

SOME ASPECTS OF SUSTAINABLE MOBILE INFRASTRUCTURE GROWTH OF BANGLADESH

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by

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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

Signature of Author

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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.

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1. INTRODUCTION

The most prospective and booming mobile telephony has brought about many positive changes in the country's economy and socio-economic sectors and was thriving for another big leap forward with a huge some of foreign direct investment (FDI) by big telecom giants like Telenor, Telekom Malaysia (TM), Orascom and SingTel in rural network expansion in Bangladesh. The foreign operators in collaboration with their local partners were working on with the infrastructure to widen the very base of mobile subscribers by removing the entry barrier and make the mobile telephony affordable even to rural masses.

And after the launching of state-owned Teletalk and Banglalink, the sector was experiencing a cut-throat competition which was absent in the market here before the two new operators' launching and the people had just started reaping the benefits of competitiveness as the call charges were coming down significantly and line rent and handset prices were also coming down while the number of subscribers were going up with a rapid pace.

2. BACKGROUND INFORMATION

In Bangladesh an intense competitiveness has hit the very prospective and fast growing telecommunication sector and every person can feel the intensity of competitiveness that has gained momentum in the market. If somebody goes through the newspapers and watch televisions as the telecom operators are expending a huge some of money for putting advertisements there to win over others in media campaign.

The advertisements of four private cell phone operators have spelled boom for the electronic and print media, but the media blitz at the same time has created confusion among the prospective buyers of the mobile sector because every other day the operators are bringing in new packages with many more attractive offers, though languages of these ads, specially by the leading operators, are very much tricky and in some cases deceiving as these are never clear cut in language actually what is in the offer. So, the buyers are in confusion which one is more beneficial for him or her and often get messed up and pick up one without any clear idea. Some people are even more enterprising as they are using two SIMs on a single phone set and cell phone servicing centres at the Eastern Plaza are offering to incorporate this facility for a charge of Tk 300 to 3,000. And young people are availing this facility for many purposes and some are doing it just for fun and others as necessity.

With this fact in mind we did our initial survey on subscriber opinion on the current market scenario. Based on the results of the survey we did our analysis and we fetched some vital information regarding subscriber profile. Finally we would like to propose a software tool which will help the subscriber to select the best from available packages.

The main objective of the software is to guide the general subscriber to procure a particular package offered by any mobile operator currently present in the country.

3. SYSTEM SPECIFICATION

As mentioned in the previous section the software will contain the following features:-

- The software will be capable of calculating the best of the available packages by using the user profile of the subscriber.

The User profile contains the following information:

1. Talk Time between the following time periods:

- a. 8 am- 1 pm
- b. 1 pm – 4 pm
- c. 4pm – 8 pm
- d. 8 pm – 11 pm
- e. 11pm – 8 am

2. Total SMS on a particular day.

- Generate a report for the user which will contain details information about the packages of every operator.
- Display the best package suitable for the user in the report with the total cost.

4. SYSTEM DESIGN

After thorough analyzing the over user requirements and system specification for the software we can use MS Excel to develop the prototype of the system.

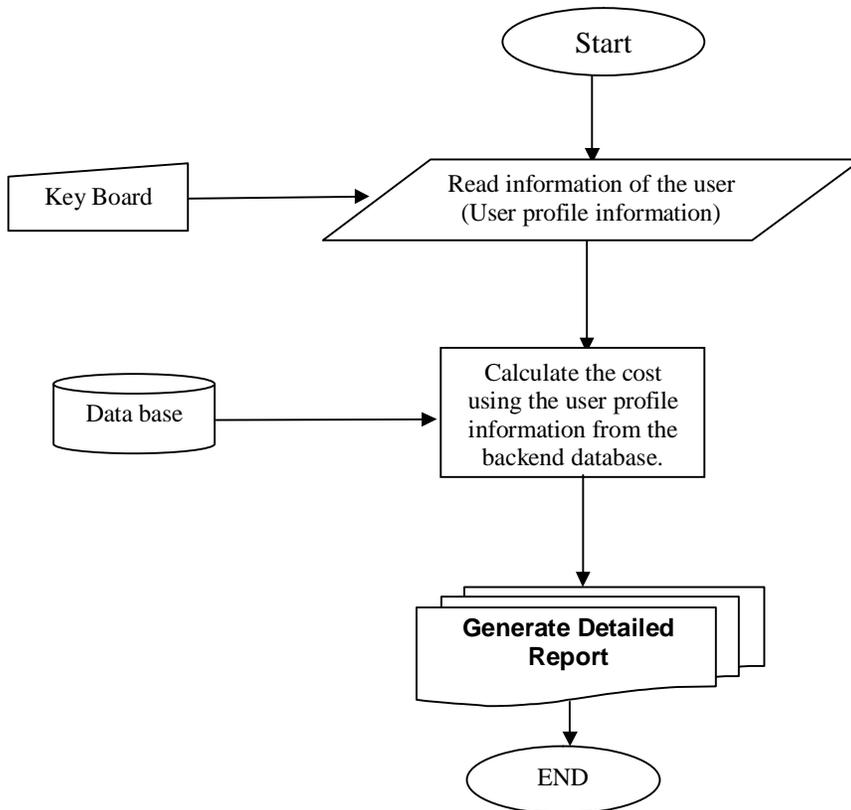
The Advantages of using MS Excel while developing the prototype is given below:

- Ease of data storage and editing.
- Availability different type of mathematical functions.
- Using different controls we can send route information to a database
- Adds greater sophistication in calculation fields
- Most people are familiar with the interface.
- Ability to use Visual Basic to program any Macro.

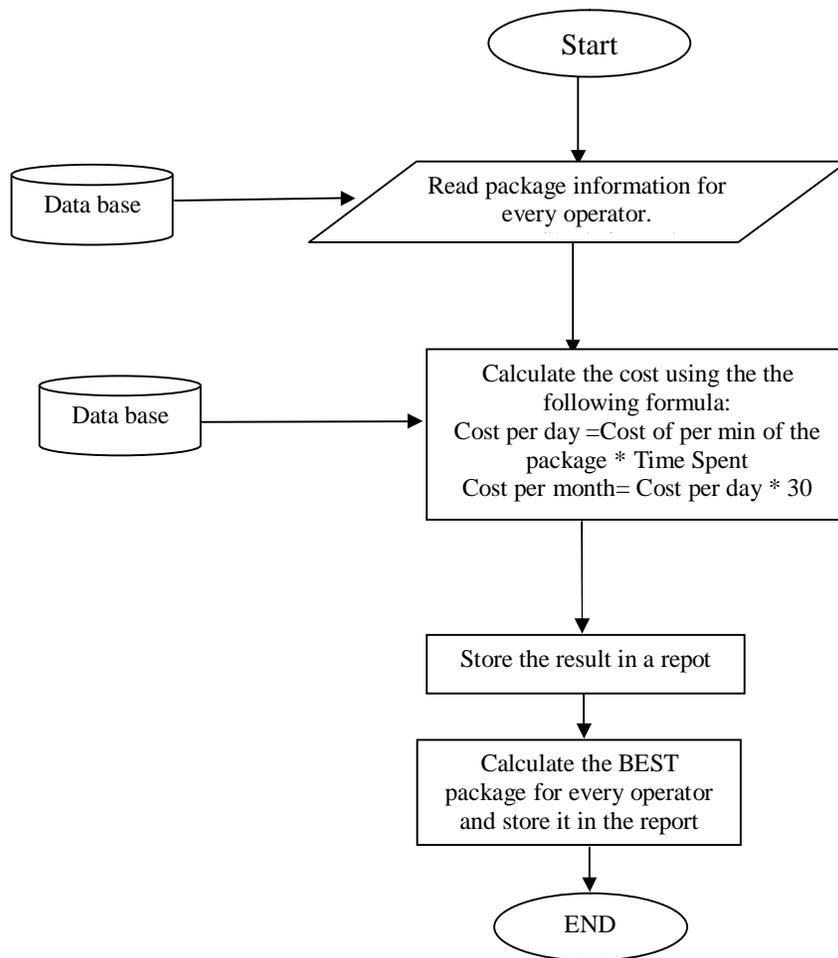
5. PROPOSED SOLUTION

The program that is to be developed will require to have more user friendly appearance and the user of the applications will find the program much more easier to operate. The fact that MS Excel has good facilities for creating customized user interfaces with the provision of creating macros has made us to choose this spreadsheet package.

6. FLOWCHART OF THE OVERALL PROCESS



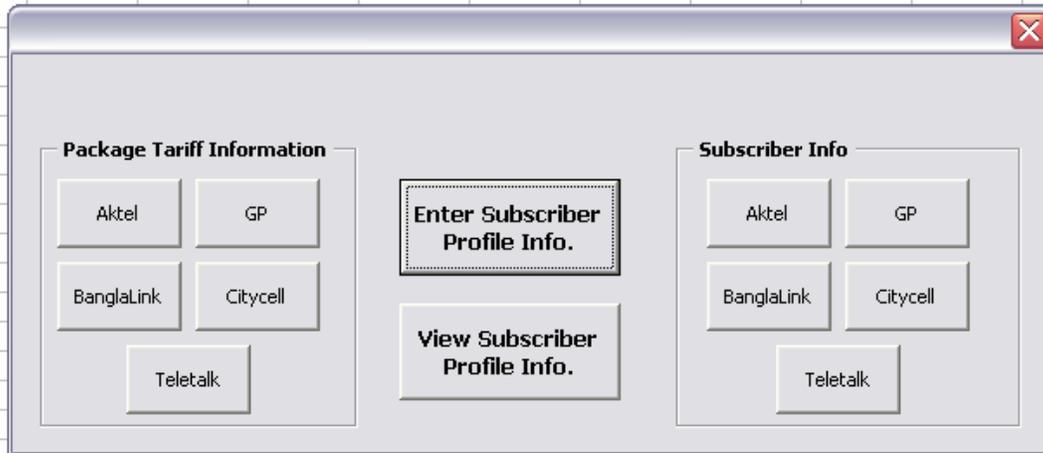
7. FLOWCHART OF THE REPORT GENERATION PROCESS



8. USER INTERFACE DESCRIPTION OF THE PROTOTYPE

8.1 THE MAIN MENU

When the user opens the prototype a Menu appear which looks like:



The Main Menu

This is the screenshot of the main menu of the software. It contains all information about the operators and the packages offered by them. The button "Enter Subscriber Profile Info" is used for entering the user profile information. "View Subscriber Profile Info" button is used to view the subscriber profile information.

If a user wants to know more about a particular package of a specific operator then the user can click on any desired button in the Package Tariff Information in the left hand side.

If a user wants to know about the package that is best for him/her the user can click Subscriber info on the right hand side. It will be discussed in detail in the next sections.

8.3 FORM FOR ENTERING THE USER PROFILE

The following form appears when the user clicks the "Enter Subscriber Profile Info" button. This form is one of the main form which is used to get the information regarding the subscriber usage of the mobile. It includes different time periods of the day and No. of SMS per day.

Please enter the conversation duration in minutes according to the time slot:

8 am - 1 pm :

1 pm - 4 pm :

4 pm - 8 pm :

8 pm - 11 pm :

11 pm - 8 am :

No. of SMS Per Day :

Calculate

The above form is used to enter the user profile information. The text box of form is divided into the time bands of particular day. The user just have to enter the per minute talk time for a particular day and then press the calculate button. The prototype will then calculate all the related information about the rate of each package of each operator and generate a report which will have the total cost per day, total cost per month and the best package of a specific operator. The total report is generated on the basis of the user profile information that subscriber entered in the user form.

8.4 Some of the sample reports are given below:

Subscribers Rate Aktel				
Time Slots/SMS	Pre-Paid	Exceed	Joy	Post-Paid
8 am - 1 pm	4.9	2.4	4.5	4
1 pm - 4 pm	0	0	0	0
4 pm - 8 pm	4.9	2.4	4.5	4
8 pm - 11 pm	0	0	0	0
11 pm - 8 am	2.5	1.35	2.5	1.5
No. of SMS	2	2	2	2
Total Cost per day	12.3	6.15	11.5	9.5
Total Cost per Month	369	184.5	345	285

Main Menu	GP	Citycell	Best Package	Total Monthly Cost (Exc VAT)
	Banqlalink	Teletalk		

Sample Report for Aktel

As seen in the above report, the total information is divided into different time periods of a particular day. The columns are different package of a specific operator. Here in the sample the packages in display are "Pre-Paid", "Exceed", "Joy", "Post-Paid".

When the user clicks calculate button in the previous form where the user enters his/her user profile information, the system calculates the cost and fill the columns accordingly. The last 2 rows of the report is the vital information regarding the cost per day and cost per month. The system calculates the cost after processing the user information. For example, here in the above sample the total cost for a particular subscriber want to buy the "Aktel Prepaid" package then his/her total cost per month would be around 370. The cost for other package is also shown in the other columns.

Lastly, the best package is calculated shown in highlighted text. Here in the above sample, "Aktel Exceed" is best package of the lot as it gives the user the cheapest solution. As seen above if the user chooses this package then he/she may have a monthly cost of only 184.5 tk where he/she will have to pay 369 tk if "Aktel Prepaid" is chosen. Here the subscriber gets to know about his/her estimated costing month which is basically our ultimate goal of the system. It must be mentioned that the total cost does not include the VAT.

8.5 Sample Report for Banglalink

Subscribers Rate for Bangla Link					
Time Slots/SMS	be-linked	ladies, first	Banglalink Standard	Banglalink M2M Plus	Banglalink M2M
8 am - 1 pm	4.4	4.5	4	4	4
1 pm - 4 pm	0	0	0	0	0
4 pm - 8 pm	4.4	4.5	4	3.5	4
8 pm - 11 pm	0	0	0	0	0
11 pm - 8 am	1.96	1.96	1.5	1.5	1.5
No. of SMS	2	2	2	2	2
Total Cost Per Day	12.76	12.96	11.5	11	11.5
Total Cost Per Month	382.8	388.8	345	330	345

Main Menu	Aktel	Citycell	Best Package	Total Monthly Cost (Exc VAT)
	GP	Teletalk		
			Banglalink M2M Plus	330.00

As seen in the above report, the total information is divided into different time periods of a particular day. The columns are different package of a specific operator. Here in the sample the packages in display are "be-linked", "Ladies-first ", "Banglalink", etc. When the user clicks calculate button in the previous form where the user enters his/her user profile information, the system calculates the cost and fill the columns accordingly. The last 2 rows of the report is the vital information regarding the cost per day and cost per month. The system calculates the cost after processing the user information. For example, here in the above sample the total cost for a particular subscriber if he/she wants to buy the "Blink Ladies First " package then his/her total cost per month would be around Tk. 390. The cost for other package is also shown in the other columns.

Lastly, the best package is calculated shown in highlighted text. Here in the above sample, "Bangla Link M2M Plus" is best package of the lot as it gives the user the cheapest solution. As seen above if the user chooses this package then he/she may have a monthly cost of only 330 tk where he/she will have to pay 388.8 tk if " Blink Ladies First " is chosen. Here the subscriber gets to know about his/her estimated costing month which is basically our ultimate goal of the system. It must be mentioned that the total cost does not include the VAT.

8.5 Sample Report for Grameen Phone:

	Subscribers Rate for GP						
Time Slots/SMS	GP Regular	GP National	anytime 300	anytime 500	Easy PrePaid	EASY Gold	Djuice
8 am - 1 pm	4	4	4	3	4.8	4.8	5
1 pm - 4 pm	0	0	0	0	0	0	0
4 pm - 8 pm	4	4	4	3	4.8	4.8	5
8 pm - 11 pm	0	0	0	0	0	0	0
11 pm - 8 am	2	2	3	3	3	3	2.5
No. of SMS	2	2	2	2	2	2	1.5
Total Cost Per Day	10.00	10.00	11.00	9.00	12.60	12.60	12.50
Total Cost Per Month	300.00	300.00	330.00	270.00	378.00	378.00	375.00

Main Menu

Aktel

Citycell

Banqlalink

Teletalk

Best Package
anytime 500

Total Monthly Cost (Exc VAT)
270.00

As seen in the above report, the total information is divided into different time periods of a particular day. The columns are different package of a specific operator. Here in the sample the packages in display are "GP Regular", " GP National", "anytime 300", etc. When the user clicks calculate button in the previous form where the user enters his/her user profile information, the system calculates the cost and fill the columns accordingly. The last 2 rows of the report is the vital information regarding the cost per day and cost per month. The system calculates the cost after processing the user information. For example, here in the above sample the total cost for a particular subscriber if he/she wants to buy the "GP Easy Gold " package then his/her total cost per month would be around Tk. 378. The cost for other package is also shown in the other columns.

Lastly, the best package is calculated shown in highlighted text. Here in the above sample, "anytime 500" is best package of the lot as it gives the user the cheapest solution. As seen above if the user chooses this package then he/she may have a monthly cost of only 270 tk where he/she will have to pay 375 tk if "Djuice" is chosen. Here the subscriber gets to know about his/her estimated costing month which is basically our ultimate goal of the system. It must be mentioned that the total cost does not include the VAT.

8.8 Sample Report for Citycell:

Subscribers Rate for Citycell										
Time Slots/SMS	Hello 123	Mega Phone	Aalap Super Plus	Aalap Classic	Aalap Super	Aalap A	Aalap B	Citycell Premium	Shobar Phone	Aamar Phone
8 am - 1 pm	3	4	2	2.4	2	4.5	5	4	4	3
1 pm - 4 pm	0	0	0	0	0	0	0	0	0	0
4 pm - 8 pm	3	4	2	2.4	2	4.5	5	4	4	3
8 pm - 11 pm	0	0	0	0	0	0	0	0	0	0
11 pm - 8 am	3	2	1	1	1	2	2	1.5	1.5	1.5
No. of SMS	2	2	2	2	2	2	2	2	2	2
Total Cost per day	11	12	7	7.8	7	13	14	11.5	11.5	9.5
Total Cost per Month	330	360	210	234	210	390	420	345	345	285

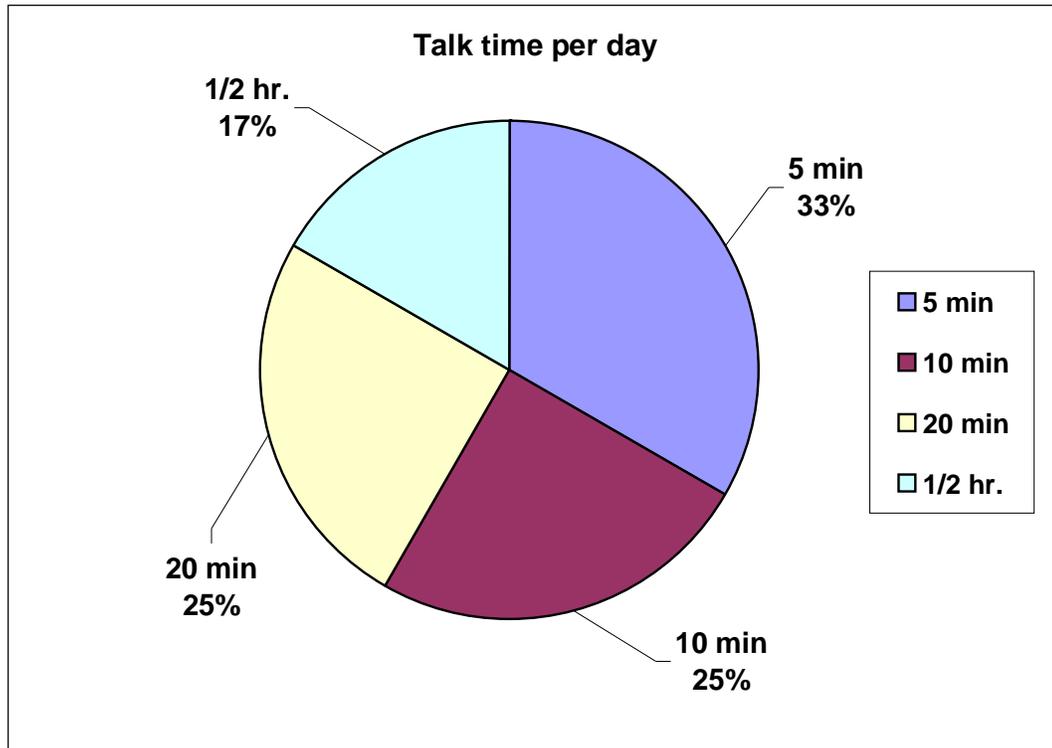
Main Menu	Aktel	GP	Best Package	Total Monthly Cost (Exc VAT)
	Banqlalink	Teletalk		

As seen in the above report, the total information is divided into different time periods of a particular day. The columns are different package of a specific operator. Here in the sample the packages in display are "Hello 123 ", " Mega phone", "Aalap Super Plus", etc. When the user clicks calculate button in the previous form where the user enters his/her user profile information, the system calculates the cost and fill the columns accordingly. The last 2 rows of the report is the vital information regarding the cost per day and cost per month. The system calculates the cost after processing the user information. For example, here in the above sample the total cost for a particular subscriber if he/she wants to buy the "Aalap B " package then his/her total cost per month would be around Tk. 390. The cost for other package is also shown in the other columns.

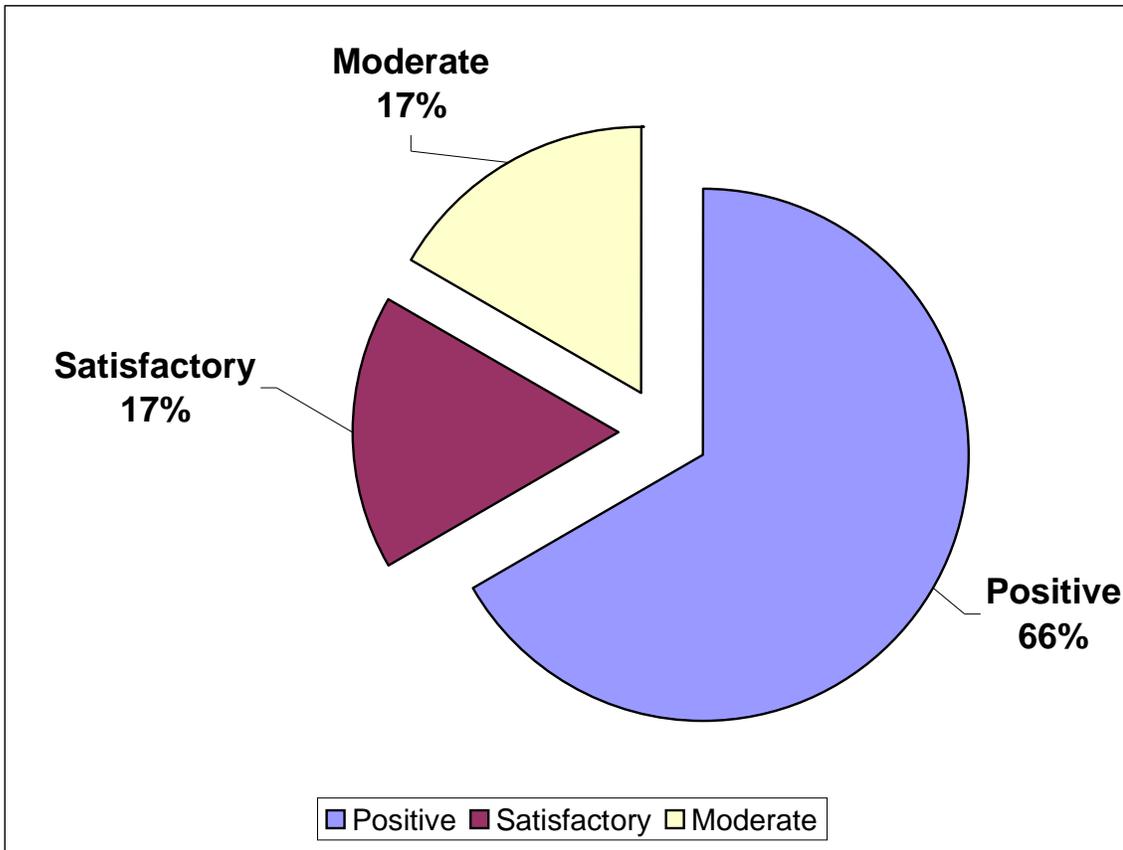
Lastly, the best package is calculated shown in highlighted text. Here in the above sample, "Aalap Super Plus " is best package of the lot as it gives the user the cheapest solution. As seen above if the user chooses this package then he/she may have a monthly cost of only 210 tk where he/she will have to pay 420k if "Aalap B" is chosen. Here the subscriber gets to know about his/her estimated costing month which is basically our ultimate goal of the system. It must be mentioned that the total cost does not include the VAT.

9. FEEDBACK RESULTS

The prototype of the software was given to few students of BRAC University students and they were told to use the software. When we get the results, the outcome was pretty much encouraging and fruitful.



As seen in the above chart, the person whom the prototype was given for testing, most of them spent around 5 min on average daily. Around 25% of the participants spend around 15 minutes on average.



The above chart shows the satisfaction rate of the participants. Around 66 % were very positive of the system and all of them expressed their complete satisfaction. They were very much eager to know more about the system and participate in the testing phase. Some of them gave valuable suggestion on incorporating more helpful features in the system in future.

Around 17% of the total participants were quite satisfied of the system. At first they were not able to understand the feature of the system as because this kind of software is not available at the moment. They gave us some important suggestion for the development of the system.

10. Future Improvements

The following feature can be included in the future:

- The total system will be made more attractive by applying Graphical user interface (GUI).
- The system will be made available in the web so that the software is accessible from anywhere in the world.
- The user will be able to know the best of all the packages of all the operators of the country. This feature is not currently present in the prototype.
- A comprehensive database will be maintained in order to store all the data and information regarding the package of different operators. If the system is incorporated with the web then the package information will be regularly updated as the packages info is changed quite frequently.
- The user profile information will be made more extensive and informative so that accurate results can be made.
- Many-detailed information regarding the packages will be given in the system so that the subscriber can get the required information of a specific package.

11. Conclusion

Bangladesh will not be able to sustain the outstanding growth of the telecommunication industry if any necessary steps are not being taken immediately to provide much better service to customers. It might seem that the growth continue but in reality it will not, 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. Also, in future there will be more competition between the mobile operators as more and more investors are getting interested to invest in this sector.

The main factor for attracting more customers will be better and efficient services provided by the telecommunication firms. Having more satisfied customer will enable operators to retain existing customers as well as attracting new customers from general population, thus making more profit.

Therefore, this software will help the both new and old subscribers to better understand the deals provided by the mobile operators. Through the use of this software, customers will be able to make more informed decision about whether to keep existing mobile connection or subscribe to another deal. This software will enable the customer to know hidden costs associated with the mobile connection deals. Furthermore, customers can better evaluate their individual pattern of using the mobile, i.e. the software will provide user profile which will show the rate of use during several part of the day.

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.