Internship Report (BUS-699)

IGW billing structure and regular operation in context of Bangla Trac Communications limited

Submitted By:

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Date: 16 September, 2014

Submitted To:

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LETTER OF TRANSMITTAL

September 15, 2014

Showvonick Datta
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Subject: Submission of Internship Report

Dear Sir,

I have completed this report as part of my internship program (MBA-BUS699) in Bangla Trac Communications Limited. While preparing this report, I tried my level best to follow your instructions. It gives me immense pleasure to tell you that working on this internship report has given me a wide range of exposure.

The report is based on the knowledge, experiences and the skills that I have acquired during my period of internship at Bangla Trac Communications Limited and also a research on "IGW billing structure and regular operation in context of Bangla Trac Communications limited".

I am thus submitting this report with the hope that it lives up to your satisfaction. However I would be glad if you enlighten me with your thoughts and views regarding the report. In addition, if you wish to enquire about any of the aspects of the report, I would be glad to answer your queries.

Sincerely,

Debakor Nath
ID: 12164070
BRAC University

Acknowledgement

I would like to express my gratitude to my university supervisor Mr. Showvonick Datta for giving me the opportunity to work with him during my internship period. I have been able to compile and complete this report in a comprehensive manner due to the guidance, support and counseling that he has provided me with during this period. I have tried my best to implement his constructive suggestions while writing my report.

I would also like to take this opportunity to acknowledge the help provided to me by some people of Bangla Trac Communications Limited. My sincere gratitude goes to Mr. Atauar Rahman (Head of Billing), Mr. Rezwanul Mannaf Engineer Billing department, Mr. Fahad Mahamud Islam Finance & Settlement, Mr. Alimul Razi and Mr. AHM Ahsan Habib core networks of Bangla Trac Communications Limited, for giving me time from their busy schedule, providing me with information that was required to complete the report, and for guiding me properly throughout the period of my internship. I would also like to thank all the employees of Bangla Trac Communications Limited who has supported me and co-operated with me during my internship period.

Lastly, during the preparation of the project work I have come to network with different individuals and friends, who lend their ideas, time and guidance to amplify the report's contents. I must say that without their help it would be very hard for me to prepare such report.

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Executive Summary

Bangla Trac communications limited is a sister concern of Bangla Trac. The company was incorporated on 18 September 2007. Bangla Trac own IGW license after taking a long run auction arrange by BTRC on 25, February 2008 and start their operation on 24 August 2008. After started the operation as IGW Bangla Trac established as a pioneer in the international incoming outgoing voice for the last six years. Bangla Trac followed hierarchical structure of organization. Through sophisticated services and contemplative practices, the company strives to provide improved and more efficient services to its clients every time. The company's vision is to make progress possible through excellence in technology, integrity and unsurpassed customer services.

According to BTRC guideline of IGW, Bangla Trac have to invoice ANS for international outgoing calls and ANS invoice to Bangla Trac for international incoming calls, which don't have any direct connectivity. Bangla Trac deals with foreign partner for international incoming outgoing call termination, but customer support page is not adequate and updated it's require to enhance the customer web portal for better service.

Telecom billing is a complex process, where billing system need to collect calls data from switch process that data and charged them accordingly. Bangla Trac use CDR based billing for calculate international incoming outgoing calls. According to the licensing guide line we share 51.75% of our revenue with BTRC, 20% with ANS and 15% with ICX for incoming calls. Billing system collects CDR from the switch FTP location, process those CDR and calculate minutes for the partner.

Billing department generate daily report for the management, department, partner, stake holder and for performance analysis. Daily report divided into the two parts like incoming and outgoing. In the incoming we added call summary of OS carrier, OS Carrier IP wise, ICX Wise and ANS wise. For outgoing we generate call summary of OS carrier, ICX carrier and destination wise. Performance of the individual carrier can be measure from the daily incoming and outgoing report.

More than 7M Bangladeshi people live in the foreign country, for that nearly 50M incoming minutes and 1M outgoing minutes terminate and originate from Bangladesh. These incoming outgoing calls generate huge revenue. But Bangladesh government cannot take advantage from this due to lack of proper surveillance. If the government increases their actions against grey termination, monitor ICX, IGW periodically then I think the revenue will be double. Authority should decrease the outgoing call rate so that our people can communicate with their relative with low cost.

Introduction

This paper intended to full fill the MBA curriculum of BRAC University business school. This paper have been written under the internship program, course ID BUS-600. For internship I have been involve myself with Bangla Trac Communications billing department. Bangla Trac Communications Limited is one of the licensed IGW in Bangladesh. Bangla Trac communications billing department work with interconnect telecom billing software. Company use CBOSS interconnect billing solutions which is developed by Russian company and in house developed billing known as EIBS for their billing solutions.

Bangla Trac communications limited is the sister concern of Bangla Trac. Bangla Trac has several other entity like Bangla CAT, Acron Limited, Asian gate limited, Prime Bank Limited, Acron Infrastructure limited, and Prime Islami Insurance limited. Their working area like Power, international and wholesale voice, data service, mobile value added service and financial service.

In the internship period I have been work and observe billing department regular activities. The primary responsibility of the billing department is to send daily traffic report. The traffic report include international incoming and outgoing traffic report. Incoming traffic report divided into overseas carrier, interconnection exchange, access network service and some other part. Whereas outgoing report divided in to overseas carrier, interconnection exchange, destination wise and some other part.

I analyzed Bangla Trac incoming and outgoing calling data from January 2012 to December 2013. I take this period for the analysis as in the early of 2012 only four IGW was in the market, but in the middle of 2012 another 20 IGW license have been given. So from this analysis I can show the traffic pattern before and after new IGW license.

I want to show incoming outgoing call market status from both Bangla Trac and BTRC perspective. I also trying to show incoming traffic pattern like origination of the traffic, ANS wise call termination, day wise termination etc. I also try to find the reason why international incoming is lower? What steps should take for increase incoming traffic? For outgoing traffic I have shown top 20 outgoing destination, origination of the outgoing traffic, average call duration of the outgoing calls and why outgoing minutes are lower compare to incoming minutes.

At the last portion of the internship report I am trying to find the result of this analysis, try to find some flaws and ways to recover from the flaws. Billing is very important department as company revenue affect for any flaws. So billing department require to do job in perfect manner.

Organization

Introduction:

Bangla Trac communications Limited is a premium telecom service provider driven by innovation and commitment to quality. Since its inception, as one of the pioneer International Gateway (IGW) Service Providers, we have diversified our portfolio well beyond our core business of premium quality voice termination to Bangladesh. Our wide range of innovative products and services are designed to enable our local and international partners to realize their full potential in target markets.

For Bangladesh termination we have always focused on developing a highly scalable and robust network with multiple redundancies, considering the constraint of single submarine cable. As a result we have been able to provide premium quality voice termination to Bangladesh with maximum uptime. We have 280 plus direct interconnect with major Tier1 and Tier2 carriers of all major continents and carried over 4 billion paid minutes in 2011. Recently we were awarded interconnection exchange license ICX, which will give us more control over the value chain of Bangladesh termination.

B-Trac international, our Singapore affiliate, is offering A to Z routes with special focus in Asia-Pacific, South Asia, Africa and Middle East. Our technical expertise, existing robust network, and vast number of direct interconnects made our transition to wholesale rather seamless and ensured rapid growth within a very short span of time.

Our International Internet Gateway (IIG) license will facilitate deeper access into IP landscape of Bangladesh. It will enhance the experience of the customers through cutting edge innovation in line with supreme quality of services. We have three working Point of Presence at Epsilon, Equinix and HK Colo for routing all call based on regions.

History:

Protected by the government's telecom laws, the Bangladesh Telegraph and Telephone Board (BTTB) were the sole carrier and router of international phone calls since the country's independence in 1971. But lack of government policing led the private mobile and fixed-phone operators to grab illegally a large share of the market, by using Voice over Internet Protocol (VoIP) technology since 2001. It is thus expected that the entry of the three new private operators would ensure a sizeable tariff for the government. The three companies will pay Tk 150 million each as licensing fees.

The country's international call market is worth Tk 40.00 billion and it is growing rapidly because of a large number of Bangladeshi migrants working abroad. The market generates calls

to the tune of about 55 million minutes a day, with 80 per cent traffic home bound. But surprisingly, more than 50 per cent of the market is being illegally grabbed by VoIP operators. Over 7.0 million Bangladeshis now work and live abroad. Another one million are scheduled to leave the country this year. At last, international gateway to the Internet telephony is set to be legally opened for the users in Bangladesh after much foot dragging. With the auctioning of international call service license to three private operators, the decade-old monopoly of the state-run BTTB is gone.

Bangla Trac Communications Limited is a sister concern of Bangla Trac Limited. The company has been established with the aim of diversifying Bangla Trac Group's business into the telecommunication sector. It was incorporated on 18 November 2007.

On 25 February 2008, Bangla Trac Communications Limited was awarded the license for establishing, maintaining and operating an International Gate-Way service in Bangladesh. Apart from the 4 IGWs including Bangladesh Telecommunications Company Limited no person or business entity shall be allowed to provide International Gateway Services in Bangladesh. Bangladesh Telecommunications Company Limited will have primary backbone connection towards international networks through SEA-ME-WE-4 submarine cable and through other submarine cables.

The company provides international voice call services through clear channel, VoIP origination and routing facilities which are then routed to BTRC. In addition to that Bangla Trac Communications Limited has arranged end-to-end service level agreements and is negotiating fees with overseas careers for call origination and termination by themselves. The company has already signed agreements with more than 100 international voice carriers like British Telecom, Telenor, Bharti, Reliance, Tata Communication etc. The company has installed the machinery and equipment's for carrying on the VoIP business with a full office set up at Road: 11, Banani, Dhaka. The company formally launched its operation on August 24, 2008.

Product / Service offerings:

Bangla Trac communications Limited start with international incoming, outgoing voice from August 2008. Later Bangla Trac involved in the wholesale business in the end of 2009. Through the time Bangla Trac offer various services in Telecommunication, Power, and Data service. The service offered by Bangla Trac communications are given below

- International Gateway
- Wholesale Voice
- Interconnection Exchange

- Wholesale Bandwidth
- Bandwidth Exchange
- SaaS & Cloud Services
- Enterprise Solutions
- Mobile Value Added Services
- Turnkey Power & Logistic Solutions
- Business Process Outsourcing

Bangla Trac Communications limited is the sister concern of Bangla Trac, this company have several sister concern including Bangla Trac Communications limited. The short description of other sister concern of Bangla Trac are given below

Bangla Trac Limited (Brand Name: Bangla CAT)

Bangla Trac Limited, with an Authorized Share Capital of BDT 100 Million, is the largest independent power generation solutions provider in Bangladesh, the largest Caterpillar Electric Power Generation Dealer in Asia-Pacific region and also one of the top five Caterpillar gas engine dealers globally. It was appointed the dealership for Caterpillar engines and equipment's in Bangladesh on 11 October 2004. Bangla Trac Limited's management brings with it over thirty years of experience in marketing Caterpillar products in Bangladesh. With a brand name Bangla CAT, Bangla Trac Limited offers all Caterpillar customers solutions in Bangladesh including power generation, material handling, mining operations, marine propulsion and earth moving.

Products and Services of Bangla Trac Limited

Bangla Trac Limited is the market leader in all of its product categories and sectors. The generators sold and serviced by Bangla Trac have a combined capacity of more than 1,300 MW or equivalent to 20% of the national power generation capacity. As a leading Power Systems supplier, Bangla Trac supplies clients with the electric power solutions needed to operate their respective businesses at maximum efficiency. All the Caterpillar Gas Engine models offer high reliability, durability and fuel flexibility to burn from the bio-mass to pipeline natural gas. Bangla Trac Limited also offers the largest range of Diesel generator sets with ratings available from 7 to 16,200 ekW.

So far, around 700 Caterpillar diesel generator units and 1,150 Caterpillar gas generator units are operating all over Bangladesh. Bangla Trac Limited is the only local company with the experience of commissioning and servicing Independent Power Plants

(IPPs). The following are a few among many installations which are solely driven by power generation solutions provided by Bangla Trac Limited:

Government Organizations	Bangladesh University of Engineering and Technology (BUET) Bangladesh Gas Fields Company Limited Sylhet Gas Field Company Limited Sangu Gas Fields Limited Dhaka Stock Exchange BIWTA (Bangladesh Inland Water Transport Authority) Chittagong Port Authority
Private Organizations	Acme Laboratories Limited Rahimafrooz Batteries Limited Mir Ceramic Limited Farr Ceramic Limited Apex Footwear Limited Kazi Farms Limited Standard Group Limited ACI Limited Desh Energy (Mohammadia Group), Novo Pharmaceuticals (United Group), Westin Hotel Limited Square Hospital Limited Square Pharmaceuticals Limited PHP Float Glass Factory Summit Power Plant BEXIMCO Pharmaceuticals Monno Ceramics CEMEX Cement Embassy of the United States of America

Bangla Trac Limited is also the leading rental power solutions provider in Bangladesh. The company has the largest rental fleet in Bangladesh with a total fleet capacity of 9 MWe and in the coming months this will increase even further. Bangla Trac Limited is the only local company which offers complete advanced end-to-end solution for power rentals including power synchronization with utility, sound attenuation for residential or critical applications and cabling solutions.

Marine	Marine engines, which are equipped with advanced electronic control, enhanced monitoring capabilities and cutting-edge technology. The Marine Power System product line consists of propulsion engines from 127 to 9,770 bhp, auxiliary engines from 162 to 5,420 bkW and marine diesel generator sets from 11 to 5,200 kW.
Earth Moving and Material Handling	Product line consists of more than 300 machines that set the standard for the machine industry. Machinery includes Articulated Tucks, Backhoe Loaders, Cold Planers, compactors, Forest machines, Hydraulic Excavators, Motor Graders, Off Highway Trucks, Paving Equipment, Pipe layers, Road Reclaimers, Scrapers, Skidding, Soil Stabilizer, Telehandlers, Track Wheel Loaders.
CAT Engine Oil	CAT Oils are developed by Caterpillar & Mobil with the scope of securing further satisfaction from the customer. CAT Oils fully meet the self-imposed Caterpillar requirements to ensure optimum engine and component life. (MJLL) Mobil Jamuna Lubricant Limited imports the CAT Engine Oil which Bangla CAT eventually sells to its customers.
GAS Generator Sets	All the CAT Gas Engine models offer high reliability, durability and fuel flexibility to burn from the bio-mass to pipeline natural gas. Ratings from 9 to 6,000 kW.
Diesel Generator Sets	The Bangla CAT diesel generator product line available from 7 to 16,200 ekW. The Caterpillar diesel generators are sold under two brands names OLYMPIAN and CAT.

Acorn Limited

Acorn was established in 1985 and was once a leading supplier of gas processing equipment to gas fields across Bangladesh. Since then the company has changed its ownership structure and area of business and currently the main focus of this company is in financial investments in the stock market. The company's major investment is in the shares of Prime Finance & Investment Limited and acts as a corporate director in that company. Currently, M Aminul Haque, who is also a co-owner and Managing Director of Acorn, is the Chairman of Prime Finance and Investment Limited and acts as the representative of Acorn

Limited. At present Acorn Limited owns around 318,403 shares of Prime Finance & Investment Limited.

Asian Gate Limited

The main function of Asian Gate Limited is also in financial investments. The company has its major investments in Far East Finance and Investment Limited and acts as a corporate director to the company. At the present moment Asian Gate Limited owns 119,874 shares of Far East Finance and Investment Limited. The company intends on diversifying into the IT software development business – specifically in software development outsourcing.

Prime Islami Life Insurance

The Company was initially incorporated as Prime Life Insurance Company Limited in July 2000 with the combined efforts of renowned business personalities, bankers and retired Governmental officials. With a view of running the company as per ideology and principle of Shariah, it was converted into Prime Islami Life Insurance Limited in April 2002. In a relatively short span of time, Prime Islami Life Insurance Limited has achieved an excellent progress in business and product development. Mr. Tarique E Haque, one of the owners of Bangla Trac Limited, is also a Director of the company.

Prime Bank Limited

Prime Bank Limited started its operation on 17 April, 1995 and today is one of the leading commercial banks in Bangladesh. Mr. Aminul Haque, father of both owners of Bangla Trac Limited, is a co-owner of Acorn Limited and Asian Gate Limited and a former Chairman and at present Director of Prime Bank Limited. Both owners of Bangla Trac Limited are shareholders in Prime Bank Limited.

Acorn Infrastructure Services Ltd.

Acorn Infrastructure Services Ltd (AISL) and Bangladesh Power Development Board (BPDB) have signed a rental Power Purchase Agreement (PPA) on 06 July 2010. Under the agreement a 100 MW HFO based power plant have established at Jhulda, Karnaphuly, Chittagong by AISL for the purpose of generating and supplying electricity to BPDB at Jhulda, Karnaphuly. The Power Purchase Agreement (PPA) is for 5 year rental basis.

AISL is a joint venture company with its 51% shares owned by Bangla Trac Limited, 20% by Unilib Enterprises Pte. Limited and 14.5% shares each by Mr. Tarique Ekramul Haque and Mr. Nazim Asadul Haque, both owners of Bangla Trac Limited. Bangla Trac Limited (with the brand name Bangla CAT) is the largest independent power generation solutions provider in Bangladesh, the largest Caterpillar Electric Power Generation Dealer in Asia-Pacific region and also one of the top five Caterpillar gas engine dealers globally. Currently Bangla Trac"s installed generators capacity equals 20% of the national capacity. Bangla Trac Limited is also the largest supplier of heavy construction machinery to the Bangladesh Armed Forces. Unilib is a Singapore based company, specialized in the business of power generation. These two companies have come together to form a power plant business for which they have already been awarded a contract for supply of 100 MW (Heavy Furnace Oil) HFO fueled power to BPDB on rental basis for a period of five years. The sponsors have years of experience in the power generation industry as both supplier of CAT generators and commissioning partner of such independent power plant projects.

BRAC Bank Limited and BRAC EPL Limited have been mandated as Joint Lead Arrangers for the finance of the project. The project will be financed by US Dollar denominated Term Loan as a part of the refinancing scheme by Bangladesh Bank. Moreover, the Government of Bangladesh (GoB) will allow duty-free import of fuel for power generation, and the entire project is tax-free.

Operational Organogram:

Bangla Trac Communications follow hierarchal company model, where Board of Directors are in the top of the model with followed by CEO. CTO, CFO, CRO and COO directly reported to the CEO. Department head of the particular functional area report to the corresponding CTO, CFO, CRO and COO. Bangla Trac organogram is given below
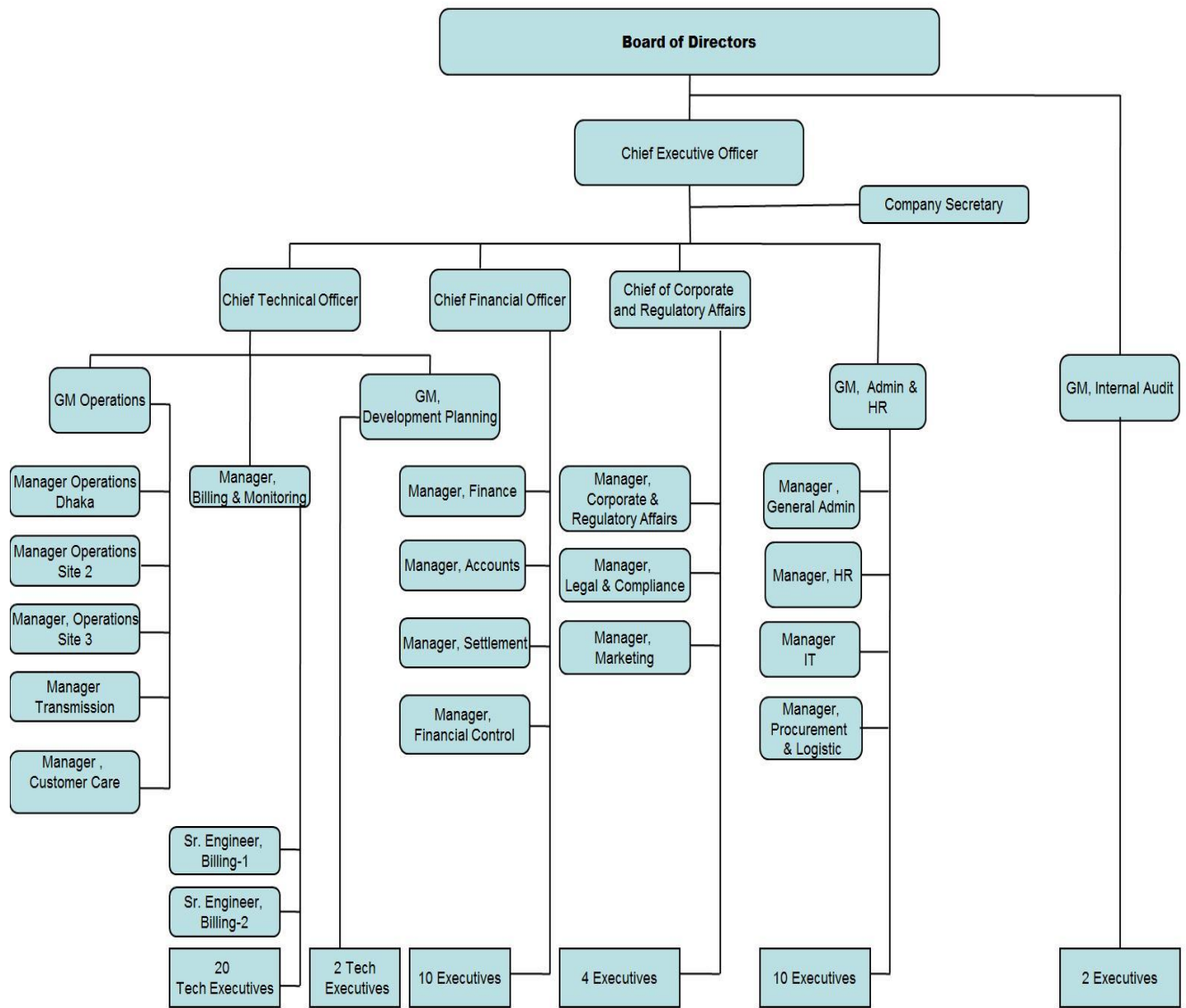
Figure-1: Bangla Trac Communications Limited organogram

Company Mission and Vision:

Bangla Trac Communications Limited (Bangla Trac), in addition to being one of the largest contributors in the sectors of International voice, Data Service, Turn Key power generation in the country, is also exemplary in providing value-added services to its customers. By establishing and sustaining a long-lasting rapport, understanding individual customer needs and providing innovative solutions accordingly, Bangla Trac always tries to meet the needs of each and every one of its customers.

In Bangla Trac Communications, there is no room for complacency! Through sophisticated services and contemplative practices, the company strives to provide improved and more efficient services to its clients every time. In order to ensure continuous improvement and growth, the company actively endorses the philosophy of developing and utilizing its human resources, technology and capital with utmost efficacy.

The company's vision is to make progress possible through excellence in technology, integrity and unsurpassed customer services. The company principles evolve around the idea of providing high quality customer services with reliability and innovative practices through persistent teamwork of responsible employees. The Bangla Trac management strongly appreciates the diversity in the vast amount of knowledge and experience their people bring with them to the company. They also acknowledge the professional specialization of each company personnel and believe that there is always something one can teach and learn from others; hence they actively encourage everyone to work collaboratively together.

Job

Nature of Job:

For the internship program of BRAC university MBA program, I have attached myself with Bangla Trac Communications limited under billing department. Here I have worked as an intern from 01, June 14 to 31 August 2014. In the billing department we have 5 people including our team leader. We need to work with various departments including Core network, Packet bone network, Planning department, NOC, Admin, Finance and Settlement, Marketing and some other department. We have 5 work days in the week with 2 days holiday in the week. Our work schedule from 9AM to 6 PM and have to be on call 24/7 for any emergency.

Job Description:

Working with in the billing department of Bangla Trac Communications Limited, I can describe my job with below responsibilities. It may vary with some other responsibilities with various requirements

- Monitoring and Supervision of daily performance report of CBOSS and i-conX billing system.
- Manage the Leave of officers and officials under his/her jurisdiction.
- Identify area where needs development/Improvement.
- Identify faulty system and take corrective measures.
- Identify the Planning and Development issues and inform to higher authority.
- Supervise and monitoring of document updating by respective units.
- Supervise and monitoring of job performance of subordinates under his/her jurisdiction.
- Instruct/advice/guide subordinates under his/her jurisdiction for necessary corrections and improvements.
- Supervise, monitor and guide Billing TL to ensure managing work load distribution for any newly raised job as well as setting proper priority and committing pending jobs.
- Supervise, monitor and guide Billing TL to ensure proper health check of the whole system by concerned engineers.
- Conducting weekly Technical operations meeting.
- Supervise, monitor and guide Billing TL to ensure Vendors' support and proper escalation.
- Support Billing section in various administrative escalations.
- Supervise, monitor and guide Billing TL to ensure maintaining proper working environment for subordinates under his/her jurisdiction.

- Coordinate inter team / cross department functional issue, inside and outside Technical dept.
- Attending cross functional meeting with other dept. like finance or Carrier relations etc.
- Support network expansion planning and implementation.
- Ensure carrier grade quality and service to the carriers and national Telco Operators.
- Ensure maintaining documentation of the Billing.
- Supervise, monitor and guide Billing TL to coordinate and help to take routing change decision based on performance and availability.
- Ensure proper Backup of related system data periodically (weekly & monthly).
- Ensure reporting for all related technical events and execute day to day instruction of Superior.
- Coordinate with new carrier during creation, testing & commissioning of new route in the switching system.
- Any Job assigned by higher authority.
- Ensure daily Log recording of new / update of events of the system.
- Any critical addition/modification/deletion of connectivity of Network and any change of critical event(s) IGW and Whole Sale network system shall be reported to superior.
- Generate weekly report on work completion.

Different Aspects Job Performance:

My best strength is my hard working capability. I am a hard worker and try to find the detail for work, assignment and challenge that assigned to me. Team player also made me stronger for my position. I accept the change throughout the time, situation and position. Last few years work in IGW, Whole sale and Bangla ICX billing experienced me on various billing platform. Going with my working carrier I have work with various IT management which helps me to do well with the IT infrastructure of current position. Have the working experiences on multiple database management; Such as Oracle, MySQL, and MSSQL server. Mine also have the good player to follow the chain of command. Overall I am a good learner and try to achieve new things in terms of work, education and professional carrier. My main barrier in my professional carrier is the communication skills, it's not about the expertise in English it's something about situation dependent behavior that help to understand the situation and judgment with time and environment basis. Mine have weakness of think in the straightway otherwise think out of the circle. Need to be more creative for competitive situation. Require IT training for the upcoming IT product. Database training requires for the new version of Oracle, MSSQL and MySQL for make me competitive with the future growth.

Critical Observation:

I have been working for Bangla Trac communications Limited under billing department over 6 years. Throughout the period, I have found some observations which may hamper company progress towards market leader in this sector. It will also enhance the company business and reputation. I have some recommendations as well. From this recommendation company can find solutions for any flaws. I will discuss both observation and recommendations in this section of the internship term paper.

Observation:

- According to the guideline of the BTRC, for incoming call ICX and ANS send IGW invoice for the international call termination. We have the direct connectivity with ICX, but don't have any direct connectivity to ANS. For that it's not logical for invoice which don't have any direct connectivity
- For outgoing calls IGW send invoice to ANS which don't have any direct connectivity
- We have found few incidents for fraudulent activities like, fake bank guarantee, company information, trade license, address etc.
- Customer performance analysis is done on the demand basis, such as when a customer generate TT then customer performance is analyzed otherwise Bangla Trac generally taking care about total performance
- For international incoming calls ICX, ANS differentiate IGW with the IGW prefix, we found some cases where IGW send traffic with other IGW prefix, which may cause dispute between ANS, ICX and IGW
- ANS send outgoing roaming call in regular trunk, for that it's not possible to identify which ANS send roaming calls and it will create dispute for outgoing invoice.
- Our international outgoing calls rates are higher comparatively with other country. So BTRC should recheck the offered rate periodically with IGW, ICX and ANS for adjusting the outgoing calling rates.
- Build summary database for keep call summary in the separate database, which will help to reduce pressure on the main database
- Overseas partner offer destination wise rate sheet via sales, which create to miss offered rate sheet and generate dispute in the call amount
- Finance settle dispute with on the basis of billing data. But they don't keep billing department in the mailing conversation, for that it takes long time to solve dispute

Project

Summary:

Throughout the paper, I want to find out the daily activities of Billing Department, How we communicate with our partner, for invoice, rate sheet offer, dispute mitigation, carrier integration, CDR cross check. Billing department analyzed incoming and outgoing calls data for the call pattern analysis. Through the call pattern analysis we try to find which carrier give us highest incoming calling minutes, on which day calling minutes generally higher, on which ANS calling minutes is the highest etc. From outgoing data analysis we came to know on which destination the traffic volume is higher, from which ANS OG calls coming most. How dispute is resolve with overseas carrier and domestic stake holders.

Description of the Paper:

This paper describe the Billing department activities, their inter-related work with other department, incoming and outgoing calls report analysis, invoice generation, incoming call pattern analysis, outgoing call pattern analysis, BTRC revenue sharing report and other various type report analysis.

Objective of the paper

This term paper is describe the Bangla Trac Communications Limited Billing department working area, bill calculation, invoice generation, invoice cross check, international incoming and outgoing call data pattern analysis. How they communicate with their partner, how they given report to the BTRC for the revenue sharing purpose? If dispute arise among partners what is the procedure to solve the problem. Inter departmental activities with the billing department. How Billing data circulated among the inter department? IGW concepts are implemented in the two countries in the world Bangladesh and Pakistan. How this concepts get implemented, how all the stake holders can get the payment for international incoming and outgoing calls that are described in this paper also.

Methodology:

In order to find out the Bangla Trac Billing Department activities analysis I have used various methods to collect and present data. For this analysis and presentation I used two types of data mainly for this purpose-

- **Primary data**
- **Secondary data**

Primary data: This report has prepared through extensive use of primary data. It is collected from the Bangla Trac billing department daily, monthly, yearly report and access of billing department reporting system. The following methods are used in collecting primary data. These are

- Direct interviewing: I have collected data from the billing department head, billing engineer, core network, finance, Sales and Marketing with protested and well-designed questionnaire.
- Personal communication: I have gathered data through personal communication with the BTRC officer, other IGW billing engineer.
- Observation method: I went to every department related to Billing department and observe their activities.

Secondary data: Secondary sources are those which are published or processed materials. I have collected secondary data from the following sources-

- Various types of official documents (BTRC Report, News Paper etc.)
- Some published research report, books, journal and articles
- Personnel departments Bangla Trac Communications Limited

Limitations:

Nothing is perfect. It is true everything must have the limitations. Although various efforts has been made to collect data and information for the internship report. Sometimes authentic data for analysis couldn't found as the prompters of the project think it can disclose their industries secrecy.

The various limitations of the study are as follows:

- Though the both primary and secondary sources of data have been used in the report they lack precision due to securely problem of the company.
- The information gathered was only of Bangla Trac Communications Limited; information of other IGW was collected via various sources.
- The workload of employee and supervisor was quite hard to give proper guidance to the intern.
- The report may not have complete information about the other department of Bangla Trac Communications Limited. As almost most of the time was spent on billing department.

Billing Solutions

Telecommunications billing is the group of processes of communications service providers that are responsible to collect consumption data, calculate charging and billing information, produce bills to customers, process their payments and manage debt collection. Telecom billing handles very complex charging scenarios which would be difficult to handle manually. Billing systems are often viewed as accounts receivable as the billing system assists in the collection (receipt) of money from customers. Billing systems are also part of accounts payable (for inter-carrier settlements) as customers often use services from other companies such as wireless roaming, long distance, and call completion through other networks. Billing systems are high end, reliable and expansive software's which provide various functionalities. Here is a list of most important features but not limited to the following:

- Rating & billing: This involves rating the products or services usage and producing monthly bills.
- Payment processing: This involves posting of the customer payments to customer's account.
- Credit control and collections: This involves chasing the outstanding payments and taking appropriate actions to get the payments.
- Disputes and adjustments: This involves, recording any customer disputes against their bills and creating adjustments to refund the disputed amount in order to settle the disputes.
- Pre-pay and post pay services: This involves supporting both pre-paid and post-paid customer base.
- Multilingual & multiple currencies: Multilingual and multiple currencies support is required if the business is spread across glob and have multinational customers or if the government regulations demand for it
- Inter-carrier settlements: This involves sharing of revenue between carriers that provide services to each other's customers.
- Products & services: This involves providing flexible way to maintain various products and services, and sell them individually or in packages.
- Discount applications: his involves defining various discount schemes in order to reduce customer churn and attract and increase customer base.

Bangla Trac communications function as one of the licensed International Gateway of Bangladesh. For the international incoming / outgoing calls Bangla Trac used interconnect offline billing system.

- Interconnect Billing: The network operator is usually financially responsible for services provided to its customers by other networks regardless of whether or not the customer pays for the service. Interconnect billing is related to inter-carrier or sometime called partner settlements. Bangla Trac connected with ICX (Interconnection Exchange) in the domestic side and connected with overseas carried in the international side. For this type of connectivity Bangla Trac use interconnect billing for invoice and settlement with his partner.
- Off-line Billing: This type of billing means the bill is generated after the call is completed. When any international and domestic calls going through the switch, switching system make a record of that call and keep the record in files. The files where switch keeps the calls record is known as the CDR (call detail record). After generated the CDR switching system send those CDR in to particular location, billing system collect those CDR from the location and mediated and rating those calls in the CDR. As this calls are rating after the finished the calls, that's why it is known as the offline billing. Bangla Trac communications limited use this offline billing for calculating bills. Here customers buy products and services and use them throughout of the month and by end of the month invoices are generated by the service provide and sent those invoices to the customers to make their due payment.

Billing Landscape:
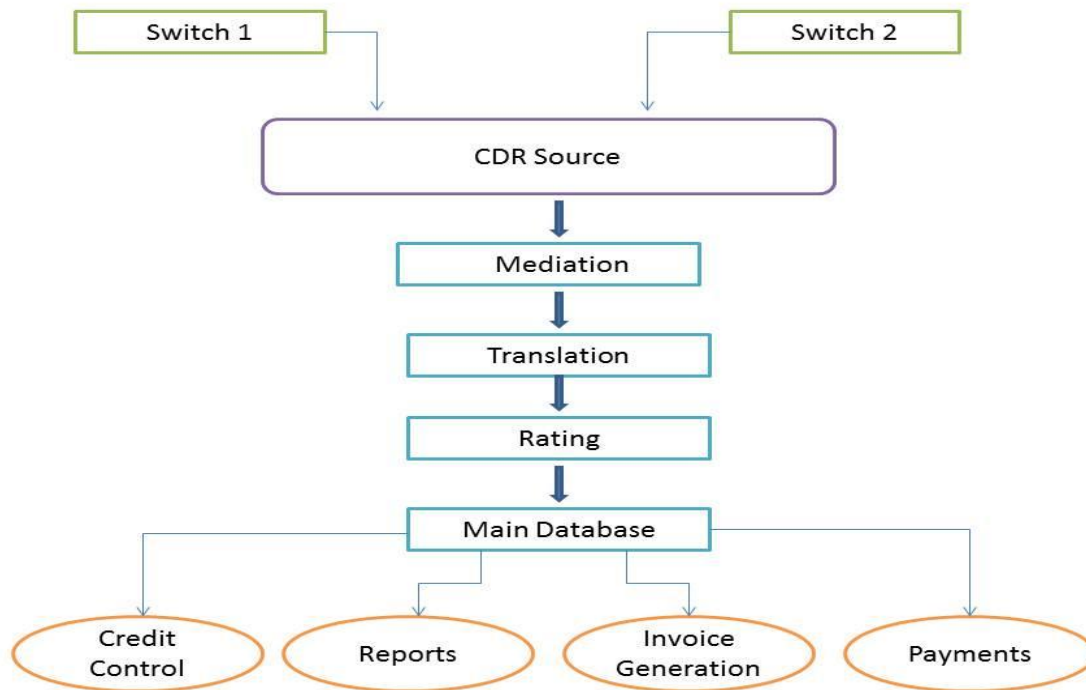
Figure-2: Billing functional level landscape

Invoice and Revenue Share:

Bangla Trac Communications Limited used CBOSS interconnect billing for the IGW billing solutions. Through the billing solutions Bangla Trac generate invoice to his overseas partner for international incoming calls and generate invoice to ANS for international outgoing calls. Bangla Trac makes payment to the domestic partner ICX and ANS for international incoming and gets payment from ANS for international OG calls. The company share revenue with stake holder such as Bangladesh Telecom Regulatory Commission (BTRC), ICX (Interconnection Exchange) and ANS (Access Network Services).

When the ANS subscribers make any international outgoing calls or receive any international incoming calls through Bangla Trac IGW. Bangla Trac switching system keep the record in the CDR. After the generation of the CDR billing system take the CDR files from the FTP locations. Billing system mediated those CDR so that it can use by the rating module for charging. Mediation servers send the mediated files to the rating server and rating server rated the calls and insert into the database server. For any international incoming calls BTRC fixed the rate of 0.03 dollar per minute. With the rate Bangla Trac generate invoice for their overseas partner and share revenue among the stakeholders. For the outgoing international calls BTRC share a common rate sheet for the entire destination of the world. IGW rated OG calls with the BTRC provide rate, which also share with ANS and ICX. From the IGW perspective Bangla Trac Communications share 51.75% of its overall revenue with BTRC. For international incoming and outgoing calls revenue share options are describe below

i) For International incoming calls:
Existing International incoming call termination rate will prevail until otherwise decided by the Commission
After deducting VAT (if applicable)
a) 15% (fifteen percent) of prevailing call rates (call rates to be determined by the Commission from time to time) to be paid to ICX.
b) 20% (twenty percent) of prevailing call rates (call rates to be determined by the Commission from time to time) to be paid to ANS.

ii) For International outgoing call rate the following revenue sharing formula shall prevail
Existing International outgoing call termination rate will prevail until otherwise decided by the Commission
a) Balance amount (Z) = Call rate (X) - specific settlement amount payable to foreign carriers (Y)
b) ANS operators will be paying Y+ 15% (fifteen percent) of Z to the IGW licensee.

Billing Department Daily Report:

Billing department generate various types of billing report for the daily performance analysis. These reports help the management and managers for taking decision. These report also used for the performance analysis of incoming / outgoing calls and carrier such as calling minute's status, Average call duration, Average success ratio, destination on which outgoing calls terminated, OS carrier partners, destination wise performance, top 10 carriers name for incoming outgoing calls and their given minutes etc. The reports generated by billing department are described below.

International Incoming Call Analysis

After the liberation war Bangladeshi people start to going aboard for better life, education, work and migrated as well. There are more than 7 million Bangladeshi origin people work and live outside of the country. Naturally Bangladeshi people are family oriented and like to contact with family member on the regular basis. In the modern age people communicate with each other through mobile phone, mobile dialer, voice messenger such as skype, viber, googletalk and other voice applications. Any calls which is originated outside Bangladesh and terminated in Bangladesh are commonly known as the international incoming calls. People may make voice calls through the internet with mobile dialer, skype, googletalk etc.

Throughout the IGW incoming calls analysis I want to show the incoming voice call traffic pattern, highest origination area, market situation, day wise traffic pattern, which mobile operator get maximum traffic and some other related analysis.

Incoming Market Status:

In the early of 2012 there are four licensed IGW in Bangladesh. They are Mir Telecom, Novotel, Bangla Trac Communications and Bangladesh Telecommunications Company Limited. In the middle of 2012 government give another 24 IGW license, later on 29 IGW company get license and start their operation for carrying international incoming and outgoing traffic from Bangladesh and from outside the Bangladesh. For market situation analysis of international incoming call analysis, I used data from January 2012 to December 2013 for this analysis. In the below table and graph we found the international incoming calls for the above mentioned period.
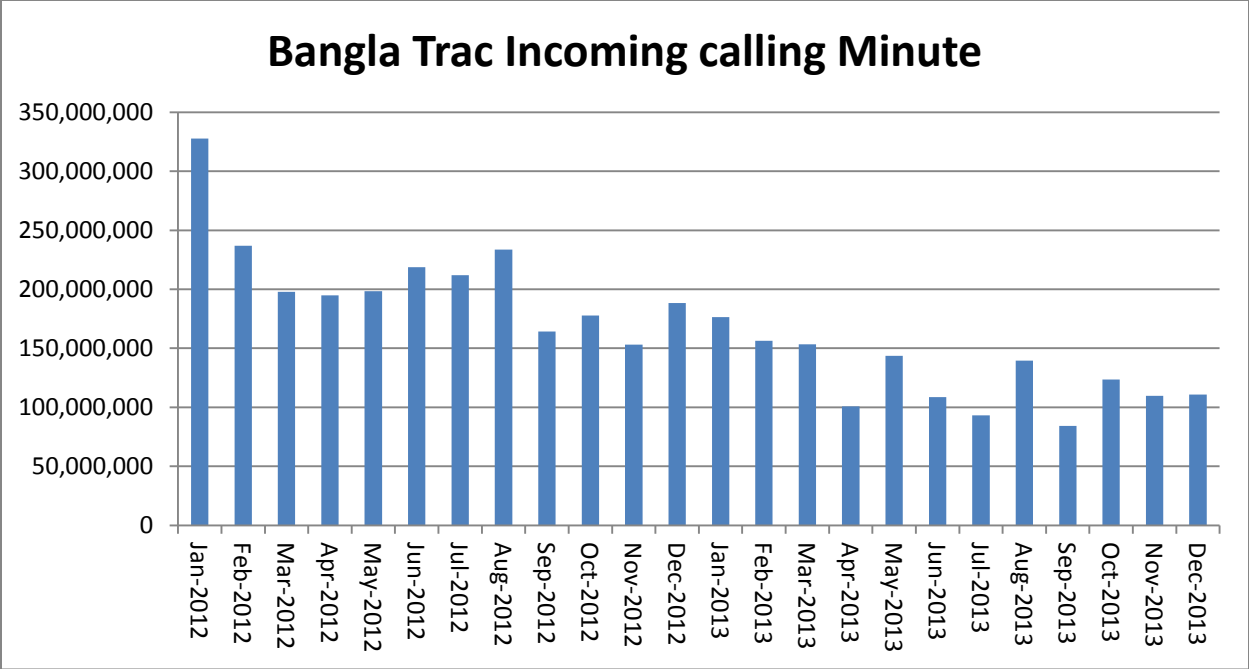
Figure-3: Bangla Trac total incoming minute history Jan-12 to Dec-13, Appendix 1: Table 1

Through the analysis of the above graph, we found that Bangla Trac terminated maximum traffic in the month of January 2012 and later on the incoming traffic reduced continuously. The company get lower amount of incoming traffic and reduced after January 2012. At January 2012 Company get more than 327 M minutes paid incoming traffic and that time only four IGW are in operations. Company's incoming traffic reduced drastically from the month of February 2012. BTRC offered new IGW license in the middle of 2012 and for that Bangla Trac get lower amount of incoming traffic from February 2012.

When the new licensed companies start their operation in the middle of 2012, the reducing patterns of incoming traffic continue. And from the above graph we found that there is a sharp down from the month of September 2012, when other licensed companies start their operation at full swing. These trends continue and we found another sharp fall in the April 2013 and after that Bangla Trac get lower traffic compare to previous incoming traffic pattern.

Bangla Trac gets lower volume of incoming traffic due to some reason such as compromise in incoming traffic rate, flexible marketing, use gray route, CDR manipulation, payment flexibility, not pay stakeholder payment on the regular basis. As Bangla Trac strictly follow BTRC guideline for continue its operation, the incoming volume decrease in a sharp from January 2012 to December 2013.

Bangla Trac sustained in the market with its voice quality, service and responsiveness for its stakeholder for any sort of issues. For that Bangla Trac create a brand in the international incoming voice market and continue its operation.
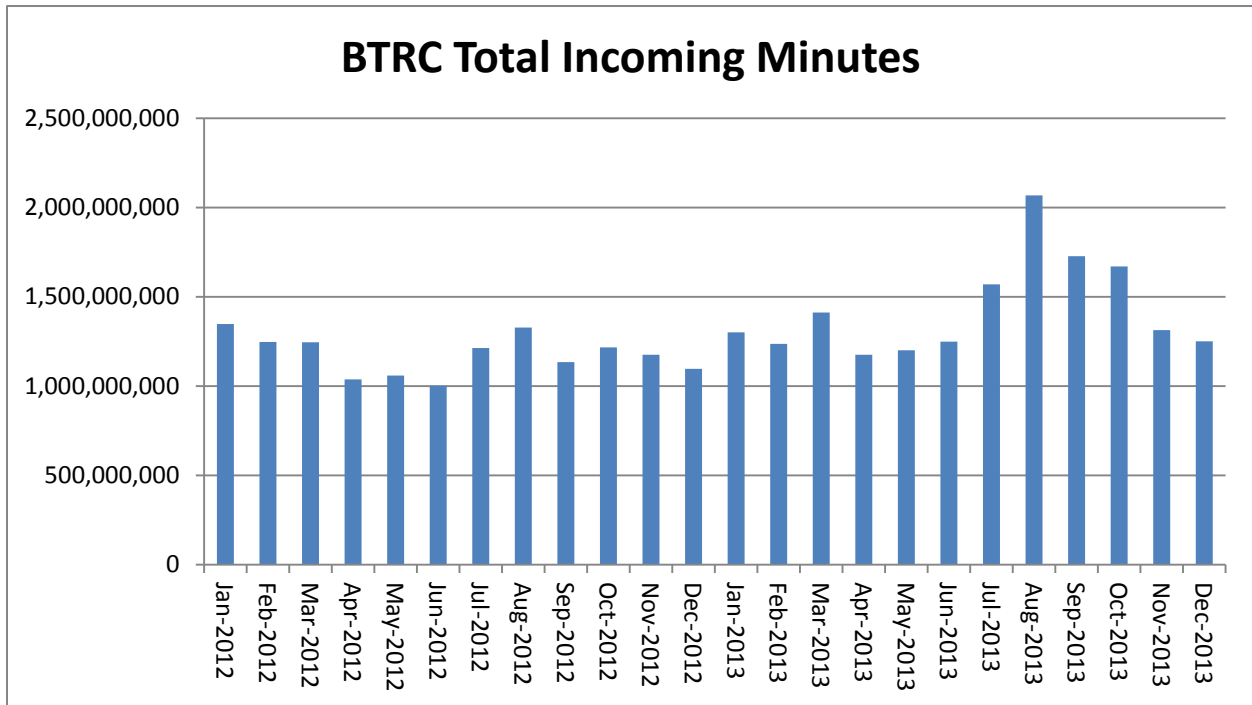
Figure-4: BTRC total incoming minute history Jan-12 to Dec-13, Appendix 1: Table 2

The above graph depicts the picture about the incoming calling minute history of Bangladesh from January 2012 to December 2013. From the above data analysis we found that the incoming traffic doesn't get enough impact as BTRC offered another 25 IGW license in the mid of 2012.

When all the IGW coming in the operation and BTRC found there is little bit change in the incoming traffic, BTRC take some initiatives so that the incoming minutes will be increase. BTRC initiatives such as close monitor of IGW, analyzed IGW CDR, directed mobile operator for close SIM which are used in grey termination, campaign against illegal VoIP operation etc. For that the incoming traffic increased from the month of April 2013, and got its peak at August 2013, and later on its down again. From the above graph we may tell that international incoming minutes increase not for the number of licensed operator, rather for taking some initiative and control over mobile operator and IGW operator as well.

Incoming Calls report:

Any call which is originated outside Bangladesh and terminated in Bangladesh is known as international incoming calls. As nearly 8M diaspora is living all over the world and they communicate with their parents, family person, relatives, international business which is increased day by day and other various reasons for that, its huge amount of international incoming calls coming in Bangladesh every day. According to BTRC average 60M minutes terminate in legal path. Every IGW mainly focused on international incoming calls, Bangla Trac also have the primary concern about international incoming calls. Incoming calls report differentiated in some category, such as, Incoming OS, incoming OS IP Wise, ICX Wise, ANS Wise.

Incoming Report Overseas Carrier:

Bangla Trac Communications have partnership with overseas carriers. Bangla Trac gets the international incoming calls from his partner. Incoming carrier name shown in the report are those, who have at least a single call in the last 24 hours. Carrier which are integrated in the system but didn't send any calls didn't show in the report. The report is generated for last 24 hours duration. The incoming OS carrier daily report looks like below.

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)	Total Call%	Fail Calls %	Successful Calls %	Total Duration (min) %
1	ARAB-BANGLADESH COMMUNICATION	360	200	160	1,519	44.44	9.49	0.02%	0.02%	0.03%	0.05%
2	Al-Madena	259	259	0	-	-	-	0.02%	0.02%	0.00%	0.00%
3	Ali Abdul Azim Atiah	18	12	6	37	33.33	6.10	0.00%	0.00%	0.00%	0.00%
4	Ayu Co.	1	1	0	-	-	-	0.00%	0.00%	0.00%	0.00%
5	Bangla Wears	676	429	247	2,105	36.54	8.52	0.04%	0.04%	0.04%	0.08%
6	CITIC Telecom	30	28	2	34	6.67	17.05	0.00%	0.00%	0.00%	0.00%
7	China Mobile International	3,019	2,084	935	2,623	30.97	2.81	0.18%	0.19%	0.16%	0.09%
8	DIGI Telecommunications	477,862	277,349	200,513	1,070,340	41.96	5.34	28.77%	25.75%	34.34%	38.59%
9	Du Emirates	1,607	1,543	64	97	3.98	1.51	0.10%	0.14%	0.01%	0.00%
10	Emirates Telecommunications	78,668	45,349	33,319	194,501	42.35	5.84	4.74%	4.21%	5.71%	7.01%
11	Faith International	346	213	133	1,022	38.44	7.69	0.02%	0.02%	0.02%	0.04%
12	France Telecom	747	516	231	851	30.92	3.68	0.04%	0.05%	0.04%	0.03%
13	IDT DOMESTIC TELECOM	2,341	1,978	363	3,706	15.51	10.21	0.14%	0.18%	0.06%	0.13%
14	Impress IT2	29	17	12	206	41.38	17.15	0.00%	0.00%	0.00%	0.01%
15	Jamir Express	381	336	45	169	11.81	3.75	0.02%	0.03%	0.01%	0.01%
16	Jamuna Traders	64	61	3	16	4.69	5.23	0.00%	0.01%	0.00%	0.00%
17	KDDI Japan	31	19	12	131	38.71	10.94	0.00%	0.00%	0.00%	0.00%
18	KTZ ENTERPRISES INC	433	433	0	-	-	-	0.03%	0.04%	0.00%	0.00%
19	Khuzama Bin Abdullah Salem Al-Kahtani	947	947	0	-	-	-	0.06%	0.09%	0.00%	0.00%
20	Lanka Bell	74	39	35	210	47.30	6.00	0.00%	0.00%	0.01%	0.01%
21	M1 Limited	169,235	98,887	70,348	473,453	41.57	6.73	10.19%	9.18%	12.05%	17.07%
22	MAXIS INTERNATIONAL	7,998	4,968	3,030	17,515	37.88	5.78	0.48%	0.46%	0.52%	0.63%
23	Nahi Telecom	93	93	0	-	-	-	0.01%	0.01%	0.00%	0.00%
24	New World Telecommunications	153	152	1	0	0.65	0.17	0.01%	0.01%	0.00%	0.00%
25	Noc Call	1,816	1,024	792	6,205	43.61	7.83	0.11%	0.10%	0.14%	0.22%
26	Ooredoo Q.S.C	1,056	831	225	704	21.31	3.13	0.06%	0.08%	0.04%	0.03%
27	PRIMETEL	81	49	32	247	39.51	7.73	0.00%	0.00%	0.01%	0.01%
28	Reliance Communications	525	271	254	1,762	48.38	6.94	0.03%	0.03%	0.04%	0.06%
29	SYSTEM ONE WORLD	237	165	72	989	30.38	13.73	0.01%	0.02%	0.01%	0.04%
30	Saudi Telecom Company	869,514	606,550	262,964	945,343	30.24	3.59	52.35%	56.31%	45.04%	34.09%
Total		XXXXX	XXXX	XXXX	XXXX	XXX	XXX	XXX	XXX	XXX	XXX

Figure-5: Incoming overseas carrier report. Appendix 1: Table 3

Purpose:

- The report show last day incoming traffic duration with every carrier contribution to the incoming traffic
- Carrier wise duration and its performance such as ASR, ACD
- Help for checking any abrupt change in the any carrier ASR and ACD
- It shows top 10 minutes provider of last day
- Report gives an clear picture for priories the carrier about performance
- Help to check any dispute with switch and billing minutes
- Carrier credit limit is checked with this report
- Management take decision for enhance relationship from this report

Incoming Report Overseas Carrier IP wise:

Incoming OS IP wise report is the report on which everyone can know the IP address with which the carrier is connected with Bangla Trac. If the IP contains 0.0.0.0 its represent the carrier have the TDM connectivity with Bangla Trac. Through this report management and concern person came to know IP wise performance of a carrier. IP wise minutes, ACD, ASR help to monitor the performance of that carrier. OS IP wise report sample is given below.

SI No	Client Name	IP	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)
1	Ali Abdul Azim Atiah	108.166.192.220	2	0	2	3	100.00	1.61
2	Ali Abdul Azim Atiah	108.166.218.231	16	12	4	33	25.00	8.34
3	Al-Madena	72.44.67.107	259	259	0	-	-	-
4	Ayu Co.	66.33.147.146	1,376	1,163	213	2,045	15.48	9.60
5	Bangla Wears	50.97.78.116	60	45	15	111	25.00	7.40
6	Bangla Wears	75.126.12.79	209	129	80	559	38.28	6.99
7	Bangla Wears	0.0.0.0	45,866	28,443	17,423	60,243	37.99	3.46
8	Bangla Wears	86.96.241.230	32,802	16,906	15,896	134,258	48.46	8.45
9	China Mobile International	0.0.0.0	3,019	2,084	935	2,623	30.97	2.81
10	CITIC Telecom	202.68.201.65	30	28	2	34	6.67	17.05
11	Du Emirates	0.0.0.0	1,607	1,543	64	97	3.98	1.51
12	Emirates Telecommunications	75.126.12.72	198	115	83	790	41.92	9.51
13	Emirates Telecommunications	75.126.12.73	209	140	69	645	33.01	9.34
14	Faith International	66.152.168.186	346	213	133	1,022	38.44	7.69
15	France Telecom	0.0.0.0	747	516	231	851	30.92	3.68
16	IDT DOMESTIC TELECOM	218.219.156.54	1	1	0	-	-	-
17	IDT DOMESTIC TELECOM	216.53.4.5	965	815	150	1,662	15.54	11.08
18	KDDI Japan	0.0.0.0	31	19	12	131	38.71	10.94
19	KTZ ENTERPRISES INC	68.71.61.188	433	433	0	-	-	-
Total			XXX	XXXX	XXX	XXX	XXX	XX

Figure-6: Incoming overseas carrier report IP wise. Appendix 1: Table 4

Purpose:

- Carrier calling minutes can be segmented with its IP, and easily track on which IP carrier perform good and which IP its bad
- IP wise performance can identified from this report like ASR, ACD etc.
- IP wise various reporting also possible such as daily, monthly etc.
- It's easy for handle carrier performance, if one IP get bad quality it's easy to identify and transfer traffic to other IP

- Identify whether it is IP or TDM carrier. If the IP field contains NULL then it's a TDM carrier, otherwise it's a IP carrier

ICX Wise incoming report

ICX is one of the stakeholders of Bangla Trac. According to BTRC guide line ICX get 15% revenue of international incoming calls. This shows minute distribution for incoming calls among ICX. ICX wise performance such as ASR, ACD can be calculated from this report. ICX wise report looks like below. Full report is given at Appendix 1: Table 4:

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)
1	Agni Systems	155,580	99,790	55,790	293,779	35.86
2	Bangla ICX	143,450	91,329	52,121	224,898	36.33
3	Bantel Limited	119,517	76,899	42,618	226,361	35.66
4	BTCL	23,972	22,673	1,299	5,675	5.42
5	Cross World Telecom	72,013	47,387	24,626	123,691	34.20
6	Gazi ICX	61,432	39,091	22,341	85,351	36.37
7	GETCO	11,256	7,761	3,495	14,325	31.05
8	Imam Network Ltd	102,216	65,829	36,387	184,070	35.60
9	Integrated Services ltd.	158,907	101,377	57,530	258,020	36.20
10	Jibondhara Solutions	124,836	78,978	45,858	200,556	36.73
11	M & H	5,628	3,683	1,945	8,493	34.56
12	MicroTrade ICX.	20,238	13,511	6,727	31,139	33.24
13	New Generation Telecom	18,651	12,562	6,089	26,838	32.65
14	New Generation Telecom	11,029	7,259	3,770	14,454	34.18
15	PARADISE TELECOM	43,361	28,370	14,991	68,819	34.57
16	Purple Telecom	66,891	43,376	23,515	139,798	35.15
17	Softex Communication Limited.	65,517	42,346	23,171	114,941	35.37
18	Tele Exchange	123,773	79,179	44,594	219,322	36.03
19	Vertex Communications	64,112	40,678	23,434	105,427	36.55
20	Voicetel	265,394	171,871	93,523	427,343	35.24
Total		xxx	xxxx	xxx	xxxx	xxx

Figure-7: Incoming call report ICX Wise Appendix 1: Table 5

Purpose:

- Report help to identify the incoming minute flow for the last 24 hours
- ICX Wise performance is identified such as ASR, ACD
- Bangla Trac to ICX dispute, performance can easily identified
- Performance of ICX monitored and traffic routed accordingly

- Inter ICX comparison is possible by call attempt, duration, ASR and ACD

ANS Wise incoming report

ANS (Access Network Service) network commonly known as operator, operator includes Mobile phone, Public switched telephone network (PSTN), Internet Protocol Telephony Service Provider (IPTSP). By this report concern person can came to know which ANS operator get the maximum incoming traffic, any congestion and other performance related information

Sl No	ANS Name	Total Calls	Fail Calls	Successful Calls	Duration (min)	ASR (%)	ACD (min)
1	Citycell	7,900	5,258	2,642	12,098	33.44	4.58
2	Teletalk	22,002	16,498	5,504	28,213	25.02	5.13
3	Airtel	86,148	59,158	26,990	126,436	31.33	4.68
4	Grameen Phone	1,715,614	1,115,524	600,090	2,739,885	34.98	4.57
5	Robi	813,298	505,730	307,568	1,436,017	37.82	4.67
6	Banglalink	621,870	399,640	222,230	1,192,553	35.74	5.37
7	PSTN	69,530	66,906	2,624	11,396	3.77	4.34
Total		xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

Figure-8: Incoming call report ANS Wise; Appendix 1: Table 6,

Purpose:

- This report show ANS wise traffic volume and its difference with other day
- ICX to ANS performance can be analyzed
- ANS wise performance ASR, ACD can be checked
- Report helps to compare among ANS, in terms of duration, Total call attempt, ASR and ACD

International Incoming Call Pattern Analysis

I have done the incoming report analysis from January 2012 to December 2013. Through the analysis I found below points

Origination of the calls:

- The international incoming calls mainly originated from Saudi Arabia, UAE, Qatar, Bahrain, Kuwait, Iraq, Oman, Malaysia, Thailand, United Kingdom, Singapore, India, Pakistan and some other countries where Bangladeshi immigrant live. The ultimate destinations are tough to find, as due to technological innovation people of one country done VPN to other country and originated calls from that countries. For that reason people may live in Saudi Arabia but his originating calls IP show USA or UK IP.
- As nearly 50% of worker live in middle east, its causes a huge international incoming volume and most of the calling minutes coming from Saudi Arabia, United Arab Emirates and Bahrain. Its send nearly 60% of daily international traffic for Bangladesh
- Analyzing the calling pattern, I found that if the calls originated from mobile operator the average calls duration (ACD), is lower compare to calls originating from mobile dialer. The cause behind this is the mobile operator calls are costly compare to mobile dialer calls.
- Bangladeshi workers target market is Middle East, Malaysia, Thailand. Worker income is comparatively low with other profession. They don't have sufficient money for going leisure with the country standard; rather they talked with relative in Bangladesh. Also in Middle East skype, viber and other messaging service is disabling for that worker have to call through local mobile operator or by mobile dialer. For that its causes a huge incoming traffic.

ANS wise call termination:

- There are 6 mobile operators and 12 PSTN operators in Bangladesh. Most of the international incoming calls terminated to the mobile operators. According to the analysis of Bangla Trac communications incoming data I found that mobile operators get nearly 99% of the incoming calls, whereas PSTN, IPTSP get nearly 1% of total incoming calls percentage.
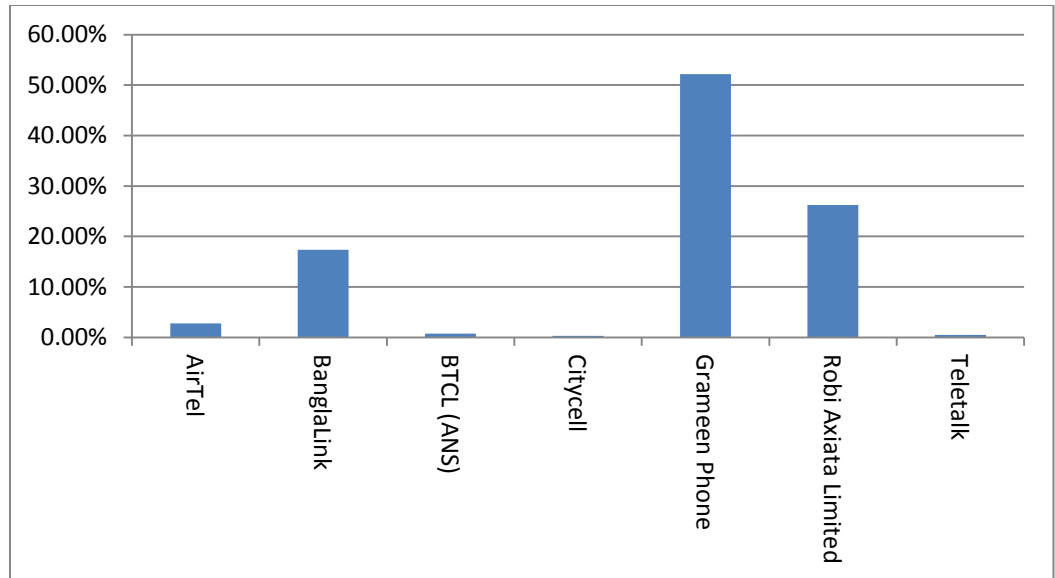
Figure-9: ANS Wise call termination % from Jan 2012 to Dec 2013

- After analyzing data 2012 and 2013 I found that nearly 52% calls terminated on Grameen Phone and rest of the 5 mobile operators, PSTN, IPTSP carry the remaining amount of international incoming traffic. Which suggest that GP's is the market holder of the international incoming traffic

Day wise call termination

- International incoming traffic flow 24/7/365, but I found incoming calling minutes higher on Friday and Sunday on other day traffic is on average. Below chart shows how incoming traffic varies with day.
- Incoming traffic get positive on Sunday and Friday as Sunday is the international holiday and Friday is our weekend. For that reason BD get higher volume of international traffic on those two days.
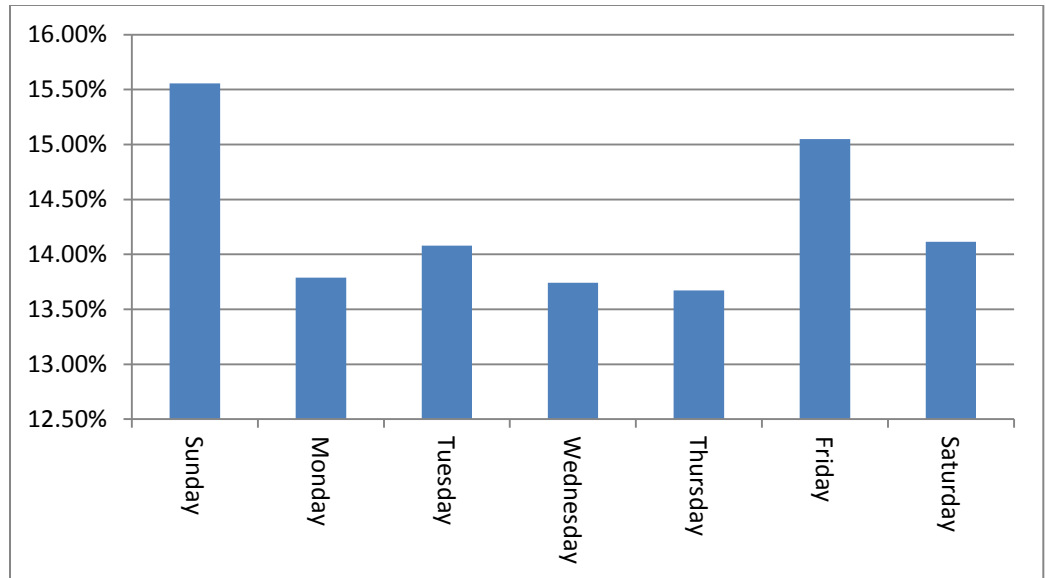
Figure-10: Day wise incoming call termination

- Incoming calls getting higher in some occasion such as, during festival like Eid, Durgapuja, Nobobarsha, government holidays in Bangladesh. During this time family, relative all over the world communicate with their relative and incoming minutes get increased.

- People all over the world make calls to Bangladesh. They call 24 hours in a day but, the main peak hour of the international traffic is 6PM to 11PM and nearly 50% of the total day traffic is coming within this time. The remaining 18 hours carry the rest 50 traffic. The off peak hour of the traffic is from 12 AM to 6 AM

International Outgoing Call Analysis

Any calls originate from Bangladesh and terminated outside the Bangladesh is known as the outgoing calls. Nearly 8M immigrant is outside Bangladesh, for the communication with them huge number of the international OG calls have been called from Bangladesh. Calls originated from the mobile user, PSTN user, IPTSP user, roaming user transferred from user to ICX and ICX send international OG calls to IGW. IGW transfer that calls to any part of the world. Outgoing calls are charged by BTRC guideline. BTRC offer a common rate sheet for all of the stakeholders. Any calls going outside Bangladesh are rated by that rate sheet. We found that the number of minutes going outside the country is comparatively much lower than coming inside the country. Incoming outgoing calling minute ratio as nearly 8:1. BTRC sell 3G license to the mobile operator as a result high speed internet is available through all over the country which have some impact on the international outgoing calls.

Outgoing Calls Market Status

Big number of Bangladeshi inhabitant immigrant to foreign country every year, day by day it increases, for that international outgoing minute is a good sector for earn revenue. Market size of the international outgoing is nearly 1M minute per day as per BTRC annual report annual report analysis of 2011-12 and 2012-13. It may increase as the people going aboard every day, but it is stuck at nearly 1M per day. The market status of outgoing calling minute status of Bangla Trac and BTRC are given below from January 2012 to December 2013.
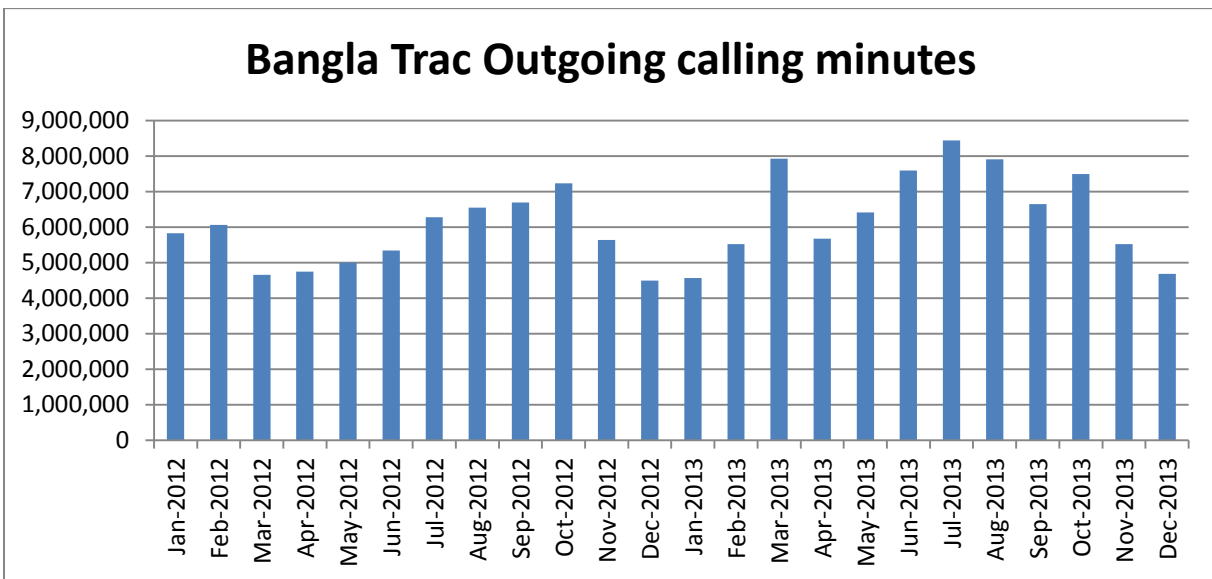
Figure-11: Bangla Trac total outgoing minute history Jan-12 to Dec-13, Appendix 1: Table 7

Above graph shows Bangla Trac outgoing minutes from January 2012 to December 2013. From the above graph we found that Bangla Trac get maximum international traffic in June 2013 to October 2013. It's also depicts that on January 2012 to December 2012 Bangla Trac nearly get same level of outgoing traffic. Company gets same level of traffic in first 2month of 2012, later outgoing traffic sharply from 6M minutes per month to 4.5M minutes per month. After the sharp decline in outgoing traffic Bangla Trac get more traffic from March 2012 to October 2012, and get maximum traffic in October 2012. Bangla Trac get lowest traffic in the month of December 2012.

Outgoing traffic rises from January to July 2013, later traffic going down and least no of traffic minute in December 2013. Through the analysis of the outgoing data we found that Bangla Trac outgoing traffic like as wave pattern. From January 2012 to March there is negative flow of the traffic and later on positive flow of traffic. Same from January to July 2013 and July to December 2013.
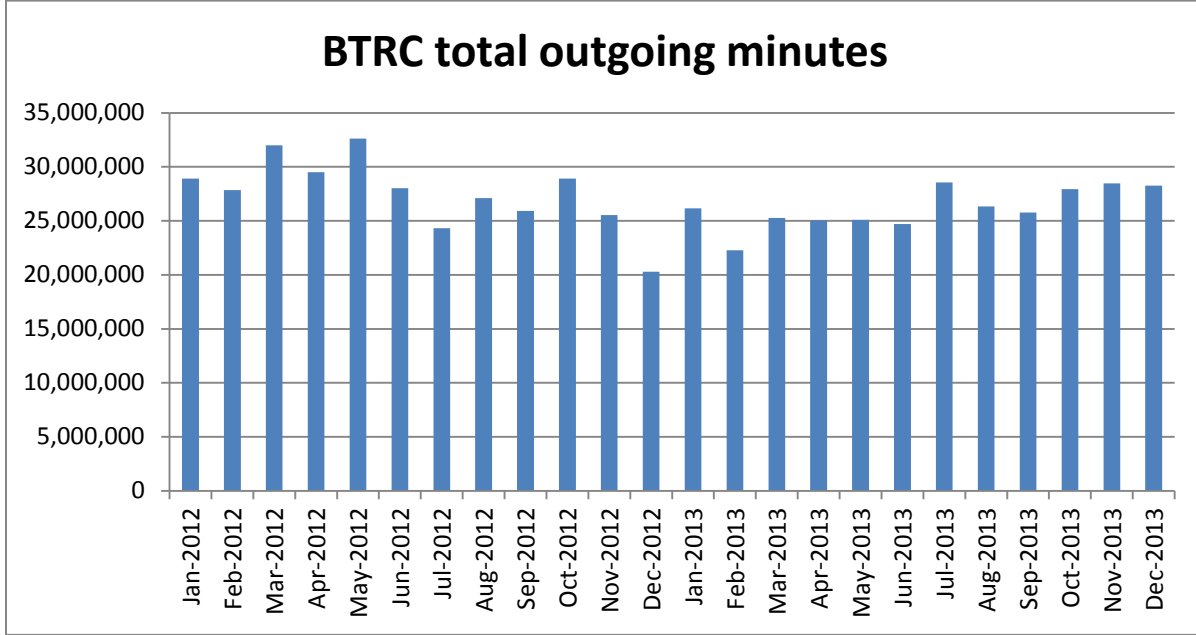
Figure-12: BTRC total outgoing minute history Jan-12 to Dec-13, Appendix 1: Table 8

The total outgoing calls from Bangladesh is nearly same with some exception in the last two years. In the early half of 2012 when there is only 4 IGW functioning for outgoing traffic routing, the traffic was more than other IGW coming to operation. The average outgoing minutes nearly 8 to 10 lac per day according to BTRC report. Outgoing traffic not get positive direction instead of our immigrant no going positive. BTRC get maximum outgoing traffic in the month of May 2012 which was 32M and lowest in the month of December 2012 which was 20M. Instead of that two month BTRC shows nearly same traffic for the year of 2012 and 2013.

Outgoing Calls Report

Bangla Trac can terminate calls in any destination of the world. When a user make calls to foreign country mobile/PSTN operator forward that calls to ICX, ICX forward the call to IGW and after that IGW company route those calls to the desire destination. Bangla Trac Billing team prepares outgoing calls report on daily basis. Reports are generated for outgoing call analysis, billing invoice, billing report, revenue share, sales report, BTRC report, management report and for many other purposes. Outgoing calls reports include overseas carrier report, ICX report and destination wise report. The report generated by the billing department are described below

Overseas Carrier Outgoing Report

The main report of outgoing call analysis is overseas carrier report. Bangla Trac connected with his overseas partners, who are help to terminate international calls all over the world. This report generally shows data of last 24 hours with every carrier who is carried international traffic from Bangla Trac communications. This report contains few fields like total calls, total successful calls, total fail calls, total duration in minute, average success ration, average call duration and percentage of total call, successful call, fail calls and total minute. Purpose of the overseas carrier report are described below

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Dur (min)	ASR (%)	ACD (min)	% Of Total Calls	% Of Fail Calls	% Of Succsful Calls	% Of Total Duration
1	BHARTI	22,718	19,837	2,881	5,331	12.68	1.85	0.59	0.56	1.06	1.91
2	BTI	438,097	367,797	70,300	111,359	16.05	1.58	11.44	10.34	25.76	39.87
3	China Mobile International	7,786	5,792	1,994	7,488	25.61	3.76	0.20	0.16	0.73	2.68
4	China UNICOM	3,731	2,377	1,354	4,671	36.29	3.45	0.10	0.07	0.50	1.67
5	ConceroTel	519	0	519	761	100.00	1.47	0.01	-	0.19	0.27
6	DIALOG TELEKOM	15	15	0	-	-		0.00	0.00	-	-
7	DIGI Telecommunications	766,301	732,260	34,041	21,624	4.44	0.64	20.01	20.59	12.47	7.74
8	Emirates Telecommunications	343,882	335,348	8,534	7,283	2.48	0.85	8.98	9.43	3.13	2.61
9	Etihad Etisalat (Mobily)	268,931	264,970	3,961	3,792	1.47	0.96	7.02	7.45	1.45	1.36
10	France Telecom	113,471	99,263	14,208	18,530	12.52	1.30	2.96	2.79	5.21	6.63
11	KDDI Japan	11,407	9,372	2,035	2,949	17.84	1.45	0.30	0.26	0.75	1.06
12	KDDI Limited	2,340	2,185	155	23	6.62	0.15	0.06	0.06	0.06	0.01
13	Ooredoo Q.S.C	160,750	157,729	3,021	3,116	1.88	1.03	4.20	4.43	1.11	1.12
14	PCCW GLOBAL LTD.	4	4	0	-	-		0.00	0.00	-	-
15	Reliance Communications	445,843	394,284	51,559	23,912	11.56	0.46	11.64	11.09	18.89	8.56
16	Saudi Telecom Company	652,323	643,655	8,668	6,550	1.33	0.76	17.03	18.10	3.18	2.35
17	Singapore Telecommunications	31,132	0	31,132	15,249	100.00	0.49	0.81	-	11.41	5.46
18	Sri Lanka Telecom	466	0	466	1,249	100.00	2.68	0.01	-	0.17	0.45
19	Sunrise Communications	117,543	108,124	9,419	16,059	8.01	1.70	3.07	3.04	3.45	5.75
20	Tata	417,340	392,577	24,763	24,390	5.93	0.98	10.90	11.04	9.07	8.73
21	Vodafone South	24,959	21,084	3,875	4,939	15.53	1.27	0.65	0.59	1.42	1.77
Total		XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Figure-13: Outgoing call report OS Wise; Appendix 1: Table 9

Purpose:

- This report help to determine how much calling minute have been terminated for last 24 hours and which carrier terminates how much minute?
- Carrier wise performance can be analyzed from this report with the help of ASR and ACD. If the performance is not satisfactory then technical could reroute the traffic for the better performance
- Overseas carrier help to check any major change in performance in terms of ASR and ACD, from which the outgoing traffic direction is changed

- Carrier wise comparison can be possible through this report. This report show individual carrier performance in a single page which helps to check which performance is good and which performance is bad
- Its help to adjust traffic for any congestion occur for terminating outgoing traffic
- Management future decision can easily be taken through this report data

ICX wise Outgoing Report

ICX are one of the stake holders of international outgoing calls. International outgoing calls coming through ICX and transfer to IGW for terminating in all foreign country. This report helps to determine the ICX performance and its contribution to the international traffic send through Bangla Trac switch. Every ICX traffic pattern doesn't match with other some ICX send India, US, Canada and other destination where some other send UK, Pakistan, Singapore and other destination traffic this data helps to find out destination wise performance and calling minutes.

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)	% Of Total Calls	% Of Fail Calls	% Of Successful Calls	% Of Total Duration
1	Agni Systems	11,750	10,315	1,435	1,586	12.21	1.11	0.31	0.29	0.53	0.57
2	Bangla ICX	316,049	301,222	14,827	17,220	4.69	1.16	8.26	8.48	5.43	6.17
3	Bantel Limited	53,823	44,694	9,129	16,131	16.96	1.77	1.41	1.26	3.35	5.78
4	Cross World Telecom	218,952	203,706	15246	19,786	6.96	1.30	5.72	5.73	5.59	7.08
5	GETCO	28,322	23,126	5,196	10,233	18.35	1.97	0.74	0.65	1.90	3.66
6	Gazi ICX	157,236	145,099	12,137	8,721	7.72	0.72	4.11	4.08	4.45	3.12
7	Imam Network Ltd	122,020	93,256	28,764	20,486	23.57	0.71	3.19	2.62	10.54	7.34
8	Integrated Services ltd	117,735	108,432	9,303	8,883	7.90	0.95	3.08	3.05	3.41	3.18
9	Jibondhara Solutions	303,680	282,321	21,359	17,163	7.03	0.80	7.94	7.94	7.83	6.15
10	M & H	346,781	320,991	25,790	26,218	7.44	1.02	9.06	9.03	9.45	9.39
11	MicroTrade	83,396	77,333	6,063	6,167	7.27	1.02	2.18	2.18	2.22	2.21
12	Mother Telecommunication	96,644	89,605	7,039	4,921	7.28	0.70	2.53	2.52	2.58	1.76
13	New Generation Telecom	51,623	49,384	2,239	2,668	4.34	1.19	1.35	1.39	0.82	0.96
14	PARADISE TELECOM	346,982	329,588	17,394	19,511	5.01	1.12	9.07	9.27	6.37	6.99
15	Purple Telecom	234,592	220,020	14,572	19,508	6.21	1.34	6.13	6.19	5.34	6.99
16	Softex Communication Limited.	224,583	214,912	9,671	10,249	4.31	1.06	5.87	6.05	3.54	3.67
17	Tele Exchange	294,255	275,658	18,597	24,869	6.32	1.34	7.69	7.76	6.81	8.90
18	Vertex Communications	120,451	112,955	7,496	10,212	6.22	1.36	3.15	3.18	2.75	3.66
19	Voicetel	697,788	651,160	46,628	34,743	6.68	0.75	18.23	18.32	17.09	12.44
Total		xxx	xxx	xxx	xxx	xxx	xxx	100.00	100.00	100.00	100.00

Figure-14: Outgoing call report ICX Wise; Appendix 1: Table 10

Purpose:

- Its help to ICX wise outgoing performance analysis for the international outgoing calls
- ICX Wise contribution to the total outgoing traffic can be known from this report

- Over utilize or underutilize ICX circuit can be known from the above report
- The total quality index can be measure from the ICX wise outgoing report
- Destination wise ICX performance can be measured

Destination Wise OG Report:

Destination wise outgoing report helps us to find out which country have the maximum traffic, outgoing route performance, Terminating destination and prefix, paid minutes and carrier name who is terminating the calls. Below is the report format for the destination wise outgoing report.

Name of Carrier	O/G Route Name	Destination	Terminating Prefix	Total No. of Calls	Total Paid Minutes
BHARTI	BHART10	Chile Mobile	568	6	2
BHARTI	BHART10	India Mobile	919	2,630	5,515
BHARTI	BHART10	Romania Fixed	402	1	3
BHARTI	BHART10	Romania Mobile	407	12	13
BHARTI	BHART10	United Kingdom Mobile	447530	8	3
BHARTI	BHART10	United Kingdom Mobile	447531	8	2
BHARTI	BHART10	United Kingdom Mobile	4475320	1	0
BHARTI	BHART10	United Kingdom Mobile	4475323	1	0
BHARTI	BHART10	United Kingdom Mobile	4475324	1	1
BHARTI	BHART10	United Kingdom Mobile	447533	21	14
BHARTI	BHART10	United Kingdom Mobile	447534	55	47
BHARTI	BHART10	United Kingdom Mobile	447535	40	30
BHARTI	BHART10	United Kingdom Mobile	447536	18	9
BHARTI	BHART10	United Kingdom Mobile	447538	37	56
BHARTI	BHART10	United Kingdom Mobile	447539	42	54
BTI	VZHK10	Algeria Mobile	21366	2	1
BTI	VZHK10	Anguilla Fixed	1264	26	11
BTI	VZHK10	Anguilla Mobile	126472	1	2
BTI	VZHK10	Antigua And Barbuda Fixed	1268	1	0
BTI	VZHK10	Azerbaijan Fixed	99412	2	7
BTI	VZHK10	Bermuda Mobile	144151	2	1
BTI	VZHK10	Bermuda Mobile	14417	1	2
BTI	VZHK10	Canada Fixed	1204	19	50

Figure-15: Outgoing call report ICX Wise; Appendix 1: Table 11

Purpose:

- Given us clear picture of carrier terminating destination, which carrier terminate which country traffic from Bangladesh
- Route wise performance of the carrier is easily figure out

- Terminating destination name and prefix can be easily trace from the report
- Total paid minutes are known from this report. Paid minutes are including with 15 second pulse defined by BTRC
- Destination wise calling minutes are measured from this report

Outgoing Call pattern Analysis

More than 1M minute outgoing traffic has been sent to foreign country every day. Among that traffic Bangla Trac contribute nearly 10 to 12% of the international outgoing traffic. I have analyzed data for from January 2012 to December 2013. After analyzing the data findings about call pattern analysis are given below

- The major terminating country for international outgoing calls include Saudi Arabia, UAE, India, USA, Malaysia, Singapore, China, UK and some other countries. The top 20 countries carry nearly 90% of the total international outgoing traffic. The below graph shows the top 20 countries for outgoing calls
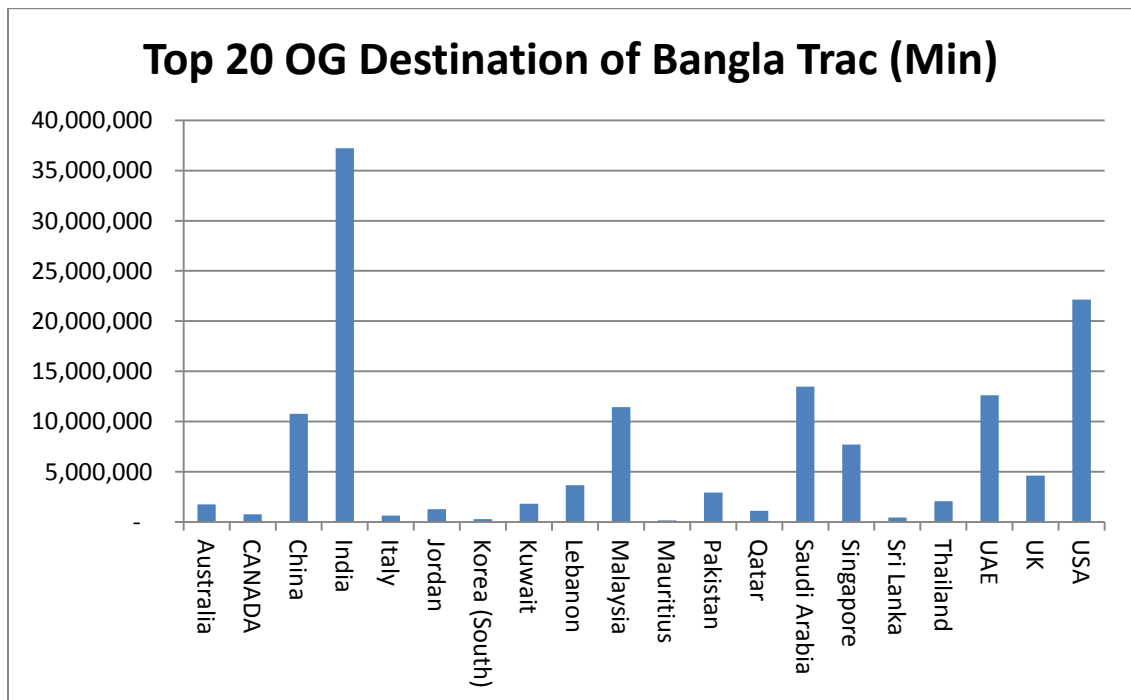
Figure-16: Outgoing call report country wise from Bangla Trac

- From the above graph we found that India carried the most of the outgoing traffic followed by USA, Saudi Arabia, Singapore, Malaysia and china
- People from Bangladesh called to India as lots of Bangladeshi relatives live there, lots of Indian people work in Bangladesh, huge trade between these two countries, people going to India for medical treatment and some other reason.

Nearly 50% of the total worker work in the middle east for that outgoing calls towards middle east also high

- The above graph shows us the top countries on which Bangladeshi people immigrant.
- Nearly 99% of the total outgoing traffic from Bangladesh originated by mobile phone users, and 1% by the PSTN and IPTSP. Among them nearly 60% coming from Grameen Phone, up to 16% by Robi Axiata and Banglalink, and remaining amount of 10% of the traffic by the Citycell, Teletalk, Airtel and PSTN operator

ACD of top 20 Destination (Min)
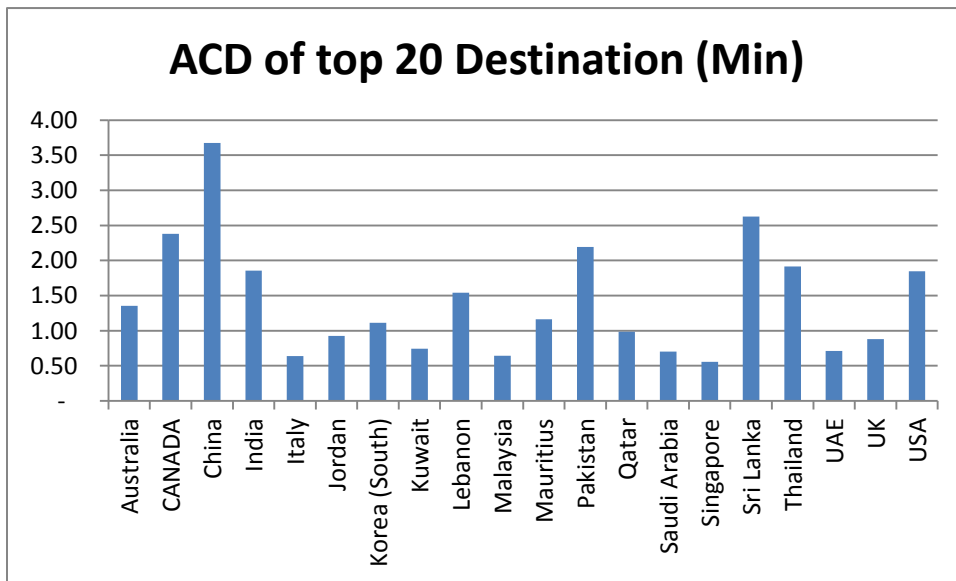
Figure-17: Outgoing ACD report country wise from Bangla Trac

- The below graph will show the average call duration (ACD) for the top 20 destination. It shows that average call duration is changed with outgoing rate. From the above graph we found that ACD of China, USA, Canada, Thailand, Sri Lanka, Pakistan are higher than other countries and the called rate to those country are comparatively lower, for that ACD become higher compare to other
- The total contribution of top 20 countries to overall traffic from Bangla Trac is given below. Its shows that India, Saudi Arabia, Singapore, USA, UAE, Malaysia and UK carried nearly 80% of the total traffic from Bangladesh
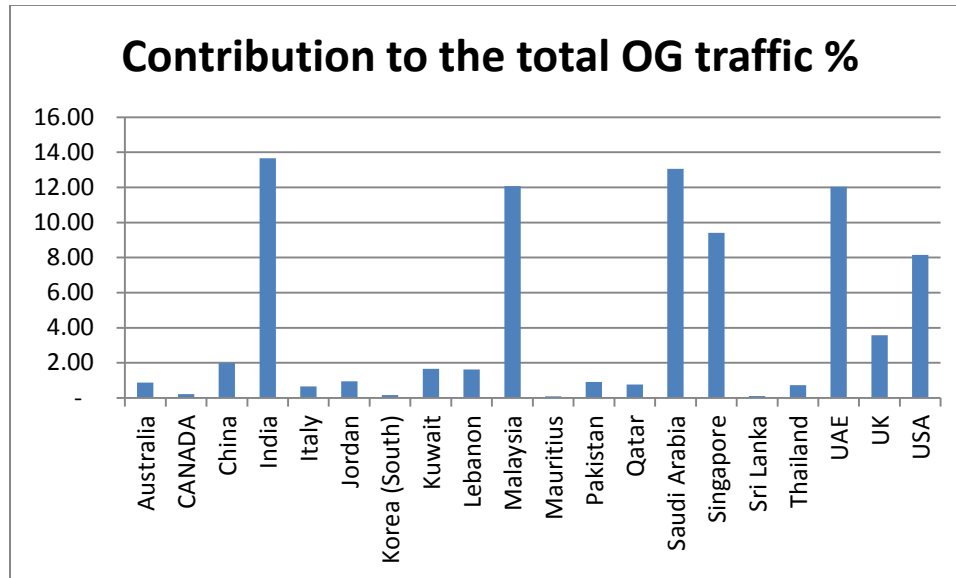
Figure-18: Outgoing ACD report country wise from Bangla Trac

Analysis

In the internship report I'm trying to describe about billing department daily work, about performance analysis, inter department work, billing software maintenance, billing hardware maintenance etc. But the main analysis has been done on the incoming and outgoing traffic. I have been analyzed from my billing experience for lower incoming and outgoing traffic. The reasons that I found are summarize below.

Reasons for lower international incoming traffic

There are some reasons for which the incoming international traffic affected. The reasons are described below

- *Higher incoming rate:* Incoming calling rate of BD is comparatively higher than other countries. India termination rate is nearly 1 cents whereas BD incoming termination rate is 3cents.
- *Grey Termination:* Grey termination increasing day by day, as the local lawful enforcement is weak and local mobile calls rate is getting lower. The internet bandwidth and grey instrument is easily accessible for that international incoming minutes decrease.
- *Lack of lawful interception:* BTRC is lacking of giving punishment for the illegal voice terminator and cannot give restriction of illegal voice termination
- *Involvement of Operator:* On some cases mobile operator, PSTN operator, IPTSP operator directly involve in the grey route voice termination, for that legal voice paid minutes decrease day by day.

- *Political issues in Middle East:* Our main manpower export area is Middle East. Nearly 50% of our labor going to work in the Middle East, but for some years the political conditions is not good in Middle East. As a result our man power export decrease and causes of lower incoming paid minutes

- *Impact of 3G:* Mobile operators of Bangladesh now offer 3G. 3G mobile network allow consumer to use higher speed internet. As internet is available and people are using smart phone. With that various messaging and voice software used for communicate with relative person in aboard. It may causes of lower international incoming paid minutes.

- *Data manipulation:* IGW Company sometimes manipulates data for note given actual data to BTRC. As IGW have to share his 51.75% of revenue to BTRC for that some company manipulate and hide actual figure of incoming minutes through his switch.

Reason for lower outgoing traffic

From the BTRC annual report of 2012 and 2013 I found that international outgoing calls doesn't get increase as lots of people going outside every year. Upon investigate the issues of lower outgoing calls from Bangladesh, the reason that I found are described below

- Higher outgoing call rate: Outgoing call rate from Bangladesh is very high comparatively with other country. It is the main barrier for calling minute increase to overseas. For example: call termination charge to India not more than 3TK from all over the world, but from Bangladesh we have to pay 13.80 taka including VAT. This is an example for a single country for other country the rate is relatively very high compare to other country.

- Economic solvency: Nearly 30% of our population lives under the poverty level. They are not economically solvent enough for making international calls. People who are live aboard are the only income source of family, for that people mainly calling from aboard to Bangladesh.

- Lack of education: Half a people of Bangladesh are illiterate for making international calls. For Making international calls any person need to know the country code, destination prefix and mobile number. But due to lack of education it's become complex for the country people

- Network unavailability: The mobile, PSTN or IPTSP network in the rural area are not very good. As network strength is not very good which causes jitter, noise, low sound is common problem in that area. For that making international calls from those area

- Availability of internet: Now internet is available almost every union of our country. People can send email, voice message, and make face to face video chat

to their relatives who are aboard from union information center. For that outgoing international calls become low

- Voice messaging service: With the development of the modern technology, every people now carry with smart phone with internet connectivity. Skype, Viber, Google Talk, Yahoo messenger and other messenger allow voice calls through all over the world the world through internet. It's one of the major reason for lower international outgoing calls

Results and discussion

Billing department is one of most important department for any telecom company, if the billing software and department wrong calculate minutes, generate invoice, report it will hamper the overall business of the company. It will create a huge impact in the market. Wrong data calculation causes the revenue losses of the company. The ultimate result of the business is the revenue if the billing doing anything wrong the faith of the stake holders and partner will be lost and it's very hard to earn the faith again.

- Bangla Trac billing accuracy is nearly 100%, no big dispute arise from the start of the operation. So billing department done his job perfectly
- Billing department require more hands for process more request from all stake holders and partner
- ICX, ANS and OS disputes are handle from the billing data
- BTRC, ICX and ANS revenue share have been done perfectly with the help of billing department
- OS carrier invoice for the incoming calls and ANS invoice for outgoing calls send timely and accurately with the help of billing
- BTRC monthly report for revenue sharing send every month on time
- All incoming outgoing invoice are generated and deliver to the concern department

Recommendation

In the internship period I have found some flaws in the process of international call handling. It is require for the company to overcome that flaws. If the company overcomes the flaws it will enhance the business process and help to dispute resolution. The recommendations are given below:

- For international incoming calls only ICX should generate invoice for the IGW, as there is the direct connectivity between the IGW and ICX. It will help IGW, ANS and ICX for dispute and manipulate IGW prefix
- When IGW generate invoice for international outgoing calls, they should send the invoice to ICX rather than ANS.
- Create separate route for international roaming calls, from my billing experience I found that ANS raise dispute mainly on the roaming calls. So its require for ANS, ICX and IGW to create separate route for roaming call process
- Billing should direct contact with foreign partner for work with offered rate sheet
- Need to create new department for international payment for the outgoing calls, which may work not only payment for the overseas partner but also for getting payment from foreign partner.
- Need to develop new client website for the client, so that client can get invoice, send offer rate, client performance, check CDR with refer to invoice from his profile
- Should follow proper guideline before integrate any company and taking calls from them. Sometimes few fraudulent company send traffic but don't give payment, so its require to recheck the document before signing the contract

Conclusion

IGW concept is very rare concept in the world, only Bangladesh and Pakistan use this concept for handle international incoming and outgoing calls. IGW market is now very competitive in Bangladesh. Now there are 26 IGW operators are doing their operation in Bangladesh. So billing accuracy is very important for sustained and lead as market leader. Bangla Trac billing department is very professional, accurate and on time for doing their regular task, which help to compete with the rival company. This helps the company to lead over other company. But as the customer requirement change over time to time for that billing department should upgrade time to time. Now billing department is lagging of the billing for operate at full functional level.

Billing department should involve more in send international payment, dispute and taking offer rate from foreign partner. It will enhance the process and minimize the time. Performance analysis should be done in a regular manner so that company can identify any issues of incoming and outgoing traffic. Billing department internal environment is very comfortable; they work as a team with lots of flexibility. Billing department deals with confidential data for that it's require to earn faith, in this case billing team earn faith from the company owner. Overall billing team work like professional, confidence, loyal and faithful to the company.

Appendix 1:

Table 1: Total incoming minutes of Bangla Trac from January 2012 to December 2013

Incoming Traffic	
Month	**Bangla Trac (min)**
January-2012	327,752,155
February-2012	236,956,859
March-2012	197,920,175
April-2012	194,851,081
May-2012	198,290,516
June-2012	218,621,944
July-2012	211,806,176
August-2012	233,586,399
September-2012	164,264,693
October-2012	177,842,164
November-2012	153,058,724
December-2012	188,422,380
January-2013	176,493,436
February-2013	156,295,783
March-2013	153,429,259
April-2013	100,667,081
May-2013	143,476,695
June-2013	108,621,622
July-2013	93,190,493
August-2013	139,635,219
September-2013	84,158,300
October-2013	123,492,287
November-2013	109,723,545
December-2013	110,745,240

Table 2: BTRC total incoming minute history Jan-12 to Dec-13

Incoming Traffic	
Month	**BTRC Total Minute**
January-2012	1,347,321,952
February-2012	1,246,230,703
March-2012	1,245,112,733
April-2012	1,036,435,243
May-2012	1,058,293,691
June-2012	1,001,512,250
July-2012	1,213,602,990
August-2012	1,328,343,222
September-2012	1,134,179,951
October-2012	1,217,130,801
November-2012	1,174,601,914
December-2012	1,096,534,800
January-2013	1,301,439,417
February-2013	1,236,079,511
March-2013	1,411,023,837
April-2013	1,174,282,677
May-2013	1,200,028,410
June-2013	1,248,267,513
July-2013	1,568,991,382
August-2013	2,067,205,736
September-2013	1,727,195,872
October-2013	1,670,420,559
November-2013	1,313,106,349
December-2013	1,250,609,965

Table 3: Incoming Report Overseas Carrier.

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)	Total Call%	Fail Calls %	Successful Calls %	Total Duration (min) %
1	ARAB-BANGLADESH COMMUNICATION	360	200	160	1,519	44.44	9.49	0.02%	0.02%	0.03%	0.05%
2	Al-Madena	259	259	0	-	-	-	0.02%	0.02%	0.00%	0.00%
3	Ali Abdul Azim Atiah	18	12	6	37	33.33	6.10	0.00%	0.00%	0.00%	0.00%
4	Ayu Co.	1	1	0	-	-	-	0.00%	0.00%	0.00%	0.00%
5	Bangla Wears	676	429	247	2,105	36.54	8.52	0.04%	0.04%	0.04%	0.08%
6	CITIC Telecom	30	28	2	34	6.67	17.05	0.00%	0.00%	0.00%	0.00%
7	China Mobile International	3,019	2,084	935	2,623	30.97	2.81	0.18%	0.19%	0.16%	0.09%
8	DIGI Telecommunications	477,862	277,349	200,513	1,070,340	41.96	5.34	28.77%	25.75%	34.34%	38.59%
9	Du Emirates	1,607	1,543	64	97	3.98	1.51	0.10%	0.14%	0.01%	0.00%
10	Emirates Telecommunications	78,668	45,349	33,319	194,501	42.35	5.84	4.74%	4.21%	5.71%	7.01%
11	Faith International	346	213	133	1,022	38.44	7.69	0.02%	0.02%	0.02%	0.04%
12	France Telecom	747	516	231	851	30.92	3.68	0.04%	0.05%	0.04%	0.03%
13	IDT DOMESTIC TELECOM	2,341	1,978	363	3,706	15.51	10.21	0.14%	0.18%	0.06%	0.13%
14	Impress IT2	29	17	12	206	41.38	17.15	0.00%	0.00%	0.00%	0.01%
15	Jamir Express	381	336	45	169	11.81	3.75	0.02%	0.03%	0.01%	0.01%
16	Jamuna Traders	64	61	3	16	4.69	5.23	0.00%	0.01%	0.00%	0.00%
17	KDDI Japan	31	19	12	131	38.71	10.94	0.00%	0.00%	0.00%	0.00%
18	KTZ ENTERPRISES INC	433	433	0	-	-	-	0.03%	0.04%	0.00%	0.00%
19	Khuzama Bin Abdullah Salem Al-Kahtani	947	947	0	-	-	-	0.06%	0.09%	0.00%	0.00%
20	Lanka Bell	74	39	35	210	47.30	6.00	0.00%	0.00%	0.01%	0.01%
21	M1 Limited	169,235	98,887	70,348	473,453	41.57	6.73	10.19%	9.18%	12.05%	17.07%
22	MAXIS INTERNATIONAL	7,998	4,968	3,030	17,515	37.88	5.78	0.48%	0.46%	0.52%	0.63%
23	Nahi Telecom	93	93	0	-	-	-	0.01%	0.01%	0.00%	0.00%
24	New World Telecommunications	153	152	1	0	0.65	0.17	0.01%	0.01%	0.00%	0.00%
25	Noc Call	1,816	1,024	792	6,205	43.61	7.83	0.11%	0.10%	0.14%	0.22%
26	Ooredoo Q.S.C	1,056	831	225	704	21.31	3.13	0.06%	0.08%	0.04%	0.03%
27	PRIMETEL	81	49	32	247	39.51	7.73	0.00%	0.00%	0.01%	0.01%
28	Reliance Communications	525	271	254	1,762	48.38	6.94	0.03%	0.03%	0.04%	0.06%
29	SYSTEM ONE WORLD	237	165	72	989	30.38	13.73	0.01%	0.02%	0.01%	0.04%
30	Saudi Telecom Company	869,514	606,550	262,964	945,343	30.24	3.59	52.35%	56.31%	45.04%	34.09%
	Total	**xxxxx**	**xxxx**	**xxxx**	**xxxx**	**xxx**	**xxx**	**xxx**	**xxx**	**xxx**	**xxx**

Table 4: Incoming overseas carrier report IP wise.

Sl No	Client Name	IP	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)
1	Ali Abdul Azim Atiah	108.166.192.220	2	0	2	3	100.00	1.61
2	Ali Abdul Azim Atiah	108.166.218.231	16	12	4	33	25.00	8.34
3	Al-Madena	72.44.67.107	259	259	0	-	-	-
4	Ayu Co.	66.33.147.146	1,376	1,163	213	2,045	15.48	9.60
5	Bangla Wears	50.97.78.116	60	45	15	111	25.00	7.40
6	Bangla Wears	75.126.12.79	209	129	80	559	38.28	6.99
7	Bangla Wears	0.0.0.0	45,866	28,443	17,423	60,243	37.99	3.46
8	Bangla Wears	86.96.241.230	32,802	16,906	15,896	134,258	48.46	8.45
9	China Mobile International	0.0.0.0	3,019	2,084	935	2,623	30.97	2.81
10	CITIC Telecom	202.68.201.65	30	28	2	34	6.67	17.05
11	Du Emirates	0.0.0.0	1,607	1,543	64	97	3.98	1.51
12	Emirates Telecommunications	75.126.12.72	198	115	83	790	41.92	9.51
13	Emirates Telecommunications	75.126.12.73	209	140	69	645	33.01	9.34
14	Faith International	66.152.168.186	346	213	133	1,022	38.44	7.69
15	France Telecom	0.0.0.0	747	516	231	851	30.92	3.68
16	IDT DOMESTIC TELECOM	218.219.156.54	1	1	0	-	-	-
17	IDT DOMESTIC TELECOM	216.53.4.5	965	815	150	1,662	15.54	11.08
18	KDDI Japan	0.0.0.0	31	19	12	131	38.71	10.94
19	KTZ ENTERPRISES INC	68.71.61.188	433	433	0	-	-	-
Total			xxx	xxxx	xxx	xxx	xxx	xx

Table 5: Incoming call report ICX Wise

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)
1	Agni Systems	155,580	99,790	55,790	293,779	35.86
2	Bangla ICX	143,450	91,329	52,121	224,898	36.33
3	Bantel Limited	119,517	76,899	42,618	226,361	35.66
4	BTCL	23,972	22,673	1,299	5,675	5.42
5	Cross World Telecom	72,013	47,387	24,626	123,691	34.20
6	Gazi ICX	61,432	39,091	22,341	85,351	36.37
7	GETCO	11,256	7,761	3,495	14,325	31.05
8	Imam Network Ltd	102,216	65,829	36,387	184,070	35.60
9	Integrated Services ltd.	158,907	101,377	57,530	258,020	36.20
10	Jibondhara Solutions	124,836	78,978	45,858	200,556	36.73
11	M & H	5,628	3,683	1,945	8,493	34.56
12	MicroTrade ICX.	20,238	13,511	6,727	31,139	33.24
13	New Generation Telecom	18,651	12,562	6,089	26,838	32.65
14	New Generation Telecom	11,029	7,259	3,770	14,454	34.18
15	PARADISE TELECOM	43,361	28,370	14,991	68,819	34.57
16	Purple Telecom	66,891	43,376	23,515	139,798	35.15
17	Softex Communication Limited.	65,517	42,346	23,171	114,941	35.37
18	Tele Exchange	123,773	79,179	44,594	219,322	36.03
19	Vertex Communications	64,112	40,678	23,434	105,427	36.55
20	Voicetel	265,394	171,871	93,523	427,343	35.24
Total		xxx	xxxx	xxx	xxxx	xxx

Table 6: Incoming call report ANS Wise

Sl No	ANS Name	Total Calls	Fail Calls	Successful Calls	Duration (min)	ASR (%)	ACD (min)
1	Citycell	7,900	5,258	2,642	12,098	33.44	4.58
2	Teletalk	22,002	16,498	5,504	28,213	25.02	5.13
3	Airtel	86,148	59,158	26,990	126,436	31.33	4.68
4	Grameen Phone	1,715,614	1,115,524	600,090	2,739,885	34.98	4.57
5	Robi	813,298	505,730	307,568	1,436,017	37.82	4.67
6	Banglalink	621,870	399,640	222,230	1,192,553	35.74	5.37
7	PSTN	69,530	66,906	2,624	11,396	3.77	4.34
Total		**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**

Table 7: Bangla Trac total outgoing minute history Jan-12 to Dec-13

Outgoing Traffic	
Month	**Bangla Trac**
January-2012	5,824,018
February-2012	6,058,455
March-2012	4,656,354
April-2012	4,747,715
May-2012	4,993,692
June-2012	5,341,343
July-2012	6,274,159
August-2012	6,549,652
September-2012	6,689,141
October-2012	7,227,972
November-2012	5,633,289
December-2012	4,494,334
January-2013	4,566,481
February-2013	5,516,269
March-2013	7,920,202
April-2013	5,675,833
May-2013	6,415,268
June-2013	7,590,090
July-2013	8,440,527
August-2013	7,905,824
September-2013	6,649,715
October-2013	7,490,044
November-2013	5,520,398
December-2013	4,684,771

Table 8: BTRC total outgoing minute history Jan-12 to Dec-13

Outgoing Traffic	
Month	**BTRC**
January-2012	28,909,903
February-2012	27,845,966
March-2012	32,001,396
April-2012	29,512,070
May-2012	32,623,442
June-2012	28,034,624
July-2012	24,330,843
August-2012	27,100,626
September-2012	25,914,297
October-2012	28,917,861
November-2012	25,545,854
December-2012	20,277,488
January-2013	26,145,872
February-2013	22,287,555
March-2013	25,255,911
April-2013	25,024,040
May-2013	25,081,966
June-2013	24,691,249
July-2013	28,563,243
August-2013	26,348,942
September-2013	25,786,564
October-2013	27,932,478
November-2013	28,458,132
December-2013	28,254,981

Table 9: Outgoing call report OS Wise

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Dur (min)	ASR (%)	ACD (min)	% Of Total Calls	% Of Fail Calls	% Of Succsful Calls	% Of Total Duration
1	BHARTI	22,718	19,837	2,881	5,331	12.68	1.85	0.59	0.56	1.06	1.91
2	BTI	438,097	367,797	70,300	111,359	16.05	1.58	11.44	10.34	25.76	39.87
3	China Mobile International	7,786	5,792	1,994	7,488	25.61	3.76	0.20	0.16	0.73	2.68
4	China UNICOM	3,731	2,377	1,354	4,671	36.29	3.45	0.10	0.07	0.50	1.67
5	ConceroTel	519	0	519	761	100.00	1.47	0.01	-	0.19	0.27
6	DIALOG TELEKOM	15	15	0	-	-		0.00	0.00	-	-
7	DIGI Telecommunications	766,301	732,260	34,041	21,624	4.44	0.64	20.01	20.59	12.47	7.74
8	Emirates Telecommunications	343,882	335,348	8,534	7,283	2.48	0.85	8.98	9.43	3.13	2.61
9	Etihad Etisalat (Mobily)	268,931	264,970	3,961	3,792	1.47	0.96	7.02	7.45	1.45	1.36
10	France Telecom	113,471	99,263	14,208	18,530	12.52	1.30	2.96	2.79	5.21	6.63
11	KDDI Japan	11,407	9,372	2,035	2,949	17.84	1.45	0.30	0.26	0.75	1.06
12	KDDI Limited	2,340	2,185	155	23	6.62	0.15	0.06	0.06	0.06	0.01
13	Ooredoo Q.S.C	160,750	157,729	3,021	3,116	1.88	1.03	4.20	4.43	1.11	1.12
14	PCCW GLOBAL LTD.	4	4	0	-	-		0.00	0.00	-	-
15	Reliance Communications	445,843	394,284	51,559	23,912	11.56	0.46	11.64	11.09	18.89	8.56
16	Saudi Telecom Company	652,323	643,655	8,668	6,550	1.33	0.76	17.03	18.10	3.18	2.35
17	Singapore Telecommunications	31,132	0	31,132	15,249	100.00	0.49	0.81	-	11.41	5.46
18	Sri Lanka Telecom	466	0	466	1,249	100.00	2.68	0.01	-	0.17	0.45
19	Sunrise Communications	117,543	108,124	9,419	16,059	8.01	1.70	3.07	3.04	3.45	5.75
20	Tata	417,340	392,577	24,763	24,390	5.93	0.98	10.90	11.04	9.07	8.73
21	Vodafone South	24,959	21,084	3,875	4,939	15.53	1.27	0.65	0.59	1.42	1.77
	Total	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**	**xxxx**

Table 10: Outgoing call report ICX Wise

Sl No	Client Name	Total Calls	Fail Calls	Successful Calls	Total Duration (min)	ASR (%)	ACD (min)	% Of Total Calls	% Of Fail Calls	% Of Successful Calls	% Of Total Duration
1	Agni Systems	11,750	10,315	1,435	1,586	12.21	1.11	0.31	0.29	0.53	0.57
2	Bangla ICX	316,049	301,222	14,827	17,220	4.69	1.16	8.26	8.48	5.43	6.17
3	Bantel Limited	53,823	44,694	9,129	16,131	16.96	1.77	1.41	1.26	3.35	5.78
4	Cross World Telecom	218,952	203,706	15246	19,786	6.96	1.30	5.72	5.73	5.59	7.08
5	GETCO	28,322	23,126	5,196	10,233	18.35	1.97	0.74	0.65	1.90	3.66
6	Gazi ICX	157,236	145,099	12,137	8,721	7.72	0.72	4.11	4.08	4.45	3.12
7	Imam Network Ltd	122,020	93,256	28,764	20,486	23.57	0.71	3.19	2.62	10.54	7.34
8	Integrated Services ltd	117,735	108,432	9,303	8,883	7.90	0.95	3.08	3.05	3.41	3.18
9	Jibondhara Solutions	303,680	282,321	21,359	17,163	7.03	0.80	7.94	7.94	7.83	6.15
10	M & H	346,781	320,991	25,790	26,218	7.44	1.02	9.06	9.03	9.45	9.39
11	MicroTrade	83,396	77,333	6,063	6,167	7.27	1.02	2.18	2.18	2.22	2.21
12	Mother Telecommunication	96,644	89,605	7,039	4,921	7.28	0.70	2.53	2.52	2.58	1.76
13	New Generation Telecom	51,623	49,384	2,239	2,668	4.34	1.19	1.35	1.39	0.82	0.96
14	PARADISE TELECOM	346,982	329,588	17,394	19,511	5.01	1.12	9.07	9.27	6.37	6.99
15	Purple Telecom	234,592	220,020	14,572	19,508	6.21	1.34	6.13	6.19	5.34	6.99
16	Softex Communication Limited.	224,583	214,912	9,671	10,249	4.31	1.06	5.87	6.05	3.54	3.67
17	Tele Exchange	294,255	275,658	18,597	24,869	6.32	1.34	7.69	7.76	6.81	8.90
18	Vertex Communications	120,451	112,955	7,496	10,212	6.22	1.36	3.15	3.18	2.75	3.66
19	Voicetel	697,788	651,160	46,628	34,743	6.68	0.75	18.23	18.32	17.09	12.44
	Total	xxx	xxx	xxx	xxx	xxx	xxx	100.00	100.00	100.00	100.00

Table 11: Outgoing call report Destination Wise

Name of Carrier	O/G Route Name	Destination	Terminating Prefix	Total No. of Calls	Total Paid Minutes
BHARTI	BHART1O	Chile Mobile	568	6	2
BHARTI	BHART1O	India Mobile	919	2,630	5,515
BHARTI	BHART1O	Romania Fixed	402	1	3
BHARTI	BHART1O	Romania Mobile	407	12	13
BHARTI	BHART1O	United Kingdom Mobile	447530	8	3
BHARTI	BHART1O	United Kingdom Mobile	447531	8	2
BHARTI	BHART1O	United Kingdom Mobile	4475320	1	0
BHARTI	BHART1O	United Kingdom Mobile	4475323	1	0
BHARTI	BHART1O	United Kingdom Mobile	4475324	1	1
BHARTI	BHART1O	United Kingdom Mobile	447533	21	14
BHARTI	BHART1O	United Kingdom Mobile	447534	55	47
BHARTI	BHART1O	United Kingdom Mobile	447535	40	30
BHARTI	BHART1O	United Kingdom Mobile	447536	18	9
BHARTI	BHART1O	United Kingdom Mobile	447538	37	56
BHARTI	BHART1O	United Kingdom Mobile	447539	42	54
BTI	VZHK1O	Algeria Mobile	21366	2	1
BTI	VZHK1O	Anguilla Fixed	1264	26	11
BTI	VZHK1O	Anguilla Mobile	126472	1	2
BTI	VZHK1O	Antigua And Barbuda Fixed	1268	1	0
BTI	VZHK1O	Azerbaijan Fixed	99412	2	7
BTI	VZHK1O	Bermuda Mobile	144151	2	1
BTI	VZHK1O	Bermuda Mobile	14417	1	2
BTI	VZHK1O	Canada Fixed	1204	19	50