

# **SOME ASPECTS OF SUSTAINABLE MOBILE INFRASTRUCTURE GROWTH OF BANGLADESH**

A Thesis

Submitted to the Department of Computer Science and Engineering of

BRAC University

by

Md. Imtiazul Haque Mortuza

ID: 02201067

In Partial Fulfillment of the  
Requirements for the Degree Of  
Bachelor of Science & Engineering

August 2006



BRAC University, Dhaka, Bangladesh

## DECLARATION

I hereby declare that this thesis is based on the results found by myself. Materials of work found by other researcher are mentioned by reference. This Thesis, neither in whole nor in part, has been previously submitted for any degree.

Signature of  
Supervisor

-----  
Dr. Yousuf Mahbubul Islam

Signature of  
Author

-----  
Md. Imtiazul Haque Mortuza

## **ACKNOWLEDGMENTS**

First of all, I would like to thank my supervisor, Dr. Yousuf Mahbubul Islam. He gave me not only full freedom to choose my thesis topic, but also extended a lot of guidance throughout its development. Although being extremely preoccupied with his busy schedule, he often showed much enthusiasm and took time and lot of pain to review drafts of my paper that enabled me to improve the contents as well as my presentation. I learned plenty of useful things from his comments, revisions and discussions during this period which taught me to write better research papers. And it was possible for me mainly because of my supervisor's support.

I want to give my heartiest gratitude to all the faculty members of BRAC University for their helping hands. My special gratitude goes to Mr. Jakaria Shwapan, CEO, RanksTel and Prof. Anwarul Haque, Chairman, ESS, BRAC University for giving me some of their precious time for discussing the issue. Many thanks to all of my friends for being with me and always encouraging me.

Finally, special thanks and love to my father for his constant guidance and encouragement in my study and research work, my mother for her prayers and my one and only brother for his brotherly support and love.

Last but not the least, thanks to the Almighty for helping me in every step of this work.

*To my family, friends and well wishers*

## **ABSTRACT**

Bangladesh is a developing country. Like all other sectors, TELECOMMUNICATION is also weak compare to other countries telecommunication. But this sector is becoming the largest revenue earning area of our country.

Our goals are to search a better way to sustain with the present growth in telecommunication industry so that in near future further investments and burgeon in this industry in ensured.

So often Mobile companies of Bangladesh offer packages but people don't know which packages are beneficial for them. So we want to develop such guiding software that can be useful to the user to choose the better package.

## Table of contents

CHAPTER 1: INTRODUCTION .....	1
1.1 Analyzing current situation.....	1
CHAPTER 2: CONCERN FROM BTRC POLICY.....	4
2.1 Package revision .....	4
2.2 Tariff management.....	5
2.3 Local investment.....	5
2.4 Public share concern .....	7
CHAPTER 3: TARIFF STUDY .....	8
3.1 Per capita income of people.....	8
3.2 Division of income.....	8
3.3 Affordability .....	9
3.4 Affordability analysis.....	9
3.5 Tariff proposal .....	10
CHAPTER 4: CURRENT MARKET SCENARIO.....	11
4.1 About the operators.....	11
4.2 Present tariff system.....	12
4.3 Gross income analysis.....	14
4.3.1 Grameen phone .....	14
4.3.2 Aktel.....	16
4.3.3 Banglalink .....	18
CHAPTER 5: MARKET SCENARIO ON PROPOSED TARIFF .....	20
5.1 Operators on proposed tariff .....	20
5.1.1 Grameen phone .....	20
5.1.2 Aktel.....	22
5.1.3 Banglalink .....	24
CHAPTER 6: CONCLUSION .....	26
REFERENCES .....	27

# CHAPTER 1: INTRODUCTION

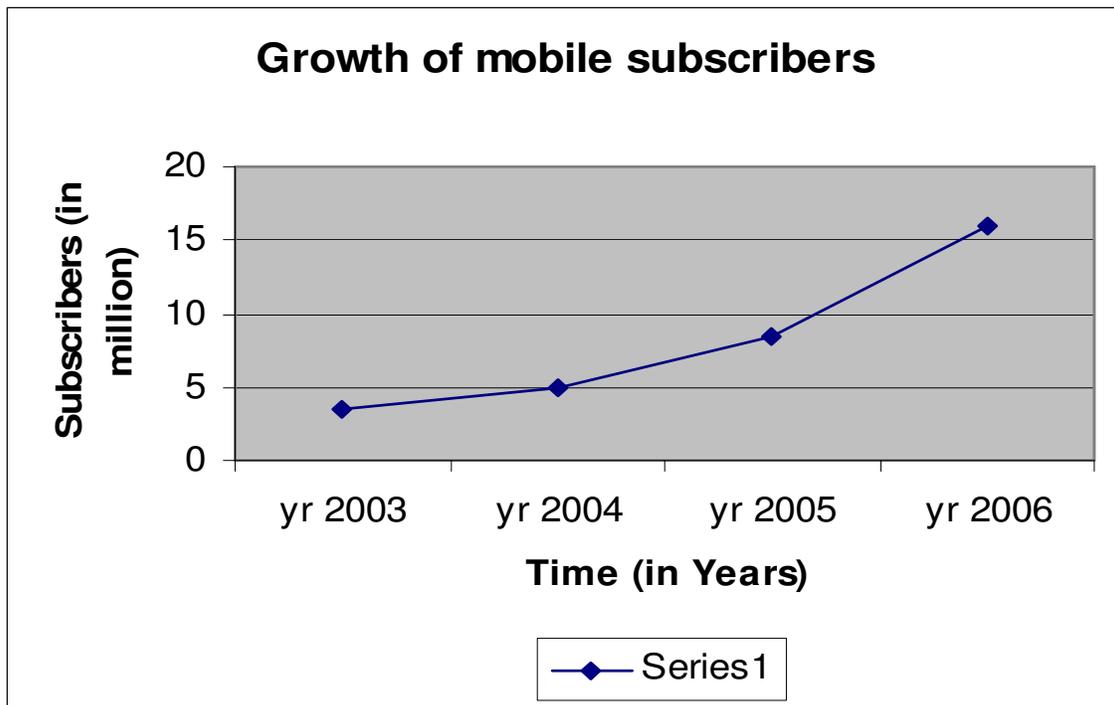
## 1.1 Analyzing current situation

Telecommunication is now a huge sector in our country. Business in this industry is expanding beyond imagination. Its future prospect and our national economy are enviably related. Our study comprises the mobile consumer growth, action and role to be played by BTRC and implementation of a software which gives a sharp idea about the selection of the right mobile operator service.

Bangladesh is a under developed country of the world. Illiteracy is a disgrace up on the people over here. People with inadequate knowledge and skills are hoodwinked by the wrong choice of their mind. The software developed by us illustrates the details of every package of every mobile company. It calculates the call rates according to the using profile if the user. Through the calculation, it reckons the best suitable package for a user.

Our thesis highlights the sustainability of current growth in telecommunication industry, economic male-policy of the mobile companies and the possibility of our national economic uplift through some modifications of the principles. We have sorted out the financial misapplications of the mobile phone operators of the country and its proper measure to improve the standard of service as well as to boost our economy.

Telecommunication industry has been having the largest boom in the history of it. In the last few years the total number of subscribers has been increased not in numbers rather in volumes. The present growth scenario is something like the following chart:



Here we see that in last year the increment was double. As this industry is in a rapid growth and directly influencing our economy our goal is to research the way to sustain this huge amount of growth.

Recommending policies for BTRC: The current policies of BTRC are too flexible for the operators. To improve the standard of service, develop proper customer care and maintain national economic interest, policies have to be revised with care in some places.

## **CHAPTER 2: CONCERN FROM BTRC POLICY**

### **2.1 Package revision**

Mobile companies trying to popularize themselves are now involved in a rat race of income. Some are announcing free calls through out the day and night some are offering free calls all through the night. This vulgar race between the mobile companies has directly attacked the general subscribers. The adverse affects of these harmful packages must be mended. The shaded packages must be denounced by BTRC. They should enact principles to check the misuse of the attraction. So there should be strict rules about launching and promoting any packages as clearly as it can be so that is does not create any sort of confusion in the mind of the user while they are going for it. Because the present packages and its tariff is no where clearly stated. They are clearly deceiving people. There are so many hidden cost and charges in the packages but these are never stated clearly neither is the outlet nor in the promotions. BTRC should form a committee to guide the mobile companies to their package offers.

## **2.2 Tariff management**

There is no guiding policy for the mobile phone operators of our country about the call tariff of the different packages on offer. This is surely a concern of BTRC. There should be a maximum imposable tariff provided by BTRC. This will definitely strict the operators do introduce package on every day basis and imposing tariff in any shape the feels better. This lack of guideline in the policy is directly hurting the subscriber's economic ability. Because now a day mobile phone is no longer a part of fashion rather it is becoming a necessity. So BTRC should provide a clear guideline to the operators on setting the tariff.

## **2.3 Local investment**

Expansion of telephones in the private sector is based on purely conservative estimates. The expansion in this sector could perhaps be much more as it is expected that the private sector will play an increasingly significant and prominent role in the development of the telecom sector. All necessary facilities to encourage such growth of the private sector will be readily forthcoming.

Since Bangladesh is a developing country so it is quite difficult for the government to make sufficient investment in the telecommunication sector. It will be a slow process if the government is the lone investor in this sector. So in order to making it a revenue earning sector for the country and increase the growth of the industry the private investment is a must. The private company may take help from the foreign investor to make this sector into a world class standard.

In Bangladesh already private investment has taken places. But the sad story is the private investments are not local. They are rather foreign investments. This is another major issue of revenue leaking. The majority percentage of all the operators of the country is being owned by foreign investors. There must be steps to encourage local investors in this booming industry.

## **2.4 Public share concern**

Out of 5 companies, 4 of them are financed by foreign investors. Our stock of foreign currency is very low. The limited amount of currency obtained by our national investors doesn't fill in the shortage of foreign currency. But to the contrary, the enormous amount of profit earned by the mobile companies is directly passed abroad. The stock of our own foreign currency is becoming deficient. For, example, Grameen Phone and Aktel cumulatively invested 60 million dollars in several fields. The single income of Grameen Phone out of its investment is alone 85 million dollars. If all this money is consigned to foreign countries, our national economy will be at stake. So, BTRC should develop a policy so that dollars to be consigned can not exceed a certain amount. Our suggestion is to have a time constraint in the license that after a certain period of time the company should declare its share in the stock market as public shares. This initiative will definitely prevent the massive revenue leaking from the fast growing telecommunication industry.

## CHAPTER 3: TARIFF STUDY

### 3.1 Per capita income of people

In general the per capita income of our country fluctuates between \$400 and \$450. But if we consider the income of the lowest level of people using a mobile phone, it gives us a whole different scenario.

Per capita income of the lowest income group of mobile phone user is somewhere between \$900 and \$920. If we convert this into BDT it becomes almost BDT 5500 per month.

### 3.2 Division of income

The division of people's income (BDT 5500) is described here:

Income breakdown of people:

Food 60%

Accommodation 20%

Miscellaneous Expense 10%

Savings 10%

---

Total 100%

### **3.3 Affordability**

Affordability means how much a person can afford for something within his income or budget. So the mobile phone tariff of our country should be considering this factor that the assigned tariff must be affordable by the general users. Users should not feel the cost as a burden. If so then a sharp decline from the rapid growth of recent time is waiting for the country.

### **3.4 Affordability analysis**

From an economist's point of view a person can afford half of the savings for extra expenses from his income. If we consider this extra expense as a budget for mobile using a person can manage to expend 5% of his monthly income in mobile phones. In our country if the monthly income is approximately BDT 5500, 5% of it becomes almost BDT 270. That means a general person of our country has the ability to spend BDT 270 per month for using a mobile phone. But our question is, is it the amount people are spending in the present tariff scenario, definitely not. Now let us have a tariff design considering people's affordability as the highest priority.

### 3.5 Tariff proposal

People can spend BDT 270 per month. From our survey we found that a person talks 10 minutes every day in mobile phone. So the monthly time becomes 300 minutes. Now if we design the tariff it becomes  $300/270 = \text{BDT } 0.9$  per minute. But the point here is the amount is including VAT. So excluding VAT the amount becomes **BDT 0.8/min**. This is the marginal amount of tariff which will not create any pressure on people's monthly budget.

So the actual tariff that suits people with their monthly income is **BDT 0.8** per min.

## CHAPTER 4: CURRENT MARKET SCENARIO

### 4.1 About the operators

At present there are 5 mobile phone operators in the country. These are:

1. Grameen phone
2. Aktel
3. Banglalink
4. Citycell
5. Teletalk

Of the 5 operators only Teltalk is a state owned mobile phone company. All the other 4 are foreign invested companies.

Current subscriber information of the operators is given below:

Grameen phone	:	8.5	million
Aktel	:	4	million
Banglalink	:	2	million
Citycell	:	1	million
Teletalk	:	0.5	million
<hr/>			
Total	:	16	million

## 4.2 Present tariff system

During our survey we have gone through each of the packages of all the operators. Here is the tariff of the different packages of the three major operators of the country:

### Grameen phone

<b>Time Slots</b>	<b>GP Regular</b>	<b>GP National</b>	<b>anytime 300</b>	<b>anytime 500</b>	<b>Easy Prepaid</b>	<b>EASY Gold</b>
8 am - 1 pm	4	4	4	3	4.8	4.8
1 pm - 4 pm	4	4	4	3	4.8	4.8
4 pm - 8 pm	4	4	4	3	4.8	4.8
8 pm - 11 pm	3	3	4	3	4.8	4.8
11 pm - 8 am	2	2	3	3	3	3

### Aktel

<b>Time Slots</b>	<b>Pre-Paid</b>	<b>exceed</b>	<b>JOY</b>	<b>Post-Paid</b>
8 am - 1 pm	4.9	2.4	4.5	4
1 pm - 4 pm	4.9	2.4	4.5	4
4 pm - 8 pm	4.9	2.4	4.5	4
8 pm - 11 pm	4.9	2.4	4.5	3
11 pm - 8 am	2.5	1.35	2.5	1.5

## Banglalink

<b>Time Slots</b>	<b>be-linked</b>	<b>ladies, first</b>	<b>Banglalink Standard</b>	<b>Banglalink M2M Plus</b>	<b>Banglalink M2M</b>
<b>8 am - 1 pm</b>	<b>4.4</b>	<b>4.5</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>1 pm - 4 pm</b>	<b>4.4</b>	<b>4.5</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>4 pm - 8 pm</b>	<b>4.4</b>	<b>4.5</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>8 pm - 11 pm</b>	<b>4.4</b>	<b>4.5</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>11 pm - 8 am</b>	<b>1.96</b>	<b>1.96</b>	<b>1.5</b>	<b>1.5</b>	<b>1.5</b>

### **4.3 Gross income analysis**

If we analyze the gross income of the companies it will unfold a new chapter to us and that is how much revenue is leaking annually from our country from the possible highest revenue earning industry. The gross income analysis of the three major operators is as follows:

#### **4.3.1 Grameen phone**

##### **4.3.1.1 Revenue calculation**

Total number of subscriber of Grameen Phone is considered to be 5 million and the flat tariff that is generalized tariff of their packages is considered to be BDT 4 per minute. Now if we simply calculate the gross monthly revenue of Grameen Phone it becomes:

5 million X BDT 4 X 300 min (average talk time) = **BDT 6000 million**

##### **4.3.1.2 Expenditure calculation**

#### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

5 million X BDT 0.26 X 300 = **BDT 390 million**

**Salary:**

Grameen has approximately 5000 employee nation wide. Their average salary is BDT 30000. So monthly salary is,

$$5000 \times \text{BDT } 30000 = \text{BDT } 150 \text{ million}$$

**Promotion and others:**

Monthly news paper advertisement = BDT 75 million

Monthly television advertisement = BDT 81 million

Monthly other expenses = BDT 12 million

---

Total monthly expense = **BDT 168 million**

Total monthly expense = BDT (390 + 150 + 168) million  
= **BDT 708 million** (approximately)

**4.3.1.3 Income calculation**

Gross monthly revenue = BDT 6000 million

Gross monthly expenses = (-) BDT 708 million

---

**Gross monthly income = BDT 5300 million** (approximately)

## **4.3.2 Aktel**

### 4.3.2.1 Revenue calculation

Total number of subscriber of Aktel is considered to be 3.5 million and the flat tariff that is generalized tariff of their packages is considered to be BDT 4 per minute. Now if we simply calculate the gross monthly revenue of Aktel it becomes:

$$3.5 \text{ million} \times \text{BDT } 4 \times 300 \text{ min (average talk time)} = \text{BDT } 4200 \text{ million}$$

### 4.3.2.2 Expenditure calculation

#### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

$$3.5 \text{ million} \times \text{BDT } 0.26 \times 300 = \text{BDT } 273 \text{ million}$$

#### **Salary:**

Aktel has approximately 4000 employee nation wide. Their average salary is BDT 20000. So monthly salary is,

$$4000 \times \text{BDT } 30000 = \text{BDT } 80 \text{ million}$$

**Promotion and others:**

Monthly news paper advertisement = BDT 50 million

Monthly television advertisement = BDT 50 million

Monthly other expenses = BDT 10 million

---

Total monthly expense = **BDT 110 million**

Total monthly expense = BDT (273 + 80 + 110) million

= **BDT 450 million** (approximately)

4.3.2.3 Income calculation

Gross monthly revenue = BDT 4200 million

Gross monthly expenses = (-) BDT 450 million

---

**Gross monthly income = BDT 3750 million** (approximately)

### 4.3.3 Banglalink

#### 4.3.3.1 Revenue calculation

Total number of subscriber of Banglalink is considered to be 2 million and the flat tariff that is generalized tariff of their packages is considered to be BDT 4 per minute. Now if we simply calculate the gross monthly revenue of Banglalink it becomes:

$$2 \text{ million} \times \text{BDT } 4 \times 300 \text{ min (average talk time)} = \text{BDT } 2400 \text{ million}$$

#### 4.3.3.2 Expenditure calculation

##### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

$$2 \text{ million} \times \text{BDT } 0.26 \times 300 = \text{BDT } 156 \text{ million}$$

##### **Salary:**

Banglalink has approximately 2500 employee nation wide. Their average salary is BDT 25000. So monthly salary is,

$$2500 \times \text{BDT } 25000 = \text{BDT } 62.5 \text{ million}$$

**Promotion and others:**

Monthly news paper advertisement = BDT 60 million

Monthly television advertisement = BDT 65 million

Monthly other expenses = BDT 10million

---

Total monthly expense = **BDT 135 million**

Total monthly expense = BDT (156 + 62.5 + 135) million

= **BDT 350 million** (approximately)

4.3.3.3 Income calculation

Gross monthly revenue = BDT 2400 million

Gross monthly expenses = (-) BDT 350 million

---

**Gross monthly income = BDT 2000 million** (approximately)

## CHAPTER 5: MARKET SCENARIO ON PROPOSED TARIFF

### 5.1 Operators on proposed tariff

If the proposed tariff from chapter 3 is applied to all the operators there will be a huge deflection in the income of them but still there will be no loss at least.

The situation of three major operators might be as follows:

#### 5.1.1 Grameen phone

##### 5.1.1.1 Revenue calculation

5 million X BDT 0.8 X 300 min (average talk time) = **BDT 1200 million**

##### 5.1.1.2 Expenditure calculation

#### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

5 million X BDT 0.26 X 300 = **BDT 390 million**

#### **Salary:**

Grameen has approximately 5000 employee nation wide. Their average salary is BDT 30000. So monthly salary is,

5000 X BDT 30000 = **BDT 150 million**

**Promotion and others:**

Monthly news paper advertisement = BDT 75 million

Monthly television advertisement = BDT 81 million

Monthly other expenses = BDT 12 million

---

Total monthly expense = **BDT 168 million**

Total monthly expense = BDT (390 + 150 + 168) million

= **BDT 708 million** (approximately)

5.1.1.3 Income calculation

Gross monthly revenue = BDT 1200 million

Gross monthly expenses = (-) BDT 708 million

---

**Gross monthly income = BDT 500 million** (approximately)

## 5.1.2 Aktel

### 5.1.2.1 Revenue calculation

3.5 million X BDT 0.8 X 300 min (average talk time) = **BDT 840 million**

### 5.1.2.2 Expenditure calculation

#### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

3.5 million X BDT 0.26 X 300 = **BDT 273 million**

#### **Salary:**

Aktel has approximately 4000 employee nation wide. Their average salary is BDT 20000. So monthly salary is,

4000 X BDT 30000 = **BDT 80 million**

#### **Promotion and others:**

Monthly news paper advertisement = BDT 50 million

Monthly television advertisement = BDT 50 million

Monthly other expenses = BDT 10 million

---

Total monthly expense = **BDT 110 million**

Total monthly expense = BDT (273 + 80 + 110) million  
= **BDT 450 million** (approximately)

#### 5.1.2.3 Income calculation

Gross monthly revenue = BDT 840 million

Gross monthly expenses = (-) BDT 450 million

---

**Gross monthly income** = **BDT 450 million** (approximately)

### 5.1.3 Banglalink

#### 5.1.3.1 Revenue calculation

2 million X BDT 0.8 X 300 min (average talk time) = **BDT 480 million**

#### 5.1.3.2 Expenditure calculation

##### **Call establishment & network management cost**

For each call the call establishment cost is BDT 0.26. Let this amount be applicable for each minute rather than each call for ease of calculation

2 million X BDT 0.26 X 300 = **BDT 156 million**

##### **Salary:**

Banglalink has approximately 2500 employee nation wide. Their average salary is BDT 25000. So monthly salary is,

2500 X BDT 25000 = **BDT 62.5 million**

##### **Promotion and others:**

Monthly news paper advertisement = BDT 60 million

Monthly television advertisement = BDT 65 million

Monthly other expenses = BDT 10million

---

Total monthly expense = **BDT 135 million**

Total monthly expense = BDT (156 + 62.5 + 135) million  
= **BDT 350 million** (approximately)

#### 5.1.3.3 Income calculation

Gross monthly revenue = BDT 480 million

Gross monthly expenses = (-) BDT 350 million

---

**Gross monthly income = BDT 150 million** (approximately)

## **CHAPTER 6: CONCLUSION**

Bangladesh will not be able to sustain the outstanding growth of the telecommunication industry if any necessary steps stated above are not being taken immediately. It might seem that the growth will go on but in reality it will not. This is because there will be a time when people willing to have a mobile phone will not buy one because their monthly income will not permit the cost. So the graph shown in chapter 1 will be flattened which is not desired for the economy of the country. As the largest revenue earning industry, Telecommunication should be considered with utmost sincerity by BTRC as well as Government of People's Republic of Bangladesh. This will help a healthy growth of the industry as well as the economy of the country.

## REFERENCES

- [1] For annual report and package information  
[www.grameenphone.com](http://www.grameenphone.com)
  
- [2] For package information  
[www.aktel.com](http://www.aktel.com)  
[www.citycell.com](http://www.citycell.com)  
[www.banglalinkgsm.com](http://www.banglalinkgsm.com)  
[www.teletalk.com.bd](http://www.teletalk.com.bd)
  
- [3] For public opinions and review  
[www.bangladeshinfo.com](http://www.bangladeshinfo.com)
  
- [4] Questionnaire uploaded for survey  
groups.yahoo.com/groups/ict\_of\_bangladesh  
groups.yahoo.com/groups/grameenphonesubscribers  
groups.yahoo.com/groups/aktelsubscribers  
groups.yahoo.com/groups/banglalinksubscribers  
groups.yahoo.com/groups/teletalksubscribers
  
- [5] For company business profile  
[www.telenor.com](http://www.telenor.com)
  
- [6] Other country's operators  
[www.airtel.com](http://www.airtel.com)
  
- [7] Prof. Anwarul Haque, Chairman, ESS, BRAC University
  
- [8] Mr. Jakaria Shwapan, CEO, RanksTel