



**Bangladesh Public Administration Training
Centre
Savar, Dhaka-1343**

**130th Advanced Course
on
Administration and Development
(27 October-25 December, 2020)**

**SEMINAR PAPER
ON
ANALYZING THE ROLE OF
BANGLADESH TELECOMMUNICATIONS COMPANY LIMITED IN
INCREASING BANDWIDTH**

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Date of Submission: 14 December, 2020

ACKNOWLEDGEMENT

The work has been carried out under the guidance and supervision of Dr. Mohammad Rezaul Karim, Deputy Director, BPATC, Savar, Dhaka who is the mentor of this work. The author would like to express his sincere gratitude and indebtedness to his mentor for his careful supervision, constant encouragement, invaluable suggestions and untiring assistance throughout this research work.

It is my great opportunity to offer gratitude to all members for their cooperation and encouragement who have contributed directly or indirectly to prepare this paper. Those who were related to this seminar paper from Bangladesh Public Administration Training Centre helped me a lot for writing the seminar paper. I would like to acknowledge the continuous inspiration of our honorable Rector Md. Rakib Hossain, NDC of Bangladesh Public Administration Training Centre, Savar, Dhaka,

The author expresses his utmost pleasure to acknowledge his profound gratitude to Khondoker Azim Ahmed MDS and course adviser for his whole hearted support and inspiration for complete this work.

The author expresses his gratitude to Dr. Mohammad Mizanur Rahman Director (PPR), BPATC and course director for his suggestion and guideline to prepare this seminar paper. The author also expresses his gratitude to Dr. Md. Mizanur Rahman Director (Research), BPATC and Module Director for his sincere advice on report writing.

The author would like to thank the Course Coordinators of 130th ACAD Mr. K.M. Abdul Kader Deputy Director and Mr. Md. Motaher Hossain Deputy Director, BPATC for their sincere support and positive attitude providing all sorts of council from beginning to end and of writing this seminar paper.

Thanks are also due to BTCL officials such as Mr. A.K.M Golam Baharul, GM, BTCL and Md. Rezaul Rahman Akonda, DGM, BTCL and Abu Sayed Joarder, Deputy Secretary, Ministry of Commerce and many others for their kind co-operation in supplying information related to their respective department.

The author also expresses his gratitude to all participants of 130th ACAD course for their sincere cooperation, suggestions and valuable opinions during this study. Thanks also to the management staff and dormitory staff for their assistance and cordial co-operation.

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II. LIST OF ABBREVIATIONS

Abbreviations	Full Name
BTTB	Bangladesh Telegraph and Telephone Board
BTCL	Bangladesh Telecommunications Company Limited
BTRC	Bangladesh Telecommunication Regulatory Commission
PGCB	Power Grid Company of Bangladesh
PLC	Public Limited Company
WSIS	World Summit on the Information Society
ICT	Information and Communication Technology
WIMAX	Worldwide Interoperability for Microwave Access
POP	Post Office Protocol
DDN	Digital Data Network
ICX	Interconnection Exchange
IIG	International Internet Gateway
ADSL	Asymmetric Digital Subscriber Line
GPON	Gigabit Passive Optical Network
LLI	Leased Line Internet
ITC	International Terrestrial Cable
PSTN	Public Switch Telephone Network
Gbps	Gigabit per second
DWDM	Dense Wavelength Division Multiplexer
ASON	Automatically Switched Optical Network
MOTN	Modernization of Optical Transmission Network
SEAMEWE	South East Asia Middle East Western Europe

CHAPTER-1: INTRODUCTION

1.1 BACKGROUND:

Telecommunications is an industry that is growing and improving very rapidly in the world. All other industries are directly or indirectly related to telecommunications. To address this fast-growing industry, BTTB was converted to BTCL, a state-owned Public Limited Company by the ordinance of the Government of People's Republic of Bangladesh and promulgated on June 1, 2008. From July 1, 2008, BTCL has started a new journey as a PLC. BTCL has the authority to provide basic Telecommunication services throughout the country (BTCL 2018).

The current government has a vision to build digital Bangladesh by 2021. At the World Summit on the Information Society (WSIS), it was decided by 2015 that a knowledge-based society would develop around the world. So the government has decided to build Digital Bangladesh by 2021 by transforming infrastructure, governance and education into digital systems. All citizens need access to ICT and the skills to use the digital system. In Digital Bangladesh, the government has the ability to serve citizens and make internal operations more efficient and transparent through ICT. A well-developed communications infrastructure is an integral part of the spread of ICT. The governments must play a pioneering role in this regard. The government can ensure to develop the ICT sector by increasing bandwidth and improving tele density and tele access across the country.

Telecommunications sector has several important roles in achieving the vision of Digital Bangladesh. Bangladesh Tele-Communications Company Limited (BTCL) is an important public enterprise in the telecommunications sector, actively working on strengthening the infrastructure to promote ICT activities and electronic governance to provide other telecommunications services. This sector can lay the foundation by increasing bandwidth throughout the country on which everyone involved can work to achieve the goals of Vision 2021. BTCL is doing its best with limited resources to provide its valuable customers with the country's most advanced and powerful telecommunications infrastructure and new

telecommunications services. BTCL is committed to develop modern telecom facilities at least up to the Upazila level and these will be extended up to Grameen growth centers.

There are more than 700 BTCL telephone exchanges nationwide (BTCL 2018). Such infrastructure consists of modern digital exchange, digital microwave systems, high-capacity fiber optic transmission backbones, and high-speed data network systems. Both public and private entrepreneurs can use such infrastructure for the purposes of ICT activities. So far, digital exchanges have been set up in all districts, most of the Upazilas, and some growth centers. All subscribers to the digital exchange can get an internet connection. For high speed internet and data communication

BTCL is maintaining a strong Digital Data Network (DDN) in the country. All kinds of connections and usage charges of different services are reduced to make these affordable to all. Though there are several private operators providing telecom services. The importance of BTCL is still very significant. As a public sector operator, BTCL extends its services to every corner of the country. A big portion of this investment is not cost-effective from a financial point of view. As an example, telephone exchanges at many Upazila and growth centers are not financially viable. BTCL is still extending digital exchanges to Upazilas and growth centers. Private operators carefully avoid to provide services to such places where a business is not viable. But to ensure access opportunity to all people of the country, BTCL can be a strong agent for the government. BTCL tries to ensure universal access opportunities through the harmonious development of networks and exchanges throughout the country.

Governments can ensure policy implementation through public sector operators. Telecommunications is a service-oriented public sector. The government prefers to provide telecommunications services to the general public at affordable prices, but without the presence of public sector operators, it can be an oligopoly among private sector operators. When there was only one mobile operator in the country, the service was out of the reach of the general public. The cost of the service seemed to be high, even when there were multiple mobile operators in the private sector. As a result, there was a huge demand for mobile phones to be launched in the public sector. Therefore, BTTB has implemented a mobile phone project. After launching public sector mobile phones under the name "TELETALK", real competition has been triggered, service charges for all mobile operators have fallen sharply, and the number of mobile phone users has increased dramatically. The same thing

happened after the launch of the BTTB Internet service. Internet connection and usage fees have dropped sharply. The incident shows that for the general public, a government needs to control the sector, and that government must have a strong public sector operator in the telecommunications sector.

Unfortunately, after a long period of time, BTCL is unable to achieve its goals and mission according to its vision. BTCL will be a weaker organization than before, and if the same strategy is continued, it will be the weakest organization in the very near future. Therefore, some strategies need to be implemented without delay for their survival. BTCL has the authority to provide basic telecommunications, data, and infrastructure services nationwide on behalf of the government.

1.2 *PROBLEM DEFINITION::*

The Bangladesh government has worked together with private and non-governmental entities to develop and operate internal management systems as well as deliver public services to citizens. Much attention has been given to the computerization of government ministries and agencies, access to the internet of all citizens to improve the government's capacity to carry out its tasks and cope with future challenges to achieve performance goals. To achieve the goal broadband internet connectivity to be available for customers in urban and remote areas at an affordable price is a must. BTCL can perform a pivotal role in this field.

1.3 *RATIONALE/JUSTIFICATION:*

To build Digital Bangladesh by 2021 government is taking various policies and activities in different sectors. Telecommunications and ICT will work as the foundation infrastructure to support Digital Bangladesh. To ensure proper and timely implementation of government policies, there must be a healthy and strong public sector operator in the telecom sector. BTCL has long experience and has the required human resources regarding the implementation of government programs.

Lots of private operators are serving the people, but it is natural that private operators will ensure their business first. They are helpful to the government but they are not bound to achieve the government's target if that is not financially feasible for them. On the contrary,

the public sector operator considers the service first. Through the public sector operator, the government can reach the common people irrespective of their status & position. In this perspective, BTCL is a vital agent for the government. So BTCL needs to take necessary action to increase the bandwidth of the network for the customers to achieve national goals.

1.4 OBJECTIVES:

This study is designed to achieve the objective which are:

- To assess the current status of broadband connectivity delivered by BTCL
- To increase the bandwidth what are the new resources to be employed by BTCL
- To identify the challenges faced by BTCL
- Way forward for achieving the goal

1.5 SCOPE:

This study is confined to the role of BTCL in increasing bandwidth to achieve the vision of Digital Bangladesh. In this study, a group of operating/desk level employees/officers working in Bangladesh Telecommunications Company limited will be considered. A group of customers present in my study time will be taken into consideration.

1.6 LIMITATIONS:

Higher-level employees or offices were not under consideration. Existing available documents relating to my study and customers present in my study time is taken under consideration.

CHAPTER-2: METHODOLOGY

2.1 METHODOLOGY:

The variables which are associated with data user customers endeavor are identified by the literature review and from expert's opinion. In this present study the both qualitative and quantitative approach is used. For this, the study utilizes both primary and secondary data.

Primary data was collected from the concerned subscriber and secondary data was collected from Official records, Academic Literature, Brochures, Journals, Annual Reports, Magazines, websites, etc. This study followed personal interviews and Telephonic interviews was also used for collecting the data. Two types of respondents (official & customer) were taken into consideration, because officials refer to the supply side and the customers refer to the demand side of the internet service(s) provided by BTCL.

Two sets of questionnaire were used for collecting the primary data. One for the officials and the other for the customers of the BTCL. And the interview of the customers of BTCL was also tried to take from different types of customers from different locations for getting the actual condition of bandwidth of the BTCL internet. Then structured and semi-structured data was analyzed to know the trend of the resultant output of the study.

CHAPTER-3: LITERATURE REVIEW

3.1 BTCL AT A GLANCE:

1. License	: PSTN/IGW/IIG/ICX/ITC/NTTN/BWA
2. Telecommunication Regions	: Dhaka East/ Dhaka West/ Dhaka North/ Dhaka South/Chittagong/Rajshahi/Khulna/Transmission East/Transmission west/Overseas/Planning & Development
3. ICX	: Dhaka (SBN)/Dhaka (Mohakhali)/Chittagong/ Sylhet/Bogra/Khulna.
4. Satellite Earth Station	: Mohakhali
5. Telephone Connection	: 5.30 lac (Sep. 2019)
6. Telephone Capacity	: 16.28 lac (Sep. 2019)
7. Telephone Coverage	: All districts, Upazillas and some Growth Centers
8. Internet (ADSL) Connection	: 14,669(Nov,2019)
9. Internet (ADSL) Coverage	: 64 Zilla, 23 Upazilla
10. GPON Connection	: 2512 (Nov. 2016)
11. GPON Coverage	: Dhaka, Chittagong city, Cox Bazar, Sylhet
12. Leased Line (LLI) Connection	: 2259
13. Domain (.bd) registrations	: 23236
14. Domain (Bangla)	: 620
15. Email Address under btcl.com.bd domain	: 708
16. Web hosting	: 1 (BTCL)
17. Bandwidth (Submarine Cable)	: 110 Gbps
18. Bandwidth (ITC)	: 50 Gbps
19. Optical Fiber Network	: 24,000 km
20. Optical Fiber Coverage	: 64 zilla+478 Upazilla+1212 Union

Source: **BTCL (2018)**

3.2 Services of BTCL

BTCL is providing different services throughout the country through more than 700 telephone exchanges, associated transmission system, data and internet system, satellite system etc. The services are a) PSTN fixed line telephone, b) PSTN wireless telephone, c) Value added service over PSTN telephone, d) Internet and Data services, e) Interconnection facilities, f) IN (Intelligent Network) based Services, g) Telecom Infrastructure lease, h) Telegraph Services, j) Miscellaneous services etc.

BTCL has own resources like tower, building, collocations facilities, power, manpower at all districts, several places at Dhaka, Chattragram, Sylhet, Rajshahi and up to 486 upazillas. Many telecom operators, Government entity uses collocation facilities, power, tower, transmission facilities, IIG bandwidth, and Internet facilities up to upazilla level. They are Bangladesh Army, BGB, Bangladesh Police, RAB, NAVY, Air force, Bangladesh secretariat, DC offices, Robi, GP, Gas files, Passport offices, SB offices at various immigration point, Finance department, corporate offices and private operators.

BTCL plays a vital role during the Video conference of honorable PM sir at all 64 districts and keep connected during conference through BTCL's redundant transmission network.(Khabiruzzaman,S.M.(2009))

3.3 Transmission Network of BTCL:

BTCL developed a reliable redundant transmission network from Dhaka to all 64 districts. The divisional headquarters like Chattragram, Sylhet, Mymensingh, Bogra, Khulna, Rajshahi, Rangpur, Barishal are connected with more than 200Gbps and 100Gbps bandwidth which could upgrade up to 1000Gbps in the cluster.

OFC network of BTCL covers 64 Districts, 472 Upazilla and 1216 Unions, Providing modern telecommunication facilities and broadband Internet through 29500km Optical fibers. BTCL has a robust and resilience transmission network all over the country. BTCL connected SEA ME WE4 at Coxsbazar and SEA ME WE5 at Kuakata with PGCB protection and ITC at Benapole with PGCB & Bangladesh Railway protection from Dhaka.

Backhaul Capacity from Coxsbazar to Dhaka of SEA ME WE4 is 540Gbps

Backhaul Capacity from Kuakata to Dhaka of SEA ME WE5 is 600 Gbps

Backhaul Capacity from Benapole to Dhaka of ITC is 500 Gbps

There are ten high capacity DWDM ring networks are available among 64 districts. The divisional headquarters like Chattragram, Sylhet, Mymensing, Bogra, Khulna, Rajshahi, Rangpur, Barishal are connected with more than 200Gbps and 100Gbps band width with Dhaka which could upgrade up to 1000 Gbps in the cluster. All districts are connected each other with 10G/20G/30G capacity in the ring and this capacity can be upgraded with 1500 Gbps capacity.

There are four ring DWDM network are available at Chattragram and Dhaka city.

Moghbazar, Gulshan, Sherebanglanagar, Ramna, Uttara, Cantonment, Narayanganj, Gandaria, Syedabad, Khilgaon, Mirpur are connected with ring network and with capacity 200G, 100G and 40G. This network can be upgrade up to 3000 Gbps.(BTCL (2020))

3.4 Access level connectivity:

BTCL developed a huge transmission and data network up to Union level. A WiFi project is running among 1216 unions. BTCL is connecting the root level and people of all villages among those 1216 Unions. This project is running collaboration with Bangladesh Army. BTCL will be able to connect Schools, Colleges, Varsities, Corporate offices, NGOs,, business points and others growth centers through this project. All the customers under those unions will have Roaming capabilities among them. So customers of one union will be connected to the WiFi network during Roaming in other Unions through proper authentication process. (BTCL (2018))

3.5 IIG Network of BTCL

BTCL developed three IIG big router at Dhaka, Chattragram and Jashore and designed to connect each of the IIG with 300G connectivity. Each of the IIG is designed to connect from SEA ME WE4, SEA ME WE 5 and ITC with 2x100G and 20x10G transmission Bandwidth. So all the important customers/ISP connects with BTCL IIG will never get out from the network even for a while (BTCL (2020)).

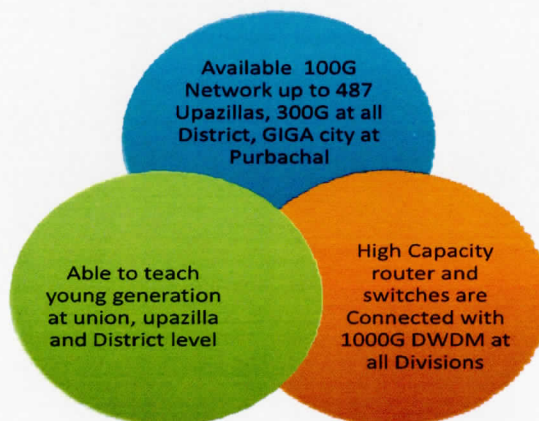
3.6 Future Plan of BTCL:

BTCL is going to take a project, in short term this project will connect 125 Upazillas with 100G DWDM connectivity and all district with 300G connectivity with each other by 2022. Eight divisional headquarters will be connected with Dhaka with 500G, 800G and 1000G DWDM ASON network. In mid term rest of the Upazilla will be connected with 100G DWDM network by 2025. In long term all villages will be connected by Giga network by 2030.

BTCL is developing Giga city in Purbachal and Giga business connectivity at all the BEZAs. Giga connectivity and DWDM network from SMW4/5 and ITC to Mirersarai BEZA is under tendering process and it will be connected with 300G connection from Dhaka and Chattragram soon.

BTCL is developing a Telecom tower at Tejgaon with joint collaboration of DoT. Another project is running to develop Container of 5G network for MNC in all 64 districts (BTCL 2020)).

Vision 2030



3.7 SWOT analysis of BTCL

BTCL can contribute in support of Digital Bangladesh as it has the following strengths and opportunities are as follows:

Strengths of BTCL:

- i. Nationwide reach: BTCL has telecommunications infrastructure, buildings, and offices across the country.
- ii. Modern technology in PSTN network: BTCL has a PSTN network to the Growth which allows to deploy the latest technology on top of the legacy network.
- iii. Current international gateway: BTCL has high capacity international gateway.
- iv. Existing organizational infrastructure: BTCL inherits an organizational structure that covers the whole country. This can be easily updated to meet the requirements of the population.
- v. Trained and experienced human resource: BTCL has well-trained and experienced personnel, including engineers and technicians, which can be utilized easily.
- vi. Existing customer base: BTCL has a customer base. In addition, the common people have the feeling of being with civil servants. BTCL can leverage this range through appropriate initiatives.

Opportunities of BTCL:

- i. The market exists: Looking at the growth rate of mobile phones, we can see that there is a large market in the telecommunications sector. BTCL can target significant market share.
- ii. By launching high-speed data services i.e. triple play, IN services, Broadband Wireless Access Service (WIMAX) etc. BTCL can take advantage of the fact that fixed networks can run more effectively than mobile.

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iii. Build position as the interconnect carrier of choice in Bangladesh

iv. Village Phone service for fixed lines-reach to unreachable

v. BTCL's access network could become strength with appropriate technology.

As a weakest organization, BTCL has some weakness and threat, which are given below:

Weakness of BTCL

1. Large number of unemployed manpower
2. Low marketing skill
3. Hard maintenance necessary

Threat of BTCL

1. More substitutes are available
2. Switch over is easy

CHAPTER-4: DATA PROCESSING AND ANALYSIS

4.1 Market share of BTCL of the National Backhaul:

Bangladesh gets 314 Gbps Bandwidth from Cox’s Bazar, 427 Gbps Bandwidth from Kuakata through SEA ME WE 4 and SEA ME WE 5 submarine cable and 550 Gbps Bandwidth from Benapole through International Terrestrial cable (ITC). So Bangladesh has 1291 Gbps Bandwidth through three path. BTCL Brings 320 Gbps among them which is shown in table 4.1 and pie chart 4.1 below:

Sl No	Name of Cables	Total Used Gbps	BTCL brought Gbps	BTCL Share
1	SEA ME WE-4	314	130	41.40%
2	SEA ME WE-5	427	140	32.79%
3	ITC	550	50	9%
Total		1291	320	24.79%

Source: BTCL (2020)

Table 4.1: Market share of National Backhaul

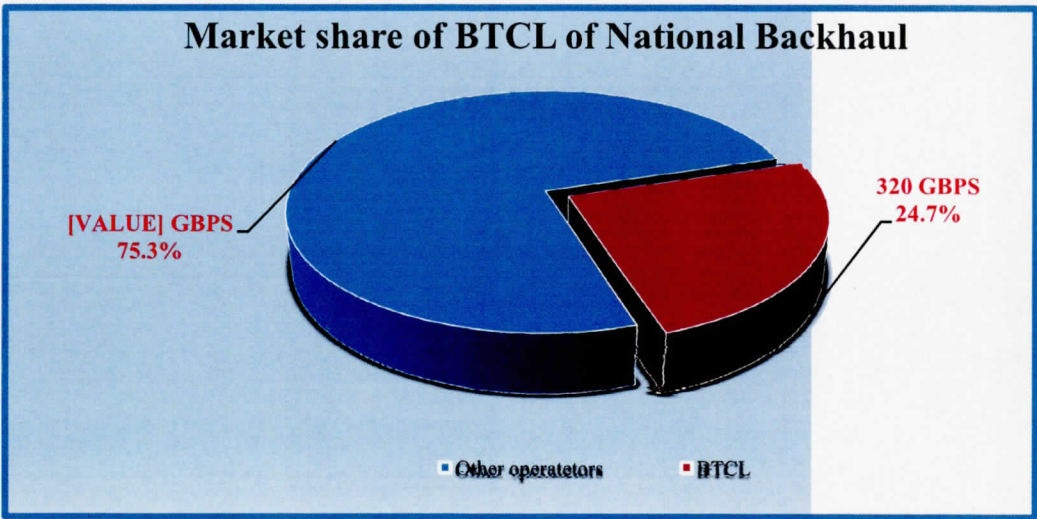


Figure 4.1 : Market share of BTCL of National Backhaul

4.2 BTCL National Bandwidth distribution throughout the Country:

Bandwidth increase through transmission network towards different Districts in the country implemented by BTCL is discussed in this paragraph. Bandwidth related transmission data has been collected from BTCL officials. Data source was secondary and it has been arranged in tabular form and its shown in table 4.2. Current transmission bandwidth distributed by BTCL has been shown in column 3 of Table 4.2. BTCL has taken a project named Modernization of Optical Telephone Network (MOTN). After completion of that project, incremental bandwidth of transmission network of BTCL throughout the country is shown in column 5 of the table 4.2. BTCL has planned of taking another project for increasing bandwidth in accordance with the customer demand and set a target time period of 2030. The increased bandwidth which will be distributed throughout the country within the year 2030 has been shown in column 7 of the table 4.2. It is very much clear from these data that BTCL has been increasing the bandwidth of its transmission network in line with the increasing demand of the customers.

The division wise bandwidth increment of transmission network implemented by BTCL has been depicted in the bar diagram of the figure 4.2

Sl No	Station Name	Current Transmi ssion BW	Bandwidth from MOTN	Total Bandwidth After Complete MOTN	Bandwidth from Ring project (Target 2030)	Total Bandwidth by 2030
1	2	3	4	5	6	7
1	Akhaura	100	50	150	200	350
2	Bbaria	2.5	50	52.5	300	352.5
3	Bagerhat	1	30	31	300	331
4	Bandarban		20	20	300	320
5	Barguna		10	10	300	310
6	Barishal	10	110	120	600	720
7	Benapole	100	150	250	1000	1250
8	Bogra	110	8200	930	800	1730

9	Chapainawabganj		30	30	300	330
10	Chadpur	1	30	31	330	361
11	Chuadanga		20	20	300	320
12	Cumilla	20	170	190	300	490
13	Coxsbazar	160	80	240	400	640
14	Dinajpur	2.5	160	162.5	300	462.5
15	Faridpur	2.5	150	152.5	300	452.5
16	Feni	5	140	145	300	445
17	Gazipur	200	500	900	300	1200
18	Gopalganj	2.5	140	142.5	300	442.5
19	Habiganj	1	20	21	300	321
20	Jamalpur	1	10	11	300	311
21	Jessore	10	790	780	300	1080
22	Joypurhat		20	20	300	320
23	Khagrasari		20	20	200	220
24	Khulna	100	180	300	1000	1300
25	Kuakata	200	80	280	1000	1280
26	Kushtia	2.5	190	192.5	300	492.5
27	Laxmipur		10	10	300	310
28	Madaripur		30	30	300	330
29	Maulovibazar	1	20	21	300	321
30	Mymensing	10	100	110	800	910
31	Naogaon	1	20	21	300	321
32	Narsingdi	1	50	51	300	351
33	Natore	1	20	21	300	321
34	Noakhali	1	30	31	300	331
35	Pabna	2.5	30	32.5	300	332.5
36	Panchogorh		10	10	300	310
37	Patuakhali		30	30	300	330
38	Rajshahi	5	120	125	300	425
39	Rangamati	1	20	22	300	322
40	Rangpur	5	130	135	800	935

41	Satkhira		20	20	300	320
42	Sirajganj	5	30	35	300	335
43	Sylhet	110	330	440	800	1240
44	Tangail	1	30	31	300	331

Source: **BTCL (2020)**

Table 4.2: BTCL National Bandwidth distribution throughout the Country

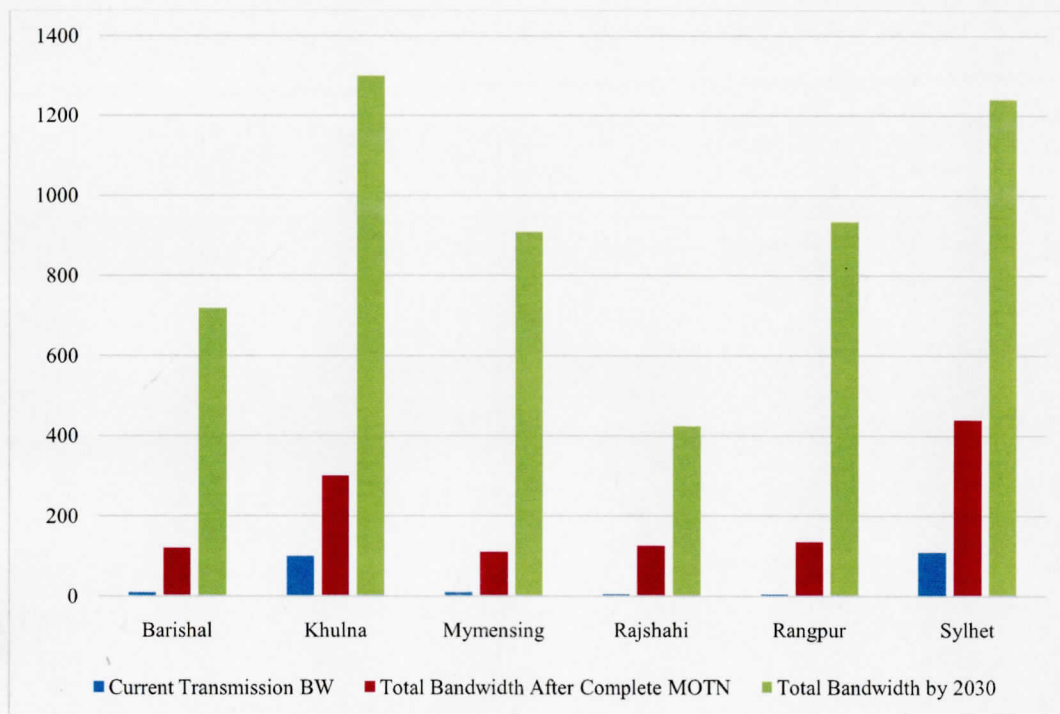


Figure 4.2: BTCL National Bandwidth distribution throughout the Country

4.3 Customer's opinion analysis :

For analyzing customers choice, satisfaction level, and the opinion on BTCL service has been done and the result is discussed in this paragraph. A sample of 20 customers has been selected in Dhaka city. A set of questionnaire was prepared (Appendix 1) and distributed among 20 customers. After filling up those questionnaire have been collected back and their responses have been arranged and analyzed for getting clear picture of customer choice, satisfaction level and opinion about BTCL. In response to the question no.3 about types of

internet, 10 customers use ADSL internet, 6 customers use GPON internet and 4 customers use Lease Line Internet (LLI) out of twenty customers. In response to the question no. 4 about customer satisfaction level, 5 customers are highly satisfied, 8 customers are moderate satisfied and 7 customers are satisfied out of twenty customers. In response to the question no.5 about customer increased probability due to increase bandwidth, 15 customers opinion are highly possibility, 3 customers opinion are medium possibility and 2 customers opinion are less possibility to increase bandwidth out of twenty customers. We know that the bandwidth of ADSL is 1.5 Mbps, the bandwidth of GPON is up to 20 MBPS and the bandwidth of LLI is Higher Mbps,

Though it is shown that no. of customer using ADSl is still higher than that of GPON and LLI. It is known from the remarks question no 8 of the questionnaire the customers are eager to have more bandwidth but BTCL is converting service type with their availability of the services in those places. Types of customer, customer satisfaction level and customer increased probability are shown in table and bar graph below:

Types of Internet services			Customer satisfaction level			Customer increased probability		
ADSL	GPON	LLI	Highly Satisfied	Moderate Satisfied	Satisfied	Highly possibility	Medium possibility	Less possibility
10	6	4	5	8	7	15	3	2

Source: Primary Data

Table 4.3: Customer’s opinion analysis

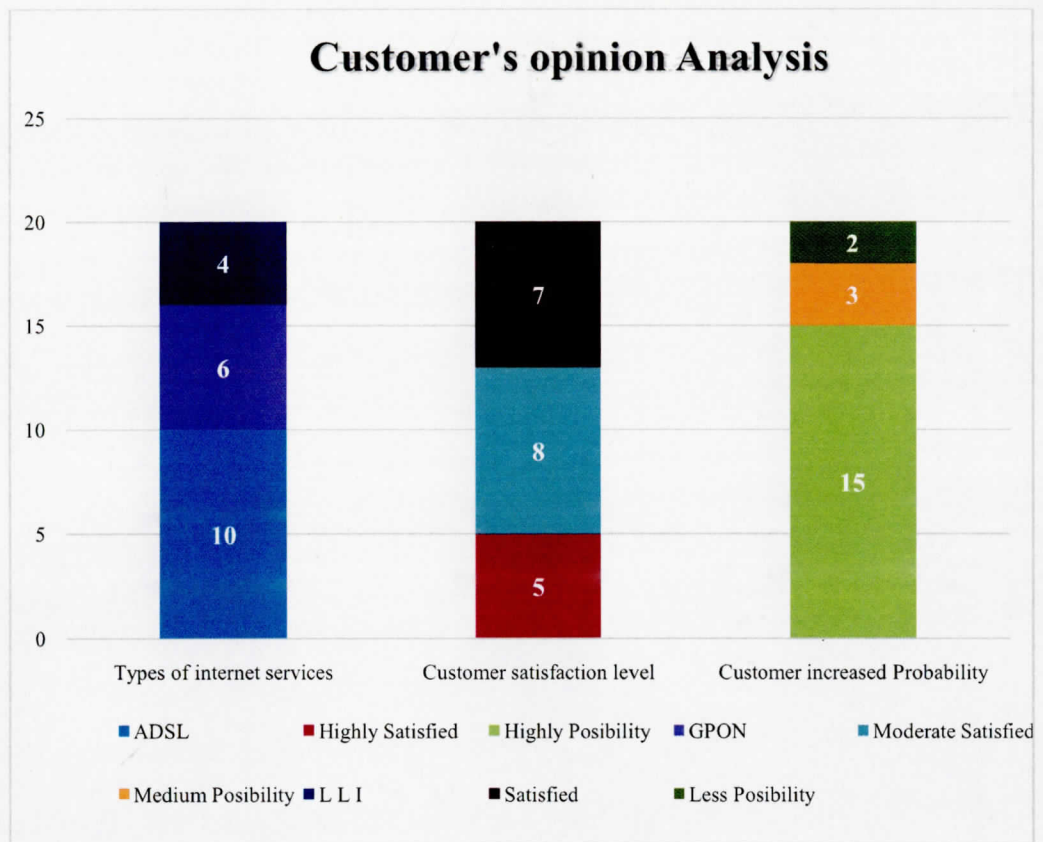


Figure 4.3: Customer's opinion analysis

4.4 Official data analysis :

A survey was also conducted among BTCL official to get their opinion about the improvement of the activities of BTCL. 20 officials were selected as a sample. A questionnaire (Appendix II) was distributed among them. From analyzing their responses through these questionnaire, it is found that: In response of question no. 6 about step to be taken to increase the bandwidth customer of the BTCL officials 15 customers opinion are highly possibility, 3 customers opinion are medium possibility and 2 customers opinion are less possibility to increase bandwidth out of twenty customers. Steps to be taken to increase the bandwidth customer are shown in table and bar graph below:

Marketing Activities to be increased	Prompt Maintenance work to be increased	Network to be expanded up to rural area	Optical fiber connectivity to be increased
3	5	4	8

Source: Primary Data

Table 4.4: BTCL officials Opinion for increasing customer.

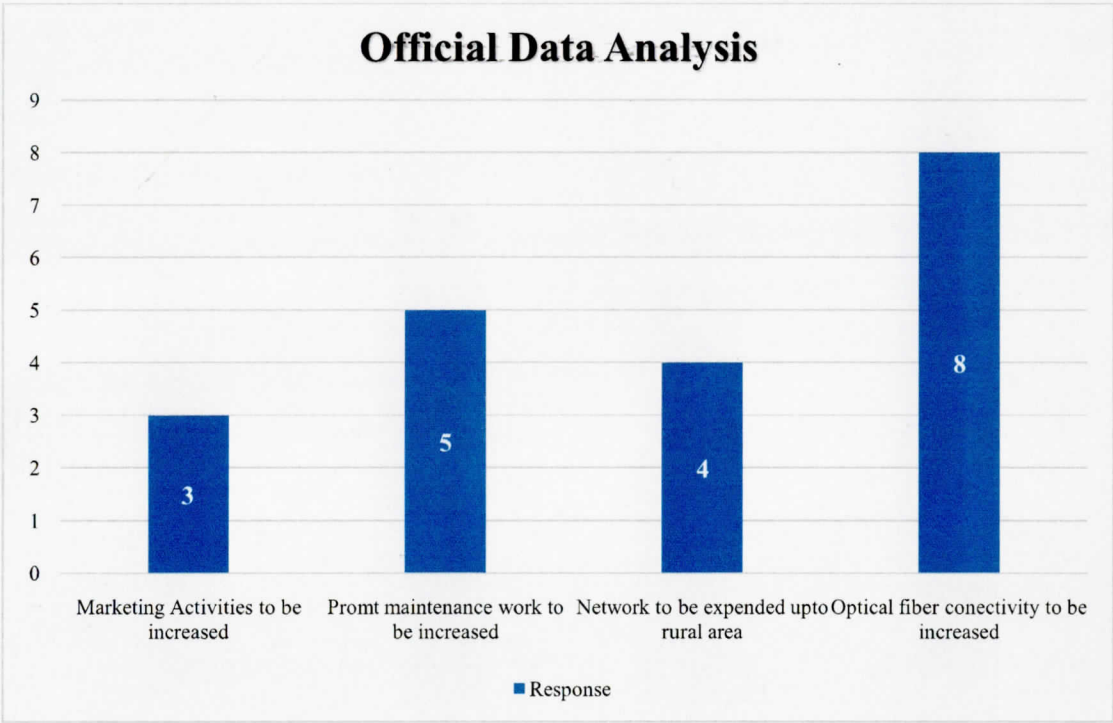


Figure 4.4: BTCL officials Opinion for increasing customer.

Chapter 5: Findings, Recommendation and Conclusion

5.1 Findings:

After thorough primary and secondary data analysis and assessment, the findings are as follows:

1. As the customers demand of bandwidth in their internet activities increases, BTCL also is increasing their bandwidth capacity in their data service through their transmission network.
2. To increase the bandwidth BTCL is expanding their network through implementation of one by one new project.
3. BTCL has set a target to satisfy their customer's demand within year 2030 upto a mentionable level.
4. The customer uses of increased bandwidth.
5. Internet customer of BTCL is increasing day by day.
6. Remarkable percentage (24.8%) of Total bandwidth service has been provided by BTCL.
7. Until now a large proportion of BTCL Customers are not highly satisfied with the service provided by BTCL.
8. BTCL will be able to increase its customer through providing smooth data service with high capacity.
9. Due to Resource limitation and Govt. policy, BTCL is not able to cop with other service provider in Telecom business.
10. BTCL's optical fiber network is not sufficient to achieve customer satisfaction for smooth service delivery.
11. BTCL marketing activities is very insufficient to aware its customer about its service.

5.2 Recommendation:

Present market is very much competitive and challenging. Some weaknesses are found through the evaluation of BTCL. To face the challenges and regain its position, the following recommendations are suggested to BTCL:

1. BTCL has to improve customer service quality through using latest digital platform.
2. BTCL needs to install more optical fiber connectivity to provide smooth service to its customer
3. Customers complain are to be entertained very promptly through easy communications between BTCL official and customers.
4. Since there are many alternatives, BTCL has to increase resources to retain its customer.
5. As govt. own company BTCL should reach every corner of the country do serve the rural area.
6. BTCL has to apply price competitiveness to increase its no. of customers for optimum use of its resources.
7. Proper advertisement should be used by BTCL for awareness creation of its customers about its available services
8. Considering modern age of Technology young energetic and skilled manpower should be engaged for latest and modern service delivery.
9. Modern High Tech equipments are to be deployed for smooth and Quick service.
10. Since BTCL has been converted to public company from govt. structure, its salary structure also to be improved as per the similar market scenario.

5.3 Conclusion:

The research on an analysis the increase of bandwidth delivered to the customers of BTCL through its transmission network throughout the country. According to the objective of the study, 1st is current bandwidth scenario is observed, increase of bandwidth is compared and targeted network expansion is analyzed. Although BTCL has found some weaknesses in service delivery, resource limits, and policy constraints in the business environment, BTCL has carried out various projects, appointed skilled personnel. They are trying to overcome this situation by offering one rate one country for telephone, Internet, VPN data and IIG bandwidth.

To build Digital Bangladesh by 2021, the government is implementing different policies and activities in different sectors. Telecommunications and ICT serve as the underlying infrastructure to support digital Bangladesh. BTCL is a well-equipped public sector operator for the proper and timely implementation of government policies. The government also needs

a pool of experienced and talented people in this regard. BTCL has long experience and has national infrastructure to implement government programs.

Many private businesses serve people, but it's no wonder that private businesses secure their businesses first. They help the government, but if it is not financially feasible for them, they are not obliged to achieve the government's goals. On the contrary, public sector operators first consider services. Through the public sector operator government can reach to the common people irrespective of their status & position. In this perspective BTCL is a vital agent for the government. Facing various hurdles BTCL its continuously trying to satisfy its customers giving modern facilities and reaching remote areas of the country. In this way BTCL is playing as pivotal actor in making digital Bangladesh.

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Appendix 1

(Questionnaire)

বিটিসিএলের ইন্টারনেট ব্যবহারের বিষয়ে তথ্য সংগ্রহ
(বিটিসিএল ইন্টারনেট ব্যবহারকারীর জন্য)

১। নাম:

(আবশ্যিক নয়)

২। গ্রাহকের পেশা ও বয়স:

(আবশ্যিক নয়)

৩। আপনি বিটিসিএলের কোন ধরনের ইন্টারনেট ব্যবহার করেন? এডিএসএল/জিপিএন/এলএলআই

৪। আপনি কি বিটিসিএল এর ইন্টারনেট ব্যবহার করে সন্তোষ্ট? যদি না হন তবে কি কি সমস্যার সন্মোখীন হয়েছেন?

৫। আপনি কি মনে করেন বিটিসিএলের ব্যান্ডউইথ বৃদ্ধিতে গ্রাহক সংখ্যা বৃদ্ধি পাবে?

৬। সংশ্লিষ্ট বিষয়ে আরো মতামত থাকলে বিস্তারিত বলুন।

Appendix 2

(Questionnaire)

বিটিসিএলের ইন্টারনেট ব্যবহারের বিষয়ে তথ্য সংগ্রহ
(বিটিসিএল সংশ্লিষ্ট কর্মকর্তা/কর্মচারীর জন্য)

১। নাম:

(আবশ্যিক নয়)

২। পদবী:

(আবশ্যিক নয়)

৩। বিটিসিএল ইন্টারনেট ব্যবহারকারী গ্রাহকের সংখ্যা বাড়তেছে কি? যদি না বাড়ে তবে এর পিছনে কি কারণ বলে আপনি মনে করেন।

৪। বর্তমানে গ্রাহক কোন ধরনের ইন্টারনেট সংযোগ পেতে আগ্রহী? এডিএসএল/জিপিএল/এলএলআই

৫। আপনি কি মনে করেন গ্রাহকের চাহিদা মোতাবেক বিটিসিএল এর জিপিএল সার্ভিস সন্তোষজনকভাবে দিতে পারছে? যদি না হয় তবে কিভাবে সার্ভিস উন্নত করা যেতে পারে বলে আপনি মনে করেন?

৬। আপনি কি মনে করেন বিটিসিএল তার প্রতিযোগী প্রতিষ্ঠানগুলোর সাথে তাল মিলিয়ে এগিয়ে যেতে পারছে? যদি না হয় তবে এর সীমাবদ্ধতা গুলো বলুন।

৭। বিটিসিএল এর ব্রডব্যান্ড গ্রাহক সংখ্যা বৃদ্ধির জন্য কি কি ব্যবস্থা গ্রহন করা প্রয়োজন বলে আপনি মনে করেন?