisement | 145 | 0.711* |
| Easy activation | 146 | 0.331* |
| Easy communication | 146 | 0.303* |
| Easy customer care | 146 | 0.392* |
| 3G VAS | 146 | 0.286* |

The correlation of the overall satisfaction level score with good internet speed was 0.765, with consistent network was 0.708, with affordable price was 0.66, and simple and clear advertisement was 0.711 *Table 2*. The association was moderate, but significant with easy activation process (r=0.331), easy communication (r=0.303), easy customer care (r-=0.392) and 3G VAS (r=0.286).

Then, the correlation between Satisfaction and customer loyalty – expressed through continuing current operator – is measured.

**Table 4: Correlation between satisfaction and customer loyalty**

| | | Satisfaction | Continue Current Operator |
|---|---|---|---|
| Satisfaction | Pearson Correlation | 1 | .823[**] |
| | Sig. (2-tailed) | | .000 |
| | N | 146 | 143 |
| Continue Current Operator | Pearson Correlation | .823[**] | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 143 | 145 |

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between overall satisfaction level score and customer loyalty is 0.823. The relationship between these two factors is positive and strongly correlated.

## 6.2 NPS Score

NPS scores of all the 3G services has been calculated to find out which operator has the best 3G service. Below is the NPS score of five operators:

**Table 5: NPS score of all operators**

|  | Promoter | Passive | Distracter | NPS |
|---|---|---|---|---|
| **Grameenphone** | 40 | 26 | 33 | 7 |
| **Teletalk** | 53 | 26 | 21 | 32 |
| **Banglalink** | 29 | 29 | 43 | -14 |
| **Airtel** | 60 | 0 | 40 | 20 |

From the table, it is clearly seen that Teletalk has the highest NPS of 32. Banglalink has the lowest NPS.

## 6.3 Factor Analysis

Kaiser-Meyer-Olkin test show strength of relationships among variables. Usually, it should be more than 0.5 and the higher the value the better.

**Table 6: KMO and Bartlett's Test**

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .838 |
|---|---|---|
| Bartlett's Test of Sphericity | Approx. Chi-Square | 890.006 |
|  | df | 78 |
|  | Sig. | .000 |

In this case, the value is 0.838 and can be accepted. On the other hand, Bartlett's test shows whether the correlation matrix is an identity matrix. If the significance value is less than alpha, then we can reject the null hypothesis that the matrix is an identity matrix. Here, the significance is .000 and we can conclude that there are correlations among the data for factor analysis.

Communalities shows how much of the variance in the variables are accounted for by the extracted factors.

**Table 7: Communalities**

|  | Initial | Extraction |
|---|---|---|
| Good_Speed | 1.000 | .799 |
| Consistent_Network | 1.000 | .652 |
| No_Disconnection | 1.000 | .514 |
| Affordability | 1.000 | .578 |
| No_Overcharging | 1.000 | .476 |
| Easy_Activation | 1.000 | .530 |
| Easy_Communication | 1.000 | .640 |
| Easy_Customercare | 1.000 | .522 |
| VAS | 1.000 | .186 |
| Help_in_Daily_Activity | 1.000 | .515 |
| Easy_adv | 1.000 | .740 |
| Availability_Nearest_Shop | 1.000 | .515 |
| Video_Bufferless | 1.000 | .546 |

In this case, over 66% of the variance in peer influence is accounted for while 66.5% of the variance in data rate is accounted for.

The Total Variance Explained table shows extractable factors along with their eigenvalues, percentage of variance attributable to each factor, and cumulative variance of the factor and the previous ones.

**Table 8: Total Variance explained**

|  | Total | | | % of Variance | | |
|---|---|---|---|---|---|---|
|  | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.587 | 42.979 | 42.979 | 5.587 | 42.979 | 42.979 |
| 2 | 1.625 | 12.499 | 55.478 | 1.625 | 12.499 | 55.478 |
| 3 | .995 | 7.657 | 63.135 |  |  |  |
| 4 | .856 | 6.581 | 69.716 |  |  |  |
| 5 | .729 | 5.611 | 75.327 |  |  |  |
| 6 | .662 | 5.095 | 80.422 |  |  |  |
| 7 | .640 | 4.921 | 85.342 |  |  |  |
| 8 | .489 | 3.762 | 89.105 |  |  |  |
| 9 | .407 | 3.127 | 92.232 |  |  |  |
| 10 | .353 | 2.712 | 94.943 |  |  |  |
| 11 | .317 | 2.436 | 97.380 |  |  |  |
| 12 | .198 | 1.526 | 98.905 |  |  |  |
| 13 | .142 | 1.095 | 100.000 |  |  |  |

In this case, first four factors accounts for more than two-thirds of the variance, which is 70%. Subsequently, in Scree Plot where eigenvalues against all the factors are plotted, we can see two components have eigenvalues more than 1.0. So, these components will be retained.
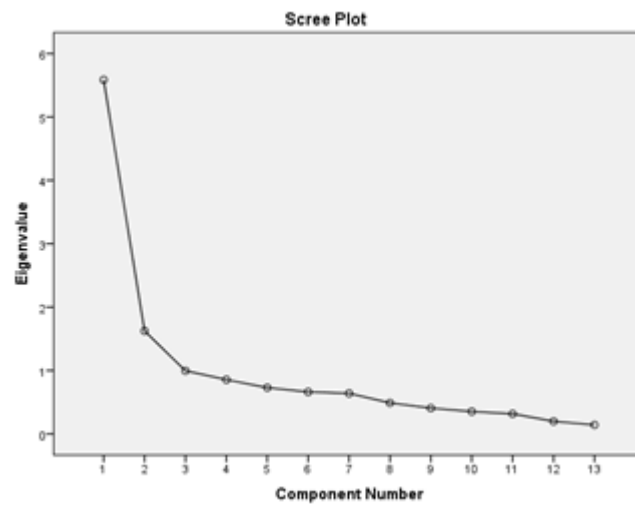
**Figure 2: Scree plot of components**

The next table shows the extracted components and loading of the variables on the extracted components. The higher the absolute value, the higher the contribution of the variable to the component.

**Table 9: Component Matrix**

|  | Component | |
|---|---|---|
|  | 1 | 2 |
| Easy_adv | .799 | -.319 |
| Consistent_Network | .756 |  |
| Good_Speed | .749 | -.487 |
| Affordability | .739 |  |
| Help_in_Daily_Activity | .716 |  |
| Availability_Nearest_Shop | .699 |  |
| No_Disconnection | .690 |  |
| No_Overcharging | .671 |  |
| Easy_Communication | .583 | .547 |
| Easy_Activation | .566 | .458 |
| Easy_Customercare | .549 | .470 |
| VAS | .428 |  |
| Video_Bufferless | .447 | .589 |

In this case, any value less than 0.3 were suppressed so that there is less clutter and only relevant values are shown in the component matrix.

**Table 10: Rotated component matrix of Factor Analysis**

|  | Component | |
|---|---|---|
|  | 1 | 2 |
| Good_Speed | .894 |  |
| Easy_adv | .843 |  |
| Consistent_Network | .789 |  |
| Affordability | .716 |  |
| No_Disconnection | .685 |  |
| No_Overcharging | .648 |  |
| Help_in_Daily_Activity | .620 | .360 |
| VAS | .328 |  |
| Easy_Communication |  | .777 |
| Video_Bufferless |  | .737 |
| Easy_Customercare |  | .694 |
| Easy_Activation |  | .693 |
| Availability_Nearest_Shop | .495 | .519 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
   a.   (Rotation converged in 3 iterations).

From the rotated component matrix the variables contribution most to a component can be identified. Two components were identified from total thirteen variables. Eigenvalue was 1.5 for the analysis, For component 1, good speed, consistent network, affordability, no network drop, no overcharging came out as most important. They all together fairly describe the "Product Quality". On the other hand, the component 2 was more strongly influenced by easy customer care, easy activation process, availability to near shop or easy distribution. They together describe "Customer Centricity".

## 7.  CONCLUSION

Acquiring a new customer is an expensive proposition for mobile phone operators due to the high tax regime and the different costs associated with subscriber acquisition. As a result, it is very important that the operators have enough insight on what affects customer satisfaction when it comes to a new technology and new service such as 3G high speed mobile internet. Without knowing which factors to focus upon, operators will not be successful in retaining its most valued customers. The major factors identified through this study will help operators to focus and channel their resources to ensure that the right experience can be offered to the customers in the way that the customers want.

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