

Report On
“Effectiveness of Revenue Assurance and Fraud Management
process in Banglalink Digital Communications Ltd”

By

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An internship report submitted to the BRAC Business School in partial fulfillment of the
requirements for the degree of
Bachelor of Business Administration

BRAC Business School
Brac University
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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Letter of Transmittal

Mr Ahmed Abir Choudhury
Lecturer,
Brac Business School
BRAC University
66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report on “Effectiveness of Revenue Assurance and Fraud Management process in Banglalink Digital Communications Ltd”

Dear Sir,

It is my pleasure to submit the internship report on Effectiveness of Revenue Assurance and Fraud Management process in Banglalink Digital Communications Ltd" to you which is a requirement of BUS 400.

I have prepared my report as per instruction and tried my level best to make it as informative as I can. I have gathered information from previously done research works available at website along with some of my colleagues’ interviews. Apart from it, I have utilized my analytical abilities to interpret the data and represented them with visuals.

I have done my Internship at Banglalink Digital Communications Ltd. I sincerely hope it will meet your expectation. However, the report is not free from flaws, I urge you accept it with thoughtful considerations.

Sincerely yours,

Mithila Ali Shila

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BRAC Business School

BRAC University

25 August 2019

Acknowledgement

First and foremost, I would like to express my deepest appreciation to the Almighty Allah for allowing me reach such state where I can complete my internship report after these four years of Undergrad life at BRAC University.

A special gratitude and indebtedness to my supervisor faculty, Mr. Ahmed Abir Choudhury Lecturer, BRAC Business School, BRAC University for his endless and constant support, guidance, encouragement and suggestion during the preparation of my internship report. I cordially thank him for being so supportive throughout the whole process and under his supervision I felt more confident to complete my internship report smoothly.

Last but not the least I would like to convey my sincere acknowledgement to Md Kowsar Alam, Specialist Revenue Assurance and Fraud Management, Banglalink Digital Communications Ltd for his guidance, constants support and supervision. Without his help, I would not have ended up being an intern at Banglalink. Moreover, upon his guidance I have worked with the Revenue Assurance and Fraud Management team where I got the opportunity to have a clear vision of how organization like Banglalink with such rigid projects and manage their operation effectively.

Executive Summary

Revenue Assurance and Fraud Management is telecom industry's solution that simplifies RAFM. It tackles critical challenges across the entire revenue chain with ease and fraud detection and recovery which simplifies and speed up the process of revenue assurance and recovery of a company. It helps in addressing revenue assurance challenges inherent to individual service fulfillment, usage integrity, retail billing, wholesale billing, and content settlement. This in-turn enables the company to dramatically reduce the time required to implement or extend the coverage of their revenue management system and practices.

The revenue path for a Communications Service Provider (CSP) is anything but a straight line – it's a complex, constantly evolving series of technologies, systems and processes that eventually delivers a mix of services to subscribers. The more complex the network, the more complicated the problems that arise, often emerging as costly losses. RAFM ensures the continuous revenue ensuring and fraud stopping.

Considering the importance of this department I have selected my report topic as "Effectiveness of Revenue Assurance and Fraud Management process in Banglalink Digital Communications Ltd".

The following report includes a brief discussion about Banglalink, important aspects of Revenue Assurance and Fraud Management and a clear portrayal of the overall process of RAFA. Moreover, the report has a defined explanation of four major sectors Banglalink "Revenue Assurance and Fraud management" work in a proficient way. Additionally, the report consists of a research in relation to RAFM that explains next level RA challenges. I have conducted a detailed analysis to figure out RA challenges that should be acquired by Banglalink to prove themselves better than any other companies in a more challenging and competitive

world. At the end of the report, there are some recommendations which Banglalink should take into consideration and implement.

Keywords: Revenue Assurance, Fraud Management, Telecom industry, Report, Technologies, Process, Subscriber, Challenges.

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List of Acronyms

BTRC	Bangladesh Telecommunication Regulatory Commission
AMTOB	Association of mobile telecom operators of Bangladesh
UAT	User Assessment Test
RAFM	Revenue Assurance and Fraud Management
ATL	Above the Line
BTL	Below the Line
VAS	Value Added Service
CDR	Call Detailed Record
OTF	Over the Fly
XDR	External Data Representation
EDR	Event Data Record
ARPU	Average Revenue Per User
KPI	Key Performance Indicator
CSP	Communication Service Provider
BSS	Billing System Software

Glossary

UAT	User acceptance testing or UAT is a type of validation which ensures that the product or the solution works for the user and meets all his/her requirements
Data Analysis	Data analysis is a process of inspecting, cleansing, transforming and modeling data with the goal of discovering useful information, informing conclusions and supporting decision-making.
Provisioning	In telecommunication, provisioning involves the process of preparing and equipping a network to allow it to provide new services to its users
Billing Mediation Platform	A billing mediation platform is a system used to convert data of certain data types to other data types, usually for billing purposes
External Data Representation (XDR)	External Data Representation (XDR) is a standard data serialization format, for uses such as computer network protocols. It allows data to be transferred between different kinds of computer systems.
Dunning	Dunning is the process of methodically communicating with customers to ensure the collection of accounts receivable.
Interconnection	Interconnection is the physical linking of a carrier's network with equipment or facilities not belonging to that network. The term may refer to a connection between a carrier's facilities and the equipment belonging to its customer, or to a connection between two (or more) carriers.
Routing	Routing is the process of selecting a path for traffic in a network or between or across multiple networks.

Switch Configuration	Switches are used to connect multiple devices together on the same network. In a properly designed network, LAN switches are responsible for directing and controlling the data flow at the access layer to networked resources. ... To remotely manage a switch, it needs to have an IP address and default gateway configured.
RAID Platform	With RAID all the necessary tools are integrated into one single platform for risk management. As an end-to-end solution it covers everything from data collection to risk analysis and reporting. With the flexibility to define controls, RAID also provides prebuilt modules for risk management areas such as Revenue Assurance, Fraud Management and Business Assurance.

Chapter 1: Empirical Part of the Study

1.1 Background of the report

The telecom industry experiencing rapid growth in terms of number of subscribers and unique subscribers. At the end of 2017, Bangladesh has become the fifth largest mobile market in the Asia Pacific and ninth largest in the world, with 85 million unique mobile subscribers. Subscribers owned an average 1.7 SIM cards amounting to a total 145 million connections and representing connections penetration of 87%. It is expected that over the next ten years, improving affordability (driven by falling smartphone prices, greater network coverage and technology advances (through the launch of 4G services) would enable Bangladesh's transition to mobile broadband technologies to accelerate out to 2025.

Nevertheless, the 3G life connections are expected to exceed 2G connections within 2020, reaching 46% of total connections. Therefore, 4G connection might lag behind initially than that of 3G in the following years but it's also predicted that 4G service will accelerate out to 2025. Exactly, on that point 4G will represent the half of total connections.

Additionally, the competition among major Telco companies is rising at a greater rate. All these requires a continued investment and maintenance of the mobile operators. Undertaking new and effective strategies and maintenance and controlling of the current condition is also important. Both current and future strategies need in depth observation and supervision.

No other department can contribute much than revenue assurance and fraud management department. For a mobile operator, identifying leakage and issues is very important otherwise it can impact significantly to the organization. A single problem can hamper the company revenue substantially which no one can ever think. Hence, controlling the revenue and

detecting the fraud activities is a major task that need to be validate and assured by the department so that the mobile operator can enjoy a smooth flow of revenue.

1.2 Origin of the report

The report is a major requirement of the internship program and therefore it is a must to complete my graduation. As a business graduate student, I have got the opportunity to do my internship under a well-known telecommunication company of Bangladesh which is “Banglalink Digital Communications Ltd”. I am privileged that they have assigned me in finance department even though I have done double major. Particularly, Revenue Assurance and Fraud Management department which is a significant part of the finance department. This is a unique department that only operates its functions in telecom industry.

The main rational behind proposing this report topic is to have an in-depth understanding of this department and analyzing the effectiveness of the overall process of this this department. This will help me to get a better knowledge and proper absorption of “Revenue Assurance and Fraud Management” department.

1.3 Objectives of the report

Broad objective:

To analyze the efficiency of Revenue Assurance and Fraud Management process in Banglalink Digital Communications Ltd

Specific Objectives:

- To know about the organization and its parent in details and the ownership structures of both the entities.
- To have an understanding on the products and services offered by Banglalink
- Digital Communications Ltd.

- To determine whether the process works well or up to the mark or not.
- To determine the process structure is consistent with the organization structure.
- To figure out the effectiveness and significance of the Revenue Assurance and Fraud Management process in the organization.
- To find out the lacking's of the process and resolve the unadaptable functions that are already taken by other organization in the country and outside the country as well.
- To provide a broad understanding of a Revenue Assurance and Fraud Management department of an organization that operates internationally.
- To resolve what other actions is better for the department and to provide some proper recommendations after in depth analysis of the findings.

1.4 Methodology

Primary data

To conduct interview of each manager, specialist, senior manager, head of RAFM team to derive sufficient information. Additionally, practical desk work and Internal Server of Banglalink.

Secondary data- Journals, Reports, Annual Report, Website, Articles.

1.5 Scope of the Study

Banglalink gave me a complete picture of the organizational structure and culture. The practical views demonstrated all the things I have learnt previously in my undergrad life. While working in the Revenue Assurance department I have been enlighten to so many new things. Undoubtedly, it's fun and a huge learning opportunity meeting new people and knowing their experience there. The true enthusiasm, team collaboration and showing gratitude to each other is the best thing in the organization that inspired me a lot. Each and every insight created a

significant impact on me and shaped my attitude and behavior. Moreover, the soft skills I built by working there will surely help me growing more effectively as a person and assist me in my upcoming career life. This work experience has helped me to better understand what working in an office-based environment is like.

1.6 Limitations

Information on the telecom industry is scarce and therefore difficulties have to be dealt with while preparing this report. Moreover, as an intern I did not have access to all the files and folders because of the organization's confidentiality policy and I have very limited scope to reveal financial data in this report. Banglalink don't even published its annual report after 2015 and the reports which are available don't contains detailed information. Additionally, the team works with confidential systems which are made by them and only they have the access to those systems. They made some controls where all information related to revenue, product, commission, network, billing process regularly and by watching them the team can say the overall condition of Banglalink. They use confidential system to detect fraud activities which they never want to reveal those to others, not even to the other employees of the organization.

Secondly, as a business graduate student it was tough to understand technical terms and works they do, software they work with. To understand them, I need to conduct one to one interview. The employees are so busy with their work which lead to little time to consult with me. On the other hand, there are not available information in the website with reference to this topic as the Telco industry don't reveal how they do it. Therefore, this emerged as a big challenge to conduct the collection processing of information and report writing.

Chapter 2: Brief Information about Banglalink

2.1 Background and history of Banglalink

Sheba Telecom (Pvt.) Ltd. was granted license in 1989 to operate in the rural areas of 199 upazilas. Later it obtained nationwide 15-year GSM license in November 1996 to extend its business to cellular mobile, radio telephone services. It launched operation in the last quarter of 1997 as a Bangladesh-Malaysia joint venture.

In July 2004, it was reported that Egypt based Orascom Telecom is set to purchase the Malaysian stakes in Sheba Telecom through a hush-hush deal, as Sheba had failed to tap the business potentials in Bangladesh mainly due to a chronic feud between its Malaysian and Bangladeshi partners. An agreement was reached with Orascom worth US\$25 million was finalized in secret. The pact has been kept secret for legal reasons, considering financial fallout and because of the feud. The main reason for the undercover dealing was the joint venture agreement between the Bangladeshi and the Malaysian partners, which dictates that if any party sells its Sheba shares, the other party will enjoy the first right to buy that.

Integrated Services Ltd. (ISL), the Bangladeshi partner, was being 'officially' shown as purchasing the shares held by Technology Resources Industries (TRI) of Malaysia for \$15 million. ISL then paid another \$10 million to Standard Chartered Bank to settle Sheba's liabilities.

In September 2004, Orascom Telecom Holdings purchased 100% of the shares of Sheba Telecom (Pvt.) Limited. It was acquired for US\$60 million. Sheba had a base of 59,000 users, of whom 49,000 were regular when it was sold. Afterward it was re-branded and launched its services under the "Banglalink" brand on 10 February 2005.

In March 2008, Sheba Telecom (Pvt.) Limited changed its name as Orascom Telecom Bangladesh Limited, matching its parent company name.

In July 2013, following the 2011 ownership restructuring in the parent company, the company name changed for the second time to Banglalink Digital Communications Ltd.

2.2 Profile of the Company

Banglalink is the third largest cellular service providers in Bangladesh. Banglalink Digital Communications Ltd, previously named Orascom Telecom Bangladesh Ltd is fully owned by Telecom Ventures Ltd (previously Orascom Telecom Ventures Ltd.) of Malta, which is a 100% owned subsidiary of global telecom holding. Following business combination, in April 2011, between Vimpelcom Ltd. and Wind Telecom S.P.A, Vimpelcom owns 51.92% shares of global telecom holding.

Banglalink attained 1 million subscribers by December 2005 and 3 million subscribers in October 2006. In less than two years, by December 2007, Banglalink overtook Aktel (Now Robi) to become the second largest operator in Bangladesh with more than 7.1 million customers.

As of September 2015, Banglalink had a subscriber base of 32.61 million with 24.81% market share. It is a wholly owned subsidiary of Telecom Ventures Ltd of Malta which is owned by Global Telecom Holding.

Banglalink had 1.03 million connections until December 2005. The number of Banglalink users increased by 257 per cent and stood at 3.64 million at the end of 2006, making it the fastest growing operator in the world of that year. In August 2006, Banglalink became the first company to provide free incoming calls from BTTB for both postpaid and prepaid connections. On 20 August 2008, Banglalink got past the landmark of a 10 million subscriber base.

It offers services under the brand names of “Banglalink” and “icon”. Banglalink has consistently been ranked as the most recommended operator in Bangladesh in terms of Net Promoters Score (NPS).

Banglalink stands for positive change and aims to empower people with affordable communication solutions so that they can start something new in life. They are consistently investing in building an efficient and dependable network. They have more than 3,200 kilometers of optical fiber and above 8,200 microwave links throughout the nation. Banglalink’s International roaming agreements cover a number of countries in Europe, Asia, North America, South America, Australia and Africa. As of December 31, 2015, Banglalink had active roaming agreements with 421 GSM networks in 160 countries and provided GPRS roaming with 312 networks in 115 countries, in addition to maritime roaming and in-flight roaming with Emirates Airlines and Malaysian Airlines.

In November 1996, Banglalink was awarded a 15-year GSM license to establish, operate and maintain a digital mobile-telephone network for providing 2G services throughout Bangladesh. The license was renewed in November 2011 for a further 15-year term.

Following a competitive auction process, Banglalink was awarded a 15-year license to use 5 MHz of 3G spectrum on September 19, 2013.

Banglalink issued 5-year USD300 million international bond in May 2014, Banglalink bond is the first ever international bond offering from Bangladesh is listed at Singapore Exchange.

Banglalink is a public limited company registered in Bangladesh under the Companies Act 1994. Telecom Ventures Limited, a fully owned subsidiary of Global Telecom Holding, owns more than 99% shares of Banglalink. GTH is traded on the Egyptian Stock Exchange under the symbol (GTH.EY), and on the London Stock Exchange its GDR is traded under the symbol

(GLTD LI). VimpelCom Ltd. owns majority shares of Global Telecom Holding. VimpelCom is headquartered in the Netherlands and traded on the NASDAQ Global Select Market.

2.3 Shareholders and Parent Company/ Ownership Structure

Banglalink is more than 99.99% owned by Telecom Ventures Ltd. of Malta, which is a fully owned subsidiary of Global Telecom Holding s.a.e of Egypt. Global Telecom Holding is traded on the Egyptian Stock Exchange under the symbol (GTH.CA), and on the London Stock Exchange its GDR is traded under the symbol (GLTD LI). Global Telecom Holding is a member of the VimpelCom Group, one of the world's largest mobile telecommunications providers by number of customers.

VimpelCom is an international communications and technology company, headquartered in Amsterdam, and driven by a vision to unlock new opportunities for customers as they navigate the digital world. Present in some of the world's most dynamic markets, VimpelCom provides more than 200 million customers with voice, fixed broadband, data and digital services. VimpelCom's heritage as a pioneer in technology is the driving force behind a major transformation focused on bringing the digital world to each and every customer. VimpelCom offers services to customers in 14 markets including Russia, Italy, Algeria, Pakistan, Uzbekistan, Kazakhstan, Ukraine, Kyrgyzstan, Tajikistan, Armenia, Georgia, Laos, Zimbabwe and Bangladesh. VimpelCom operates under the "Beeline", "Kyivstar", "WIND", "Mobilink", "Telecel", "Djezzy" and "banglalink" brands.



Figure 1 Shareholders and Parent Company/ Ownership Structure

2.4 Management team of the organization

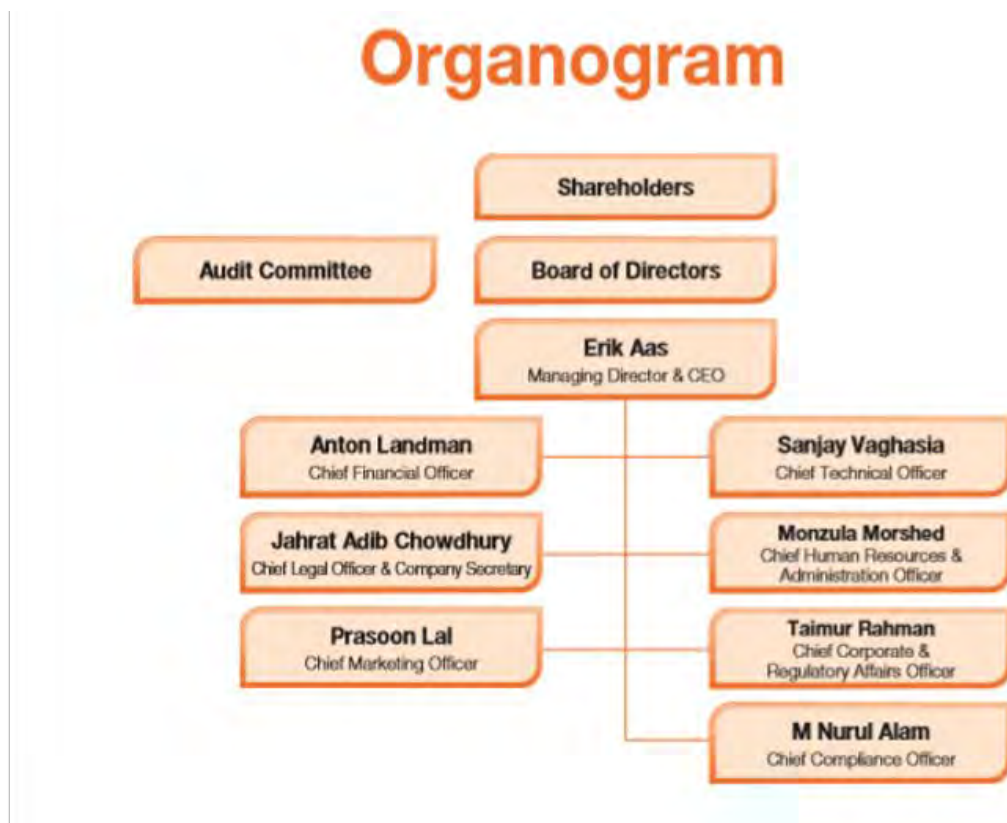


Figure 2 Management team of the organization

2.5 Vision

“To understand people’s needs best and develop appropriate communication services to improve people’s lives and make it simple.”

2.6 Mission

- Segmented approach in terms of products and services
- Delivering superior benefits in every phase of the customer experience (before, during and after sales)
- Creating optimum shareholder value

2.7 Core Values

All employees of Banglalink are expected to demonstrate the following core values in day-to-day activities to “Start Something New” in every area operation in the Banglalink way:



Figure 3 Core Values

2.8 Banglalink Corporate Social Responsibility

Incubator The platform is designed to identify and grow innovative digital ventures. Till now Banglalink IT incubator has incubated 16 startups working in various sectors.

Learn from the Start-ups Banglalink's vision is to empower innovation and encourage entrepreneurial mind-set. Banglalink has launched “Learn from the Start-ups”, a new platform

to equip and educate students on the entrepreneurial mind-set and motivate them to think outside of the box.

SDG Hackathon- “Code for a Cause 1.0” The Banglalink SDG hackathon- “Code for a Cause” is designed to fully align with Banglalink’s vision to empower innovation and encourage young people to come up with solutions to tackle socio-economic problems through digital initiatives.

Start-up Expo Banglalink arranged the Start-up Expo to drive employees towards innovation and ignite the light of curiosity among them. The program was inaugurated by the CEO of Banglalink, Erik Aas and it was sponsored by the CXOs of Banglalink. The top six team pitched their game changing ideas, and brought them to life

White Paper: Digital Entrepreneurship Ecosystem VEON commissioned grassroots research into the digital entrepreneurial environments in Russia, Ukraine, Algeria, Pakistan and Bangladesh. The aim was to analyze each ecosystem by a number of factors, including internet and smartphone penetration, ICT talent, regulation, customer base, education and the investment available.

Digigeek Meetup Banglalink launched Digigeek meet-up as a platform to educate, inspire and engage these aspiring young digital entrepreneurs. The meet-up is a great networking and learning platform for the youth aspiring “to be digital entrepreneurs”.

Digital Literacy The initial success of Banglalink was based on a simple mission: “Bringing mobile telephony to the masses” With customer experience being Banglalink’s core focus, digitalization has become a necessity to update the way customers engage, communicate, and operate. Digital Literacy program, launched by Banglalink, has run across all the districts of Bangladesh. Strategically, this program has run through the BSSPs (Banglalink Sales and Service Points) since these sales points are located in almost all the major places in Bangladesh.

Disaster Relief & Emergency Response Banglalink has been actively engaged in supporting the affected people in various natural calamities by participating in several relief distribution initiatives throughout the country.

Zero Rating of Government site Banglalink, as part of its commitment towards digitization of the nation and global digital transformation trend, has enabled free access for its subscriber to 25000+ government sites, which is allowing the Banglalink subscriber to avail digital citizen services from various government sites.

National Hackathon Banglalink was the proud sponsor of National Hackathon, the largest nationwide programming contest of the country. This hackathon is creating the platform for young programmers to unleash their potential and giving them exposure to the arena of real programming arena.

ICT Support for Underprivileged Children Computer Lab Set Up to remove the curse of illiteracy from society and to enlighten the students who will become the hope of tomorrow, Banglalink has successfully set up computer labs in 270 underprivileged schools at different parts of the country in 2011. The computer labs are equipped with PC, laptop, internet modem, multimedia projector, speakers and microphone.

Chapter 3: Literature Review

3.1 Revenue Assurance

Revenue assurance (RA) in telecommunication services is the use of data quality and process improvement methods that improve profits, revenues and cash flows without influencing demand. Revenue Assurance Department identifies and accurately measure revenue leakage in their network employing fraud management system and revenue assurance system. A telecom organization's revenue chain is usually a very complex set of inter-related technologies and processes providing a seamless set of services to the end consumer. As the set of technologies and business processes grows larger and more complicated, the chance of failure increases in each of its connections. A revenue leakage may be ascribed if a Telco company is unable to properly account for a particular service or obtain the right payment. So that, RA identifies and remedy and perhaps also to prevent problems that result in great financial performance without attempting to produce additional sales. The most common metaphor is that of leaking water from a pipe, where water stands in place of revenues or cash flows, and the leaks represent waste. The value of revenue assurance is determined by the size of the leaks and potentially also by leaks prevented before they happen. While estimating the latter value is difficult. The value added also includes the recovery of "lost" revenues or costs (through issuing additional bills, chasing uncollected payments, renegotiating with suppliers a refund of costs etc.) after the fact.

Revenue Assurance practices will vary but in general there are five main areas of operational focus:

- **Usage** – monitoring all forms of usage and reconciling with expected or normalized usage

- **Subscription** – examining the services contracted and supplied
- **Reference data** – assuring the integrity of the business DNA, the instructions an organism has develop, function, and reproduce.
- **Asset** – ensuring business assets and related costs are properly managed and optimized
- **Receivables** – timely and cost-effective management of receivables to drive cash-flow

Using a mix of data analysis and process improvement RA is able to move through the maturity by striving for continuous improvement. Data analysis offers quantitative results that the team can monitor overtime. The team generate and identifies the root cause instantly through these qualitative outcomes.

3.2 Fraud Management

Fraud Management Solution is a comprehensive fraud detection and mitigation solution to a Telco company. After advanced analytics, the solution incorporates both Artificial Intelligence and Business Intelligence to safeguard the networks (Anon,2014). It contains usage records, information from the signaling networks, subscriber and dealer profiles, and looks across interconnect, roaming, prepaid and postpaid scenarios to detect abnormal usage, trends, behaviors, anomalies and patterns. To proactively detect and safeguard companies from wholesaler and retail fraud, network specific predictive models are used.

Telecommunications fraud is one of the largest reason of revenue loss for service providers and a fact of life in the telecommunications industry. Fraud detection is an increasingly important and hardest task in today's technological environment. As consumers put more of their private information online and transacting much more business over computers, there is huge potential for fraud losses.

No telecom service provider is immune from fraud. As regulatory, financial, and market forces shift, new opportunities are evolved. No industry demonstrates this point better than telecoms.

With each new opportunity, come new risks. The operators need to manage their risks effectively as fraud reduces profits dramatically as it can affect good customers and hinders operational efficiency of an organization. Real costs can exceed lost revenue and involve resource diversion, unwarranted network investment and displacement of customer.

3.3 Revenue Assurance Process: A Holistic Approach

In a bigger picture, Revenue Assurance observes each and every step in a revenue process, starting from the transaction with the accounting ledger. It combines the Revenue Assurance process within the overall enterprise risk management of the company. It covers revenue related risk ranging from revenue leakage to revenue recognition in the financial statements. It manages people, processes and technology in an integrated way to ensure maximum revenue and minimum cost.



Figure 4 Revenue Assurance Process: A Holistic Approach

Product and Offer Management

- Correct Rates
- Profitable product offering
- Appropriate revenue assurance controls in place for new offer

Order Management and Provisioning

- Credit Management
- Timely activation
- Provisioning
- Link to tariff plan, Services and discounts

Network Management and usage

- xDR leakage
- Inadequate xDR
- High usage

Rating and Billing

- Reference data management
- Unbillable xDRs
- Billing cycle calculation and generation of bill

Receivable management

- Payment follow-up
- Dunning
- Bad debt management
- Dispute resolution

Finance and Accounting

- Completeness and existence of posting
- Revenue recognition

Customer Management

- Contract compliance
- Variation orders

Partner Management

- Dealer commissions
- Interconnections setup
- Routing
- Content provider

3.4 RA Coverage

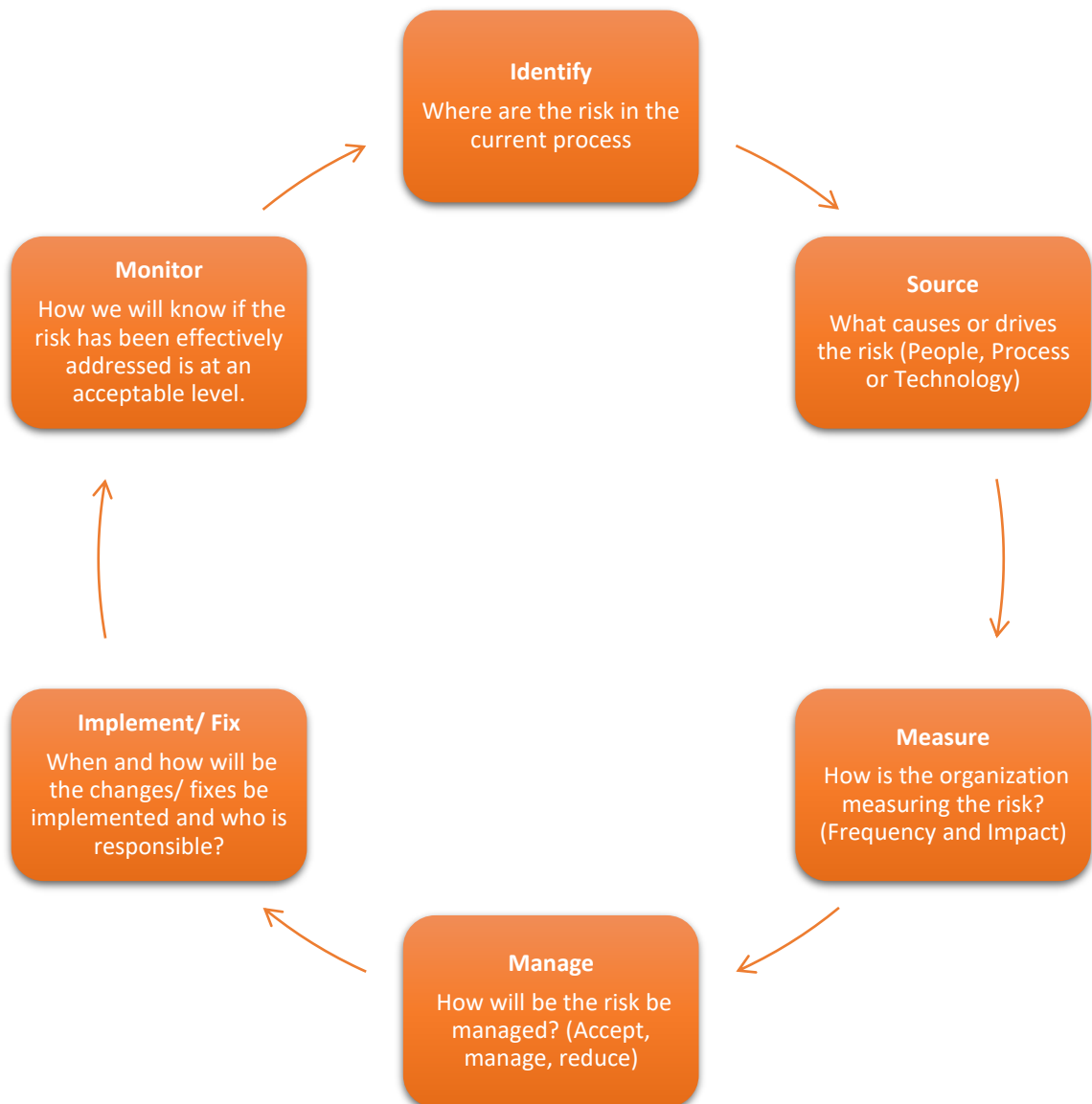


Figure 5 RA Coverage

3.5 Sources of Revenue leakage

- Access Network
- Switch configuration
- Prepaid Controls
- Mediation rules
- EDR errors
- Tariff accuracy

- Invoice production
- Tariff settings
- Data accuracy
- Inventory Management
- Commissions
- Least cost routing
- Interconnect reconciliation
- Payments
- Credit control
- Fraud management

3.6 Ranking of sources of revenue leakage

Revenue leakage primarily appears around the core revenue assurance processes. A survey conducted by the leading consulting firm where respondents (64 operators worldwide) figured out that key issues related to this is the absence of adequate controls and procedures and the loss of the data in the revenue cycle. Implementation of new products and service are also important area of leakage (Ernst and Young, 2009)

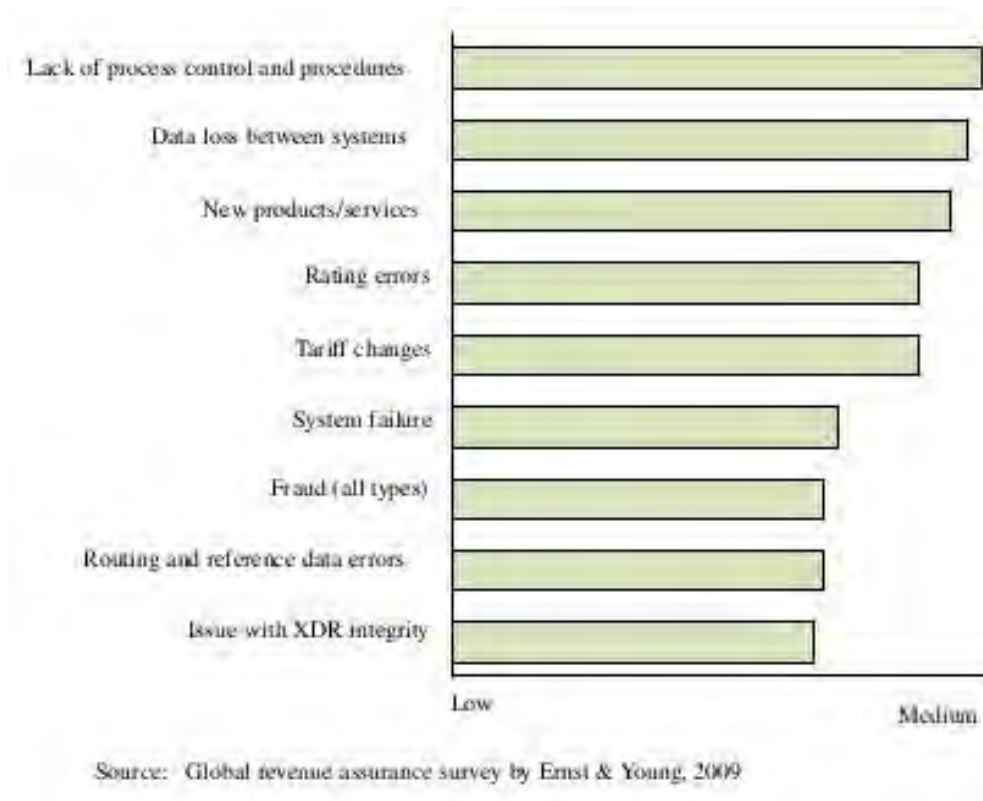


Figure 6 Ranking of sources of revenue leakage

3.7 Significance of RAFM

Revenue Assurance has always been a significant department for telecom industry for several factors.

Profit Every Telco companies face difficulties regarding financial demand and pressure. They all need to figure out alternative means to gain higher margin by effectively tracking their revenue.

Regulatory New regulatory structure and compliance requires telecoms to report their revenue accurately.

Technology Innovation Company need to ensure new technologies and products are performing as per to the plans and frequently release new technology along with the existing one.

Mergers and Acquisitions with increase in the number of Telco mergers and acquisitions, organizations are finding it very difficult to handle multiple BSS systems including Billing, Mediation and Rating together etc.

Additionally, there are other reasons for which Revenue Assurance is required which are mentioned below-

- Effects of worsening market conditions
- Effects of investor pressure
- Downgrading of debts
- Difficulty in raising capital for new project
- Impact of billing errors on customer and trading partners
- The nature of service render (Service is generated immediately customer place an order for call which implies quality control must be there into all element of the process)
- Importance of usage data integrity
- Complexity of the billing process
- Increasing government regulation
- Stiff competitive environment

Chapter 4: Banglalink RAFM Process

4.1 Product Management

Product

The connection or the network that is provided by a telecommunication company is basically their core product. So when we buy a sim card for connection in our mobile phone to make calls that is their basic product. At the same time, they offer a lot of other products as well which includes data, minutes, SMS, money.

The terms 'On-Net' and 'Off-Net' are used to describe call or messaging types. When users make calls or send messages, it can be either On-net or Off-net. So the minutes and sms products are always specified whether they are on-net or off-net products.

The term 'On-Net' used when an operator's call or message originates on his home operators network and terminates to another mobile number that resides with his operator. For example, Banglalink sim user calling to a person who is also using Banglalink sim. Both the subscribers are within Banglalink network.

On the other hand, the Off-Net call describes when the call or message made on a different network. Here, the operator using home network and making a call or send a message to a number that resides with a different network provider. For instance, Banglalink sim user calling or sending message to a GP sim user or Robi sim user that it will be considered as an Off-Net call. Call going out to a subscriber of another service provider).

Product Campaigns

Three types of product campaigns take place in any telecommunication.

ATL Campaigns

"ATL" stands for "Above the Line", meaning that the advertising of the product is going to be positioned around a wider target audience such as television, radio, or billboards. ATL is most applicable when a product is directed for a broader spectrum of consumers. Above The Line (ATL) advertising is where mass media is used to promote brands and reach out to the target consumers. These include conventional media as we know it, television and radio advertising, print as well as internet. ATL advertising tries to reach out to the mass as consumer audience.

Table 1 Example of ATL Campaign

Product	Campaign Type	Media Used for advertising	Launch Date	Validity
3 GB at recharge of tk 169	ATL	Newspaper, TV, Social Media, SMS	21 January 2018	15 Days

The product mentioned above is an ATL product because it will be advertised to the mass people and anyone can avail this offer simply by recharging 169 tk in their phone.

BTL Campaigns

"BTL", or "Below the Line", suggests that the advertising is going to target a specific group of potential consumers. BTL advertising is when companies develop ads and promotion strategies directed to certain groups of people, using tools like direct emailing, or direct product demonstrations for a specific group of people. Below the line (BTL) advertising is more one to

one, and involves the distribution of pamphlets, handbills, stickers, promotions, brochures placed at point of sale, on the roads through banners and placards. It could also involve product demos and samplings at busy places like malls and market places or residential complexes. For certain markets, like rural markets where the reach of mass media like print or television is limited, BTL marketing with direct consumer outreach programs do make the most sense.

For telecommunication companies, their users are segmented into different categories based on their demographics. So the BTL campaigns will target one or multiple segments of users and the products will be available to only them.

Table 2 Example of BTL Campaign

Product	Campaign Type	Media Used for advertising	Launch Date	Validity
9 tk - 1 GB Facebook Pack	BTL	Segmented SMS	21 January 2018	3 Days

Here the 1 GB Facebook pack can be purchased with 9 tk only by the targeted group of users and that's how the campaign will be advertised.

VAS Campaigns

Value-added service (VAS) is a popular telecommunications industry term for non-core services, or, in short, all services beyond standard voice calls and fax transmissions. In a conceptual level, value-added services add value to the standard service offering, spurring subscribers to use their phone more and allowing the operator to drive up their ARPU. For mobile phones, technologies like SMS, MMS and data access were historically usually considered value-added services, but in recent years SMS, MMS and data access have more and more become core services, and VAS therefore has begun to exclude those services.

Mobile VAS services can be categorized into:

- Consumer behavior VAS
- Network VAS
- Enterprise VAS

RA contribution in product management

The revenue assurance process in any telecommunication company relies a lot on the proper disbursement of assets. Here the assets can be money, data, sms, mms or minutes.

The main account, where customers recharge with money refill, consist of how much main money that customer has to their name. At the same time, customers have data, sms, mms, minutes or even bonus money as well which are not stored or shown in the main account. Customers usually have to dial different used numbers to check their balances on these. So different dedicated accounts are assigned for this purpose.

The disbursements are placed in different DA, DA stands for “Dedicated Accounts”. Any customer that uses a Banglalink sim, is assigned up to 180 to 200 different dedicated accounts. The purpose of this accounts are to hold the assets assigned to that customer other than their main account.

For Example: DA 122, 123, 124 are assigned for the free sms for the customer. DA 108, 109, 110 are for data.

For revenue assurance, the knowledge of products is very important. Banglalink’s primary product is its sim/number with which customers call one another. But more than that their bigger and most revenue bringing products are the data, sms, minutes etc. Customers buy minute, data etc. and thus Banglalink receive their revenue. Even more than the call/sms tariff, these are the more important products.

UAT (User Acceptance Test)

User acceptance testing or UAT is a type of validation which ensures that the product or the solution works for the user and meets all his/her requirements. User acceptance testing decides the fate of the solution and hence becomes the most critical step in the product development/testing. The word “user” in the UAT represents the client or a member of his team or a group of professionals authorized for performing the testing. The UAT is primarily to assert that the final solution delivers to the expectations of users. Also, it assures the application is providing an excellent end-to-end user experience. However, it is imperative that UAT might reveal some issues or new requirements which need to be fixed or implemented. In such cases, the product goes back to development phase based on the UAT feedback.

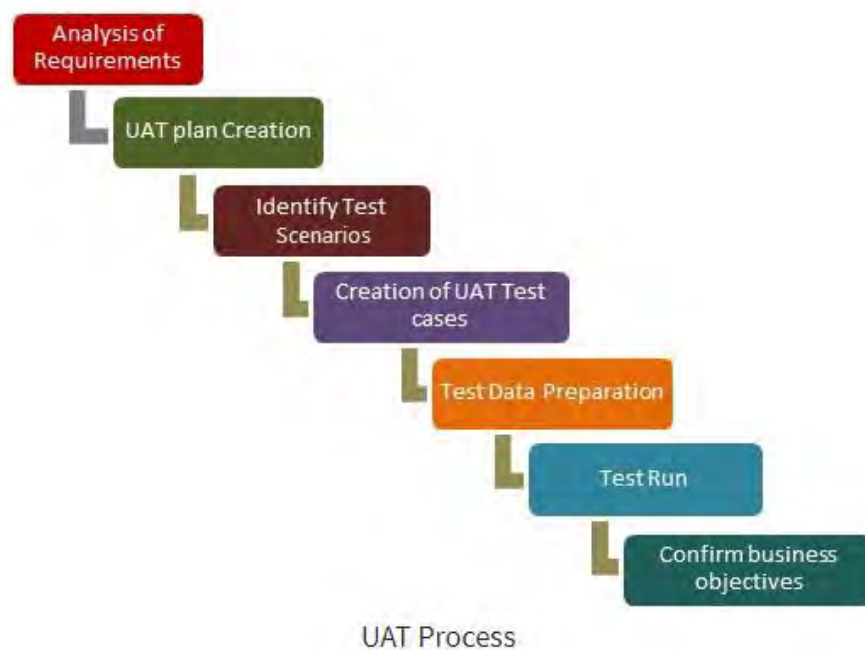


Figure 7 UAT Process

Pre-Live UAT in a telecommunication company, their products are tested before and after releasing them for users. Before a product goes live, it has to be made sure that the product does what it supposed to do that test is called Pre-Live UAT.

Post-Live UAT After a product goes live and customers start purchasing it, the same UAT is conducted again to ensure the smooth experience of an end customer. That is called the Post-Live UAT.

One of the specialist reviews overall UAT and validates each Pre-Live UAT and Post-Live UAT. After a product UAT is done, RA specialist process the CDR (Call detail record) by oracle SQL developer. SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system. After processing the CDR database, RA specialist assesses Call duration, Call destination, Offer ID (If the product providing any offer to the customer than there must be an offer Id in the CDR), Base ID (which group of people are authorized for this product), TDF (Unique code of the product), Service class, Initial and ending balance, Transaction type, Account expiry date, Main account, disbursement in DA accounts for that particular product to evaluate the accuracy of the product. If any of these goes wrong in live system, this can cause huge negative impact on revenue. The product must launch according to the way it has been designed by the marketing team.

For instance, 1 GB data pack at 129TK, 7 days' validity. The product goes live but its charging 125tk, less than its actual price or giving 2GB, more than what it supposed to give. If all of the Banglalink subscribers buy the data pack at wrong price and get more data with less price, the overall revenue can fall within a second. It's definitely a huge loss for the company and to avoid such issues Banglalink work promptly and effectively. Every new different types product goes live and the specialist need to assure that everyday those products are on live. Banglalink

has its own software system named “Work Order (WO) & Trouble Ticket (TT) Management System. For assurance, the specialist process all work order from that site and ensure each products have been validated by RA team.

Another thing that is also been analyzed by the RA specialist is validation of a product for large number of subscribers. Since the Pre and Post UAT done by a single number, it might give misleading information to RA manager. Thereby, after 7-10 days the manager again process CDR for the same product for a large number of subscriber of that product and validate. This gives much strong assurance of that particular product to the RA manager that the product isn't hampering revenue at all.

RA specialist can know easily from the Revenue Assurance system (RAID) about which product is mostly purchased, making more revenue and can be recognized as a hit product. On the contrary, which product is less popular to the customer, might not contribute actively to the company revenue. They have all little information, each products number of sales in a day, revenue about each product in their control system or Revenue Assurance system (RAID). Therefore, if any product not making any contribution to the revenue rather it is hampering or became a reason for revenue loss then RAFM immediately inform the product manager to discontinue the product. It might also happen that product Pre and Post validation was right but the product is not making enough profit, the RAFM let the marketing team know the matter and request to redesign the product or terminate the product.

User Acceptance test and validating products are significant for assuring the smooth process of producing revenue for various reasons.

- User acceptance plays a vital role in determining the approval of a solution before delivering it to the customer.

- It is to confirm that the new and existing features are working correctly
- After spending so many efforts on testing the product, there are still chances the team might miss a few areas due to the use of workarounds or the shortcuts for speeding up the whole process. So, validating the product is as much important as UAT testing.
- Testing the product with a non-evasive approach keeping focus on the quality and user friendly-ness. Hence, user acceptance testing as a tool to determine the product behavior in standard conditions.
- Moreover, there could be a situation where the development team missed to add some of the requirements or implemented incorrectly. Such a case may arise if the PM (product manager) is inefficient, doesn't interact with the team on a regular basis, or doesn't participate in user stories demo. A good PM will always make sync with the team on what the real requirements are and how they are getting implemented. Anyways, user acceptance testing is an ideal approach to identify and spot such differences. The end users are the first to catch and report these discrepancies if there are any.

An example of product UAT and Validation by RAFM

Campaign- BTL Data Packs

Detailed Service Description

Table 3 Service Description of BTL Data Packs

Product	Channel	Details	Price	ATL/BTL	Volume	Validity (Days)	Balance Check
36TK – 1GB - 7D	EV (Recharge)	36TK – 1GB - 7D	36	BTL	1024 MB	7	*5000*500#
49TK – 2GB – 7D	EV (Recharge)	49TK – 2GB – 7D	49	BTL	2048 MB	7	*5000*500#
49TK - 2GB – 30D	EV (Recharge)	49TK - 2GB – 30D	49	BTL	2048 MB	30	*5000*500#

UAT Test Bed

- ✓ Live test
- ✓ Date- 18-Jul-19
- ✓ Time- 12:37 PM

Table 4 UAT Test Bed of BLT Data Packs

	Base Rate/pulse	Offer ID: 30059 Base ID: 4936	Offer ID: 30061 Base ID: 4938	Offer ID: 30060 Base ID: 4937
	Test case	36TK – 1GB - 7D	49TK - 2GB – 30D	49TK – 2GB – 7D
	Service Class	146	146	146
	Time	12.37 AM	12.40 AM	12.46 AM
MAIN ACCOUNT	Initial balance	160	160	160
	Ending balance	160	160	160
	MA Change	0	0	0
	Expected Change	0	0	0
	Difference	0	0	0
DA 192 (DATA)	Initial remaining balance	0	1024	3072
	Ending remaining balance	1024	3072	5120
	Change	1024	2048	2048
	Expected Change	1024	2048	2048
	Difference	0	0	0
	Notification Text	OK	OK	OK
	Success/Fail	Success	Success	Success
	Remarks			

CDR (Call Detailed Record) of BTL Data Packs

Table 5 Call Detailed Record of BTL Data Packs

ORIGIN_NODE_TYPE	evapp1	evapp1	evapp1
ORIGIN_TIME_STAMP	20190718004647+0600	20190718003701+0600	20190718004016+0600
ORIGIN_TIME_STAMP	12:46	12:37	12:40
CURRENT_SERVICE_CLASS	146	146	146
TRANSACTION_TYPE	RechargethrougheVoucher	RechargethrougheVoucher	RechargethrougheVoucher
TRANSACTION_AMOUNT	49	36	49
SEGMENTATION_ID	EV01	EV01	EV01
ACCOUNT_BALANCE_BEGAIN	160	160	160
ACCOUNT_BALANCE_END	160	160	160
DEDICATED_ACCOUNT_ID_5	192	192	192
REFILL_DIVISION_AMOUNT_5	2097152	1048576	2097152
Data	2048	1024	2048
ACCOUNT_EXPIRY_DATE_5	20190816	20190724	20190816
PARAMETER_ID_1	BTLEVDData49TK2GB7D Subscribe	BTLEVDData36TK1GB7D Subscribe	BTLEVDData49TK2GB30D Subscribe

4.2 Partner Management

In Banglalink, to ensure aggressive sale the marketing team make different campaigns for its retailers.

The campaigns not only help in increasing sale but also contributes to the growth or decaying of revenue. For each area, one RSO will take the lead and under the person there are many retailers remain in specific area. For instance, all the retailer from gulshan area will remain under the Gulshan RSO. By the person, all the retailer will get the updates about different campaign and its facilities, the RSO will report about the overall performance of each retailers under his supervision. In total, Banglalink has 186 distributors, 3500 RSO and 1,00,000 retailers.



Figure 8 the process in which Banglalink reach its retailer

Demonstration of campaigns executed by Banglalink Digital Communications Ltd,

- B2C Postpaid Reactivation Commission from Feb19-Apr
- Distributor Campaign Shera partner Mar19
- Campaign for Amar Offer Retail_Apr19
- Performance based RSO incentive from July18 to Further Notice-Sep
- RSO Campaign Data Selling Outlet_DSO_Apr19
- RSO Supervisor Campaign GA and Recharge Apr19
- SOHO Postpaid Activation Commission from Dec18-Apr
- Trade Campaign Data Upsell_Apr19

There are three different type of commission are given by Banglalink to the retailer.

OTF (On the sly) By OTF retailers get commission instantly. For example, Retailer recharge 27tk for each customer and instantly get 4tk commission for the purchase. It's an effective way to motivate retailer for aggressive sale.

Daily instant RSO provides a target to the retailers under him. In case, if any retailer can sales 93tk recharge product for 10,000 customers, the retailer will get 100,000Tk commission after the day completes. Mainly, based on retailers one day sales, He will get commission as per to his performance of that day.

IRIS IRIS is a unique channel made by Banglalink for various business purposes. If any retailer sells a product through the IRIS channel, he will get commission for channeling it through IRIS. It's almost the same as OTF but because it goes through a different channel, the retailer gets commission in another way by achieving it. Example, a retailer recharging 20TK to a customer's account through the IRIS channel will give them 5TK bonus for each recharge.

Role of RAFM

By executing all these campaigns, Banglalink achieves huge sales eventually and massive amounts of sales take place everyday through these retailers. The role of RAFM is to ensure that all these retailers get the exact amount of commission for each campaign. The manager assesses effectively that whether retailers are getting more than what they are not supposed to get and also whether they are getting less where they are supposed to get more commissions. Any error can take place in this overall process which can affect revenue badly. RAFM assures and validates all the things related to this and finds out gaps if they occur. The manager analyzes the control system (RAID) and checks if there is any gap in the control system. In case the gap is discovered by the manager, firstly the manager processes CDR and assesses the condition effectively. Secondly, by the CDR the manager identifies the reason and at the same time, immediately takes action in relation to the issue.

4.3 Billing Verification

The challenges a telecommunication company faces when technical innovation increases as well as marketing rate plans and promotions for different packages, services, offers being launched and changed on a regular basis when needed. This makes the billing chain complex and this requires high involvement of the Revenue Assurance department to always analyze the

billing process so that smooth flow of billing process can be ensured. The main challenges for Banglalink telecoms are as follows:

Ensure mobile product/services revenues for different services, digital services, packages, offers under control for all type of subscriber:

- Personal, Business, Corporate, Large account, machine to machine
- Postpaid and prepaid

RA monitors the charging and billing of mobile services to detect errors before they turn into revenue losses or subscriber complaint-

Rating errors The marketing team design the product/Services rating, in telecommunications rating is the activity of determining the cost of a particular call. The rating process involves converting call-related data into a monetary-equivalent value. So, whenever a particular phone call is made to another number, the IN must charge the cost the call. For this reason, before a product goes live, IN configure its charging related info to its system. In case, IN configures less price or delay doing configuring it, then it will directly impact the revenue, and this is called rating errors. This is identified and prevented by RA manager. RA manager will let IN know to configure the pricing correctly.

Packages, Services, offers billing verification RA ensures the product team generates and analyze a sample of real mobile transactions (Voice, SMS, MMS and Data) both on home network and while roaming abroad which means UAT testing. As every product goes for UAT testing, before charging all the end customer the team test that each product charges accurate amount. After that, when customer start purchasing the product and retailer start selling products, RA team validates that customers are charging accurately and the rating process goes

in a way which it's supposed to do. By, RAID Revenue assurance system they frequently check that billing process is faultless and Banglalink charging accurately from all its subscribers.

Data bundle billing verification Nowadays the data bundles are becoming the main source of revenue for the organization, the billing of data services is getting more and more complex. To prevent sudden uncertainty and complexity regarding the data bundle products, analysis of RA team is mandatory. RA knows each of data bundles contribution to the company and they check the billing of data bundles.

Outbound Roaming Billing Verification Check outbound roaming revenues which is the revenues generated by your subscribers when they travel abroad, represent a significant part of retail revenues. Moreover, roaming services have higher billing error rates than other revenues flows because of the multiple layers of players and technical systems (the visited network, the data clearing house and the home network). RA validates outbound roaming revenues under control in all roaming zones.

Irregular Usage Billing Verification Irregular usages scenarios represent a risk for the telecom operators and may lead to unbilled transactions, fraud and security concerns. Telecom operators have to quickly recover from difficulties in case of irregular usages occurring on the network. Assessing the risk of irregular usages by checking potential weak points on your network and on your roaming partner.

RA identifies under billing for retailers and ensure revenues. Additionally, limit legal risk from subscribers' complaints about over-billing. RA checks metering accuracy, unbilled transactions, over-charged / under-charged transactions, bundle rating, option rating, prepaid account debit, prepaid bonus management, pricing against its international destinations.

Subsequently, RAFM prioritize and report actionable findings supported by detailed technical traces and estimate business impacts. They quickly undertake actions if needed.

4.4 Fraud Management

Various type of fraud can occur in Telco Company and they are endless type of way a fraud can occur in Telecommunications industry. Whatever happens regarding fraud, RAFM need to communicate it with BTRC (Bangladesh Telecommunication Regulatory Commission). All Telco company need to follow rules and regulations imposed by BTRC and it's a must. There is also an organization called AMTOB (Association of mobile telecom operators of Bangladesh). AMTOB is known as the official voice for the Bangladesh mobile Industry for interacting with relevant government agencies, regulators, financial institutions, civil society, technical bodies, media and other national and international organization. All mobile operator in Bangladesh are members of MTOB. In fraud management system the mobile operator need to facilitate each other and work as a team.

RAFM made some formulas/patterns to detect fraud activities and at the time, the team see any unusual usage or behavior, matching with those formulas, then they indicate it as a fraud activity. Promptly, a comprehensive analysis took place to get more information about the findings and the analysis estimates what action needed to be taken.

Some major fraud that frequently happens I have highlighted below-

SIM box fraud

A SIM box fraud is a setup in which fraudsters install SIM boxes with multiple low-cost prepaid SIM cards. The fraudster then can terminate international calls through local phone numbers in the respective country to make it appear as if the call is a local call. This way fraudsters bypass all international interconnect charges.

It's not a secret that tariffs for international calls are always much more expensive than calls within the network. SIM box fraud system will help you to earn money on the difference between local and international tariffs. For example:

- Any international call goes through a certain way, before getting from subscriber A to subscriber B.
- In order to deliver the call quickly, efficiently and inexpensively, large mobile operators use the services of transit operators (intermediaries), whose task is to deliver the call to the operator of another country, which in turn will be sent to subscriber B.
- Therefore, transit operators buy the route from people or organizations that own SIM box fraud system. Thus, people who own such a system receive money for the route at international rates, and pay only local cost, which is actual within the network.
- SIM box stores SIM cards, which after converting calls from international cards, make local calls.

SIM box fraud is very dangerous for any mobile operator company as the actual charges for a call is not billing. Thus, fraud management team in Banglalink continuously work hard and do deep observation to detect this sim numbers so that it doesn't hamper company's revenue system. Everyday fraud manager finds out this SIM Box numbers and inform BTRC to cease those number immediately. BTRC fine 5000tk if the fraud manager wasn't able to detect those fraud numbers so this implies how much important to identify SIM Box fraud.

Subscription Fraud

Subscription fraud involves obtaining the customer information required for signing up to new telecom contracts or services with a valid authorization, but with the intention of doing fraud activities or not paying for the products and services used (Raid Cloud, 2019). For example,

one subscription fraud can be when a person wants to purchase a sim card and while doing formal activities the person gives his fingerprint one time. The sim seller says the customer to give the fingerprint one more time as the first time was incorrect way. But actually, it was correct for both time. Without the consent and awareness of the customer the retailer made one more sim card and the purpose was doing fraud activities with those sim card. Subscription fraud takes illegal access to your services and contributes to revenue loss. Subscription fraud is also categorized as bad debt rather than fraud. Operators globally estimate that nearly 40% of all bad debts are actually subscription fraud.

Customer/Retailer fraud Sometimes retailer or customer might find any loophole of the system and they intentionally took benefits from the loss of system. For instance, customer figures out they are calling but system didn't charge cost, then they will try to take full advantage of it. In this way, huge amount of customer will do the same. As a result, a massive loss of revenue will take place.

Chapter 5: Next level RA Challenges

5.1 Near Real Time Source Assurance

Near real time source processing the team works on various data which happened in the past. After identifying those the team start working on mitigating those immediately. Still the process takes a lot of time to get terminated. For instance, the incident took place yesterday, the team identifies it today and they let related parties know about the incident, the analysis might take 1-2 days' time, and finally the event got closed or solved. It might take a short period of time or a little long to the issue to get resolved, but this short period of time can be the prime reason for a huge amount of revenue loss.

Near real time RA control population as mentioned earlier, this issue need to be solved on near real time. Exactly in the same way the RA should have the control on its population in near real time. If it takes time to control them, the issue will get delay. The faster RA can control the population, the better and fast the solution will be.

Risk mitigation process control there are limitless opportunities for revenue to seep through the cracks—especially in a world of convergent services and extended partner value-chains. If the incident got detected immediately then the risk mitigation process can be easily control by RAFM. Consequently, the most important element which is revenue protection will be ensured by RAFM.

5.2 Content based Services

Support for complex tariff plan In Telco companies, content based services which are mostly belong to VAS (Value Added Service) get less priority than ATL/BTL products. Because the revenue mostly comes from products like voice, data, mixed bundles etc. the company gives

more attention to this time of product. Even the content based services follows a simple tariff plan which is mostly fixed. But it shouldn't be. The company should give more important to content based services. For instance, they can make the VAS products more dynamic, give more variations such as variation in pricing, discounted VAS product, same as the company do for ATL/BTL products.

Near real time assurance Due to less priority, the VAS products are not validated by the team timely. If any product got validated by in 1-2 days, sometimes the VAS product got validated by 30 or more than 30 days. The team is required to do that as the company have permitted to do so. This might have less impact on revenue but the company should validate the VAS product in near real time and add value to its process improvement.

5.3 Intelligent source Processing

Auto identification of issue and escalation the team need to process data frequently based on a specific case and it's quite a lengthy task. There are huge number of problem RAFM need to deal with and the automation process makes the process quite slow. If the system or program has intelligence in itself so that they can detect the problem quickly giving the logic. The RA manager don't need to process them rather the system will inform the manager instantly. This will make the process faster and therefore revenue assurance will be faster.

Auto rollback Sometime while processing data, the system might give wrong data. Also, in half way the data might got deleted. These type of issue might occur which make the task more time consuming and the decision making regarding the matter got hampered. Consequently, the decision made by the team takes a lot of time. If the intelligent system can do those on behalf of the manager, it will take few seconds which will make the overall process much faster. At the same time, it will relief the stress of the manager.

Auto data reprocessing Exactly the same way the intelligent system will do the auto rollback; it will also do the data processing task on behalf of the manager.

5.3 A Case Study on MTN Mastering Exponential Technologies in Revenue/Fraud Assurance

Today there's great excitement about Machine Learning and Artificial Intelligence (AI) being able to "write the rules" for real-time decision-making in RA/fraud assurance. However, these sophisticated technologies, by themselves, are merely tools for innovative human brains to employ without intelligent thinking cool technologies never live up to their hype.

Once again, the tech components are available and rapidly becoming mainstream. Tony Sani and his team at the MTN Group in South Africa are addressing this advanced fraud/RA issue head on and racking up success stories as they grow their program.

MTN's business its group telecom business and MTN's significant non-telco stakes in banking, content, and on-line retail. MTN is the biggest group company in Africa and the Middle East with 250 million subscribers. In 5 years MTN took its RA/fraud assurance from very high leakage to below 3% per year. That operational success achieved by the journey MTN is taking into insert "exponential" technologies (AI, robotics, and ML) in its RA/fraud assurance program rapidly.

They are specializing in solving complicated problems working with design thinking and exponential technologies. MTN is such a great company and being in Africa there are more open to try new things out and implement the latest technologies.

MTN's telecom business is very diverse. They've got fixed line, mobile and digital businesses. In terms of revenue, the majority of it comes from prepaid GSM and of that, it's

probably 70% voice, 10% SMS, and 20% data. And our leakage risk mix are pretty much in line with our revenue mix.

On the fraud side, like most operators in its region, they are at risk of bypass (SIM box) leakage, and the overall leakage risk is caused by roughly 60% RA-related issues and 40% fraud. Its biggest leakage risk is experienced in the provisioning and network usage processes. On the mobile side, the indirect nature of sales channels in our markets contributes to our risk. Lots of professionalism in fraud detection is needed to assure this type of channel mix. Some of the rural areas in Africa, the dealer is a person who stands at the corner of a street which always brings some unique challenges to MTN group.

They are certainly evolving quickly in a digital business direction which means they have to incorporate its legacy revenue streams and new digital revenue streams at the same time.

They set a target by 2021 to reduce our leakage to below 3%, which is typically what one would find in a mature market. For leakage, they measure the impact of all risks from product development, sales ordering, provisioning, network usage, rating and billing collections, revenue recognition and partner settlement, which covers our end-to-end revenue streams.

Like others telecoms companies, the added complexity demands to manage this in a fast changing and dynamic environment which requires to constantly enhance your detection methods and controls.

In addition, they have invested a lot in and built an RAFM academy which provides online training and evaluation content.

They wanted to construct a program that could sustain the level of assurance over the long term. It required to look at more innovative ways of managing our RAFM capability and potential.

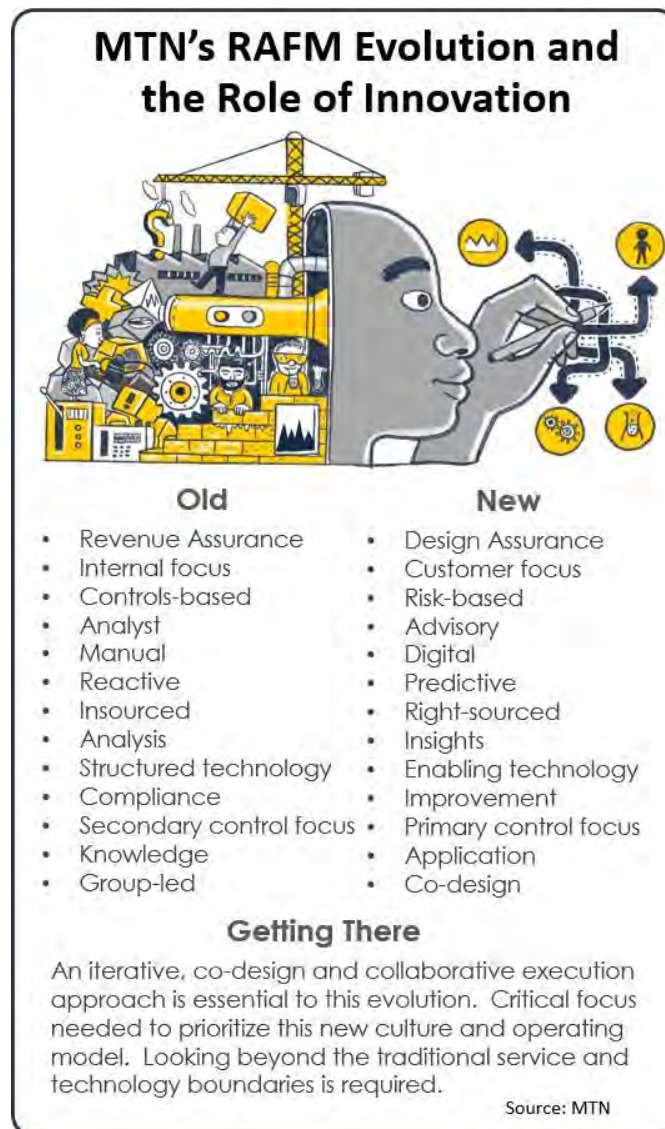


Figure 9 MTN, s RAFM Evolution and the role of innovation

As an RA and fraud community, they realized that they need to generate more insights- and improvement-driven. But to do that required investing in new ways of thinking, working and technology use they had to understand and embrace new technologies. Robotics was an obvious area because it helps to improve the automation levels. Machine learning and AI as crucial to improving its effectiveness and enabling them to be more predictive in detecting and preventing fraud leaks. So, one key driver of MTN innovation program were to invest in tech that could exponentially improve its effectiveness.

Tony brought into picture so-called “exponential technologies”. The whole idea is to bring different technologies in and redesign ways of doing assurance, risk mitigation and control. It’s all about improving and experimenting continuously. To achieve true exponential breakthroughs, they solve problems with design thinking, agile and lean delivery methods within an environment that supports innovation.

For instance, applying machine learning to solve SIM-swap fraud is a good success story of MTN. Previously, RA and Fraud teams would typically investigate SIM swap fraud from the view of one data point, complaints or exceptions in the ordering process. But after introducing machine learning, it allowed them to employ multiple data sets and find fraud patterns our traditional fraud system were exposed to. They detect that 30 minutes before 80% of SIM swap frauds took place, the services were cancelled immediately.

Chapter 6: Internship at Revenue Assurance Department

6.1 Internship Responsibility

The department I was privileged to work in Banglalink is known as Revenue Assurance and fraud Management, one of the crucial team in Finance department. This type of department mostly found in the telecom sector. This particular department works relentlessly to ensure the growing revenue of this industry without a thought of increasing sales. Starting from the user acceptance test to ensuring that no frauds have taken place, these all are done by Revenue Assurance and fraud management team. The Revenue Assurance department is extensively run by some responsible people from engineering background. I was privileged to work with some people entirely different from my academic background who work extremely hard to keep the flag of revenue assurance always up. In my tenure of 3 months, I was assigned the following responsibilities:

User Acceptance Test (UAT)

The main role that I have done as an intern, was User Acceptance Test, UAT, which signifies the prior testing of charges and viability of different packages and services before they are launched. Any new Banglalink package, any value added service, or any kind of service offered by Banglalink requires this UAT to check whether all the pre-determined charges are well executed. The team make sure everything related to a product goes in a smooth way without occurring any fault.

Every time a product UAT take place, it requires one of a team member from RAFM to be present in the UAT testing. So that, the person can check that the other team consisting of product manager, one technical specialist from ESICSON do it correctly. If the UAT testing is

not done the way, it should be that the RA specialist cannot validate the testing in a right way.

I was assigned from the team to be present at the UAT testing.

Checking CDR

After the Pre-Live and Post-Live UAT take place, the product manager informs RAFM and provide the test case that have been taken place in the UAT test. Based on that, RA specialist process CDR (Call detailed Record) of that test case and asked me to validate the CDR correctly. I used to analyze the service description of that product so that I can validate it after knowing the product entirely. Then I match the test case with the CDR. Things that I used to validate are-

- Assurance or Testing of Billing and charging rules configuration in the system as per campaign rules prior to launch.
- Assurance or testing of complex discount and bonus disbursement rules is configured in the systems prior to launch,
- Service or Offer expiry checking as per business plan
- Testing data quality & data integrity between cross nodes to ensure accuracy of revenue.

Maintaining UAT dashboard

Additionally, I need to maintain a daily UAT dashboard and update it including all the information of the campaigns that launched daily. And I had to present it to my line manager who is primly responsible for product management. Every day, I add details information about a product campaign to the dashboard, indicating which product campaign Pre and post validation is done and those which are not done marked as pending. After filtering the dashboard, I figured out the pending list for that day and provide it to my line manager. Seeing

the pending list RA specialist can better know which product need instant validation to process further so that the product can run steadily and accurately.

Table 6 UAT Dashboard

SL	1	2	3	4	5
Campaign Name	Product revision for TK99 Taka	Conducting UAT on B2B (FTR+Bundle), EV & USSD string based Bundles (Pre-live)	IN WO 2 IVR Code Charging 10122018	IN WO 1 IVR Code 8000888888 Zero Charging	IN WO ATL Data Product notification revision 08012019
Work Order	IN WO ATL Data 99TK Data Pack Revision 14012019	IN WO B2B CnC FTR Bundle Revision 17012019	IN WO 2 IVR Code Charging 10122018	IN WO 1 IVR Code 8000888888 Zero Charging	IN WO ATL Data Product notification revision 08012019
Product Type (New or Existing)	Existing	NEW	NEW	NEW	Existing
Campaign Type (ATL/BTL/PriceCo)	BTL	BTL	VAS	VAS	ATL
Segment (Prepaid or Postpaid)	Prepaid,CNC	Prepaid,CNC	Prepaid,CNC	Prepaid,CNC	Prepaid,CNC
Product manager Name	Mustafa amen	Dimitri Adhikary	Foej Ahmad	Foej Ahmad	S M Sabri Shams
PRE UAT Date	14-Jan-19	14-Jan-19	n/a	n/a	8-Jan-19
RAFM Feedback Date	14-Jan-19	16-Jan-19	n/a	n/a	8-Jan-19
RAFM Feedback (OK/Not Ok)	Ok	Ok	n/a	n/a	Ok
Launch Date	15-Jan-19	17-Jan-19	n/a	21-Mar-19	9-Jan-19
POST UAT Date	15-Jan-19	17-Jan-19	n/a	21-Mar-19	9-Jan-19
RAFM Feedback Date	15-Jan-19	17-Jan-19	n/a	21-Mar-19	9-Jan-19
RAFM Feedback (OK/Not Ok)	Ok	Ok	n/a	OK	Ok
FINAL STATUS (Closed/Open/Not Started)	Done	Done	Done	Done	Done
Confirmation Mail	YES	YES	n/a	YES	YES
Remarks	Issue closed.RAFM feedback done.	Issue closed.RAFM feedback done.	Issue closed.Product Discontinued.	Issue Closed. RAFM Feedback Done	Issue closed.RAFM feedback done.

Maintaining commission dashboard

Another dashboard that I have to keep updated named commission dashboard. This dashboard keeps monthly information of every campaign run for the retailers in one month. The dashboard also involves previous months' campaign performance, from where one of the manager analyze each campaigns required level of validation, whether the manager need to check the trend or sample for each campaign. If any campaign last 3 months' average is less than 20% and 1,00,000 then the manager does the trend analysis and if its more than 20% and 1,00,000 then the manager checks the sample. For the purpose to help the manager I updated the dashboard.

Table 7 Commission Dashboard

Commission Name	Campaign for Amar Offer Retail_Mar19_East Cluster	Campaign for Amar Offer Retail_Mar19_West and Central Cluster	Distributor ETSAF Registration Commission from Dec18
Jan'19	2,745,650	2,745,650	3,288,970
Feb'19	2,987,325	2,987,325	3,833,915
Mar'19	1,421,400	1,421,400	3,976,775
Apr'19	90,460	64,142	4,064,605
May'19			4,370,375
Avg_last_3_month	2,384,792	2,384,792	3,699,887
Dev_current month vs lst 3 month avg	(2,294,332)	(2,320,650)	364,718
Dev percentage	-96%	-97%	10%
Activation			
Required level of validation	Sample check	Sample check	Trend Base
Is RA validation Done	Y	Y	Y
RA verification evidence	Full modality has been changed so huge difference found in commission .Checked sample data	Full modality has been changed so huge difference found in commission .Checked sample data	Checked Sample Data

Searching RAID Control Gap

Moreover, the team had provided me the access to their control system named RAID. Where I need to find out is there any gap or deviation occurred in each control system. In case, I managed to get any deviation in each system then I instantly informed one of the senior manager of Revenue Assurance and fraud management.

Except these major and regular tasks my team members used to give me additional projects, analysis and data input works, data checking, and data filtering.

Chapter 7: Ending part of the report

7.1 Recommendation

Presence of RAFM in every single decision RAFM is one of the strong team and as the team had to work with all department, the team has knowledge of the overall condition of every single department. Before every project has been taken by Banglalink, RAFM team must be informed by the concerned person. Additionally, RAFM need to be involved not only in problem identification and validation but also in decision making for that project. RAFM should have a voice in every single decision made by Banglalink as it is important to have a cross-function mandate to recover revenue wherever possible. These require strong executive sponsorship.

Introducing exponential technologies RAFM can embrace machine learning and Artificial intelligence rapidly to make themselves competitive than other operators available in Bangladesh. It can be the way Banglalink can achieve top position in the market.

RAFM Academy to educate more about exponential technologies and bringing them into place will need a deeper learning of the matter. So that, RAFM can introduce an academy which can provide them online training and evaluation content such as topics about machine learning, Robotics, AI.

Designing dynamic KPI To optimize Banglalink's Revenue Assurance and Fraud Management System, the team need to design new KPI along with existing KPI. Apart from the operational KPI and on demand KPI, they can generate new KPI considering all other factors and they can work on achieving those KPI. For example, RAFM system analyze heavy caller (a large number of calls connected from one number), heavy called (a large number of calls received on one number), Traffic comparison (Outgoing call Counts from Origination point should be equal to Incoming Call Counts at Destination point), Trend Analysis

Destination (Call trends at destination point), Trend analysis from sources (Call trends at origination point), Call Trace Analysis. Sources of revenue leakages and frauds have been detected after detailed research of call records regarding each KPI. Such as, new KPI should be taken and emphasized by the team frequently to achieve operational excellence.

Decentralization of RAFM RAFM should work as an independent soul that can take decision without the interference of any other department. This can make RAFM much stronger than now.

Mixed team The team made up of employees those are from Computer Science and Electronic Engineering background. While the tem will make decision for a purpose, they have to provide effective decision for sure. If the team have a business background employee, no doubt the team can share a guaranteed solution which can obviously add value to the organization.

Reducing employee turnover Employees must receive proper financial benefits and promotions that can hold them and encourage them to work much better for the organization.

Reducing agitation as things go in a process which must have the permission of RAFM team, some department or individuals fear of RAFM team. They imagine RAFM department as police or something very harsh. But in reality actually it's not, they are doing their task and making sure no discrepancy takes place. So the fear of those people should be eliminated.

7.2 Conclusion

Companies are finding it difficult it exceedingly to keep pace with today's rate of change. Increasingly competitive and global markets, industry consolidation, investment in new product sets, growth through acquisition and development of multiple entity ecosystem has made the process highly complex.

Banglalink is a well-established telecommunication company in Bangladesh. But some issues should be fixed in the revenue assurance and fraud management sectors. Software and technology that is used need to be upgraded. The process of performing different tasks needs to be more fluent and easy. Automation should be introduced in the workplace. The dependency problem will be there but it can be smoother as well. Bangladesh is going through a transition period. A lot of digitalization is happening in the country. Banglalink also should concentrate more on digitalization. Telecommunication industry has almost gone to its maturity level in Bangladesh. So as a digital company Banglalink should also concentrate to innovate more digital products. So that the company can get a sustainable growth.

Regarding my experience, I would like to start by showing my gratitude to everyone who has helped me to learn and gain valuable insights how a top multinational operates. I easily got blended to the environment of Banglalink since everyone here is extremely cooperative. I am sure that this valuable experience will help me make immense progress in my upcoming career life. In conclusion, I would like to state that I am extremely lucky to be a part of Banglalink. I really look forward to work with them again.

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