



An Internship Report on

'Discussion on the IOT project by Grameenphone Ltd'

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Letter of Transmittal

Date: 23-06-2016

To,

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Subject: Submission of the internship report

Dear Miss,

It is my pleasure to present my internship report entitled '*Introduction to IOT; prospects of implementing it in Grameenphone Ltd*'. I have prepared the internship report as per the requirement to complete my under graduation. I have done my internship at Grameenphone Ltd in Global Sourcing Department. This report provides information about the company details, my work experience and a detailed discussion on my research topic. I have tried my level best to accomplish the given task and I hope that the report will fulfill your requirements.

Sincerely Yours,

Noor-E-Rafa

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Acknowledgement

Firstly, I would like to thank Almighty Allah for granting me with constant patience and strength to complete this internship report on time. Thanks to my friends and family too for supporting and helping and of course for being there whenever I needed mental support.

I would also like to thank my Supervisor at Grameenphone Ltd, Mr Md. Jahangir Alam who always motivated me and helped me to gain knowledge in every way possible. He was the one who helped me in choosing this research topic and helped me to think out of the box. Also I would like to take the opportunity to thank the awesome colleagues with whom I have worked so far. A special thanks goes to my internship supervisor Syeda Shaharabanu Shahbazi who gave me the opportunity to do this report. While doing this paper, I learned a lot about professional life practically by being on the field which will obviously help me in my future. I would like to convey him my heartiest gratitude for helping me whenever I was in need of it.

Finally I would like to thank my parents for believing in me and supporting me always.

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Executive Summary

Grameenphone Ltd is the leading telecom service provider in Bangladesh. Its wide area of seamless network and excellent customer service makes it to be the number one mobile operator in Bangladesh. It has been holding the number one position since its inception and till now held the position with dignity. This glory of Grameenphone is because of its resources; the talented pool of employees who continuously work hard, utilize their know-how and give their best for the benefit of the organization. Now this is the scenario of every other organization in our country, but still what sets Grameenphone apart? It is because of the incomparable work environment, exquisite culture, excellent benefits, cordial colleagues and of course the amazing workspace. I was lucky enough to be a part of this beautiful organization for 3 months where I could explore and extract an amazing work experience from the most talented pool of employees.

This report presents my work experience and learnings that I have acquired in these three months of internship in sourcing department. Also I have introduced the topic IOT and have discussed about the prospects of implementing it by Grameenphone Ltd

Part 1- About Grameenphone Ltd

Part One- About Grameenphone Ltd

1.1 About the organization

Grameenphone Ltd is the biggest telecom administrator in Bangladesh. With more than 56 million endorsers (as of January 2016), Grameenphone is the biggest cell telephone administrator in the nation. It is a joint endeavor amongst Telenor and Grameen Telecom Corporation, a non-benefit sister worry of the microfinance association and group advancement bank Grameen Bank. Telenor, the biggest information transfers organization in Norway, possesses a 55.8% offer of Grameenphone, Grameen Telecom claims 34.2% and the staying 10% is freely held.

Grameenphone was the primary organization to present GSM innovation in Bangladesh, and constructed the main cell system to cover 99% of the nation

Absolute six (6) organizations are available in the business sector among which the quantity of endorser of GP is a long ways ahead than the second position holder Banglalink (20millions). Solid universally rumored organizations like Orascom and Axiata is available in the business sector. As of late Airtel entered in the business sector by acquiring Warid Telecom. Along these lines the business is turning out to be progressively more focused on account of the section of these globally experienced administrators.

GP is seeing the Bangladeshi business sector as an extraordinary chance to work together. As of late it presents its auxiliary organization GP-IT. Expanded administrations are being offered by GP and they are resolved to proceed with their astounding execution in future. GP has fabricated the biggest cell system in the nation with more than 13,000 base stations in more than 7000 areas. In a matter of seconds, almost 98 percent of the nation's populace is inside the scope range of the GP system. GP has dependably been a pioneer in presenting new items and administrations in the neighborhood market. GP was the main organization to present GSM innovation in Bangladesh

when it propelled its administrations in March 1997. GP was additionally the main administrator to present the prepaid administration in September 1999. It built up the Call Center, presented esteem included administrations, for example, VMS, SMS, fax and information transmission administrations, global wandering administration, WAP, SMS-based push-pull administrations, EDGE, individual ring back tone and numerous different items and administrations. The whole GP system is likewise EDGE/GPRS empowered, permitting access to fast Internet and information administrations from anyplace inside the scope range. There are as of now about 2.6 million EDGE/GPRS clients in the GP system. Also, GP will keep on making the system quality better and limit changes through the nation by utilizing most recent innovations. Recently they will present 3G system in Bangladesh.

1.2 Operating coverage of GP

Presently GP has covered 440 upazillas of 61 districts. 98% of the total population is under coverage of GP's network. GP has so far invested more than BDT 15,900 crore to build the network infrastructure.

The full name	:	Grameenphone Ltd.
Head Office	:	Grameenphone Ltd. GPHOUSE, Basundhara, Baridhara, Dhaka-1229.
Date of incorporation	:	November 28, 1996.
Service Launched	:	March 26, 1997.
Product & Services	:	More than 50 products, services, promotions and features, 1600 Customer service points and 82 GP Centers in all the divisional cities.
Employees	:	More than 5000 full and temporary employees, other 300,000 people are directly dependent on GP.
No of divisions	:	7.
No of Subscribers	:	31 Million.
Shareholders	:	Telenor (55.8%), Grameen Telecom Corporation (34.2%), 10

1.3 HISTORY OF GP

- March 26, 1997 : GP launched its service on the Independence Day of Bangladesh.
- June 1998 : GP started its services in the port city of Chittagong, the second largest city in the country. Cell to cell coverage in the Dhaka-Chittagong corridor also enabled GP to introduce its service in a number of other districts along the way.
- 1999 : GP started its service in the industrial city of Khulna. Once again, a number of other districts came under coverage of GP because of the cell to cell coverage between Dhaka and Khulna.
- 2000 : GP started its services in Sylhet, Barisal and Rajshahi, bringing all six divisional headquarters under the coverage of its network.
- 2001 : Launched WAP service.
- 2002 :
Bangladesh Business Award for "Best Joint Venture Enterprise".
- August 2003 : After six years of operation, GP has more than one million subscribers.
- October 2005 : GP continues to being the largest telecommunication operator of Bangladesh with more than 5 million subscribers.
- 2006 : GP reached 10years of its operations and 10 millions of subscribers.
- November 2006 : GP re-branded with new logo.
- September 20, 2007 : GP announces 15 million subscribers.

- January 2008 : Introduced Black Berry Service to Bangladesh.
- June 2008 : Reached 20 million subscribers.
- Feb 2009 : Launched GP Internet Modem.
- Sep 2009 : Launch of GP Handset.
- March 2010 : Mobitaka Brand launch with E-ticketing.
- June 2010 : 1st Annual General Meeting of GP.

1.4 THE VISION, THE MISSION AND THE OBJECTIVE

Company Vision “We are here to help” Vision: GP vision is “We’re here to help. That implies GP exist to help the clients get the full advantage of interchanges administrations in their day by day lives. They need to make it simple for the clients to get what when they need it.

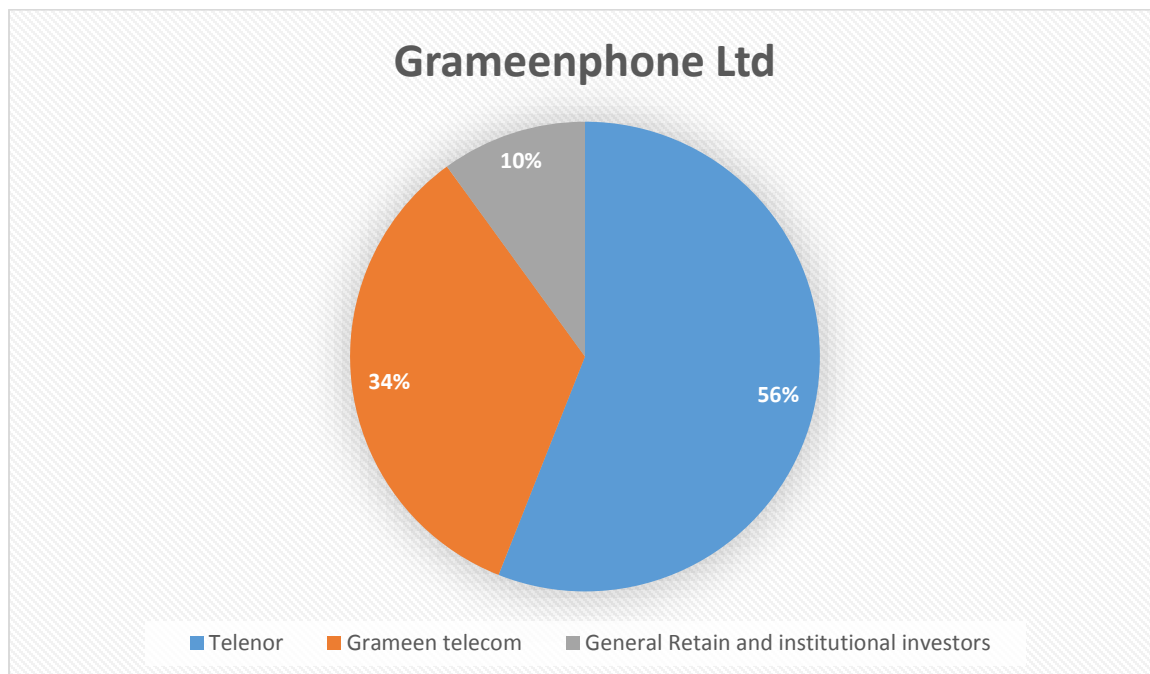
Company Mission: The mission of GP is to give an aggregate correspondence answer for its clients. To do this the administration improvement of GP has altogether created in the course of the most recent couple of years. GP endorsers can now appreciate all the cutting edge information correspondence and substance administrations. Versatile office, web access, MMS and present day music and download administrations are accessible through the across the nation EDGE empowered system.

Objective: GP has a dual target to get a financial profit for its ventures and to add to the monetary advancement of Bangladesh through telecom. This is the reason GP, in a joint effort with Grameen Bank and Grameen Telecom, is planning to place one telephone in every town to contribute altogether to the monetary event of poor people. It is en route to acquire an aggregate upset the telecom field. By accomplishing the achievement components, GP might want to be perceived as a solid, legitimate and conferred organization to its esteemed endorsers and partners.

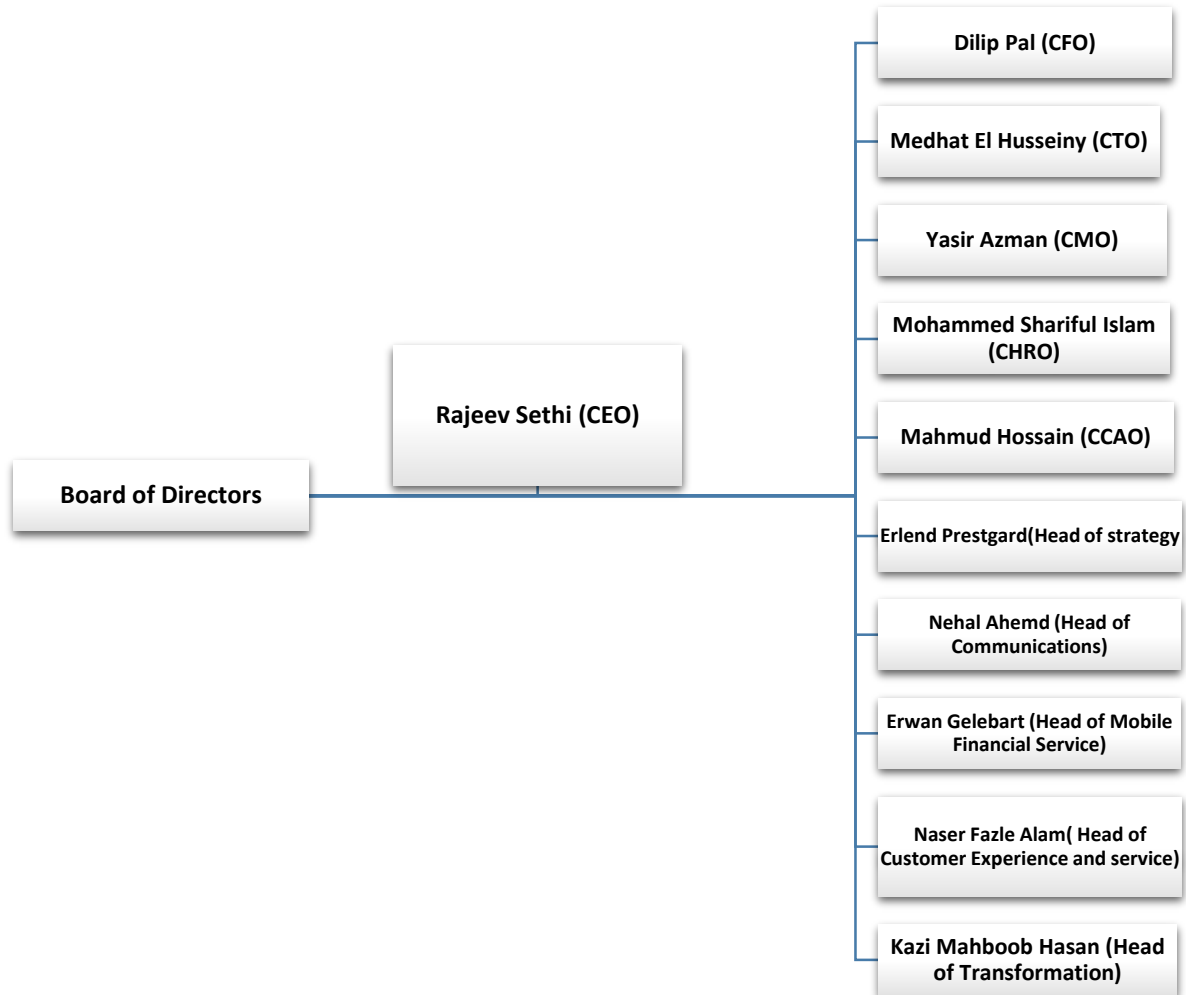
Grameen Telecom:

Grameen Telecom Corporation, which claims 28.8% of the shares of GrameenPhone Ltd., is a non-profit organization and works in close cooperation with Grameen Bank. The universally presumed bank for the poor has the most broad country keeping money system and mastery in small scale fund. Grameen Telecom, with the assistance of Grameen Bank, directs the Village Phone Program, through which GrameenPhone gives its administrations to the quickly developing provincial clients.

Grameen Telecom's targets are to give simple access to GSM cell administrations in country Bangladesh, making new open doors for money era through self- work by giving villagers access to advanced data and correspondence based innovations.



Organogram of Grameenphone Ltd:



Management of GrameenPhone:

The top administration of GrameenPhone Ltd is doing their administration parts exhaustively throughout the years. There has been substitution or changes in the positions yet all have cooperated to expand the general execution of the association. Administration Team of GrameenPhone contains the CEO, Directors and the Divisional Heads of the organization.

The Service:

GrameenPhone has confidence in administration that prompts great business improvement. Telephony people groups cooperate, raising their profitability. This increase in profitability is improvement, which thus empowers them to bear the cost of a phone administration, producing great business. In this way advancement and business go together.

Corporate Governance:

In the fast-paced universe of information transfers, energetic and dynamic Corporate Governance practices are a crucial fixing to achievement. GrameenPhone puts stock in the proceeded with change of Corporate Governance. This thusly has driven the organization to confer significant assets and execute globally acknowledged Corporate Standards in its day-to-day operations. Being an open restricted organization (PLC), the Board of Directors of GrameenPhone have a vital part to play in meeting all partners' advantages. The Board of Directors and the Management Team of GrameenPhone are focused on keeping up powerful Corporate Governance through a society of Accountability, Transparency, Well-Understood Policies and Procedures. The Board of Directors and the Management Team additionally continue on to keep up consistence of all laws of Bangladesh and all inside reported controls, strategies and methods. GrameenPhone is a really straightforward organization that works at the largest amounts of trustworthiness and responsibility on a worldwide standard.

The Technology:

GrameenPhone's Global System for Mobile or GSM innovation is the most broadly acknowledged computerized framework on the planet, presently utilized by over a billion people in 172 nations. GSM brings the most exceptional improvements in cell innovation at a sensible expense by prodding extreme rivalry among makers and driving down the expense of gear. Along these lines, shoppers get the best for the minimum. GrameenPhone is presently the main information transfers administration supplier in the nation with more than 23 million endorsers as of March 2010. Throughout the years, Grameenphone has dependably been a pioneer in presenting new items and administrations in the neighborhood market. GP was the primary organization to present GSM innovation in Bangladesh when it propelled its administrations in March 1997. The innovative know-how and administrative mastery of Telenor AS has been instrumental in setting up such a global standard cell telephone operation in Bangladesh. Being one of the pioneers in building up the GSM administration in Europe, Telenor AS has additionally exchanged this learning to the nearby workers throughout the years.

Divisions of GrameenPhone:

Grameenphone Ltd. has approximately 5000 employees working at different levels of organizational hierarchy. There are 10 functional departments engaged in managing these employees- with the aim to meet organizational objectives. Grameenphone follows a mix of centralized and decentralized decision making process-where the top management mainly takes all the strategic decisions while the functional managers have flexibility to take decisions by themselves on a day to day basis. At Grameenphone the Managing Director is assisted by 10 Senior Executives who are heading different departments in the strategic decision making process. The departmental names of Grameenphone are given below:

- ⊗ Corporate Affairs Division
- ⊗ Customer Service Division
- ⊗ Finance Division
- ⊗ Human Resource Division
- ⊗ Information Technology Division
- ⊗ Internal Audit Division
- ⊗ Internal Control Office Division
- ⊗ Network Division
- ⊗ Sales Division
- ⊗ Communication Division

Grameenphone takes after a 3-layer administration rationality in Bangladesh. These are Directors, Managers and Officers. The CEO is the top most power of all the levels. Chiefs are the departmental heads that are in charge of the exercises of their specialties. Supervisors have the power beside chiefs. These two layers speak to the administration level of Grameenphone. Officers are the following persons to remain in the chain of command rundown. They are the common mid-level workers of Grameenphone's hierarchical chain of importance. These officers are in charge of dealing with the operational exercises and working level representatives.

Part 2- My Work Experience

Part 2- Work Experience

I was very lucky enough to work in the department of sourcing during my internship period. This department falls under the division of Finance and is responsible for all sorts of procurements, both tangible and intangible goods for Grameenphone Limited. The department is mainly divided into 6 groups, each group working as a team to give their best. The groups are-

1. Governance and strategy
2. General contracting
3. Technology Contracting
4. Sourcing support service
5. Inventory and delivery management
6. Billing and archiving management
7. Sim and scratch card management

I worked with the General contracting team under the supervision of Md. Jahangir Alam Before writing about my work experience, it is very important to brief about sourcing and the sourcing procedure of Grameenphone Ltd.

2.1 What is Sourcing

Sourcing is a component of Supply chain management. It is also known as procurement. It is the practice of locating and selecting vendors based on a certain set of criteria. Mainly it is an institutional process of all the purchasing activities of an organization. This starts from identifying a potential vendor and ends till closing the contract with the vendor. Sourcing plays a vital role in Grameenphone to procure the best product and formalize the way information is gathered to leverage the purchasing power to get the best possible values. I was really lucky enough to work with the best talent that Grameenphone has in its sourcing department.

2.3 The sourcing process

During my work period, I closely worked with my team, General contracting in these 7 steps of sourcing process. General contracting deals with all sorts of procurements of all Grameenphone's products and services excluding technology like media buying, gift items, content providers and devices. This included Training, consultation, audit, legal food & beverage, facilities, transportation, insurance, media buying and all sorts of events. The highest expenditure of Grameenphone limited is in the following chronological order.

1. Device
2. Media Buying
3. Content Provider
4. Security
5. General services

The main stakeholders of General Contracting are-

- People and Organization (P&O) division
- Corporate Affairs Division
- Finance Division
- Commercial Division
- Managerial Division
- Communication Division

Again the team has separate person in charge of making contract for separate things. I worked under my Supervisor, Mr Jahangir Alam, who is the lead specialist of Global sourcing and is on charge of making contract for the contents of Grameenphone Limited. The team, General Contracting, undergoes the following process of sourcing before making any sort of contract following procurement. The whole process is a rigorous process and the best vendor is chosen via the process.



To learn about the process in more details, my supervisor took me to various meetings where the steps of this process were conducted.

1. **Need identification and verification-** The whole process of sourcing is initiated when the user sends a contract request. A finance representative then takes approval of the investment committee and will verify if the need is within the business plan and budget. After that the contract owner will complete a Purchase request by defining the term and will ensure that the need is within the business plan and budget. Sourcing will check the completeness of the PR and will start processing
2. **Sourcing Strategy-** After this the sourcing strategy will be prepared by the CST members with the given template. Then there will be a vendor market analysis based on the criteria set by the user. Grameenphone limited already has a database of vendors and also search for vendors outside. The potential vendors are then shortlisted and a baseline cost is established to estimate the expenditure. The strategy is then approved by the AMS.
3. **RFQ Floating and bid receipt-** After this tender is prepared and is sent to the potential vendors. Against this, bid is being received from the vendors by sourcing.
4. **Bid evaluation-** Mainly two types bids are received by sourcing. One is Technical bid and the other is the commercial bid. Vendors are to send the technical bid at first. Sourcing then sends this bid to the user. The user matches their criteria and shortlists further. The shortlisted vendor list is then being sent to Sourcing. Sourcing then opens the commercial bid of the shortlisted vendors which contains the quotations stated by the vendor for their product or services.
5. **Negotiation-** If negotiation is necessary then a negotiation plan is being made by the CST and is then approved by the Approval management System (AMS). In this case, Mr Zahed Bin Ahsan, The line manager of General Contracting is in charge of approving the

negotiation plan. Negotiation can be of two types, by meeting with the vendors, i.e by face-to-face negotiation and by e-auction.

6. **Awarding and contract management-** In this particular step, the vendor is being chosen with the best quotation. Notification is being to the qualified vendor and also to the disqualified vendors. Contract is then finalized and is signed by both the parties. A scanned copy of the contract is then uploaded in the in the system which is in the contiki. The user is then supposed to send a detailed purchase order to sourcing specifying everything about the product or service. A purchase order is then being issued. After that, a product/service is being delivered, warehoused or is being moved to the site. All the claims and everything related to the import of the product and dealing with the vendors happens in this stage.
7. **Contract Closure-** This the final stage of the sourcing process. The vendor is evaluated for the time period till which the contract is valid. The actual saving is calculated and contract is closed formally.

2.4 My Responsibilities

- I was really lucky to work with my supervisor. He was very helpful and was always concerned about my learning. He always pushed me so that I could think out of the box and add value to the organization. In order to enhance my internship experience, I was assigned with certain duties which was very helpful for me because I think during the course of fulfilling the responsibilities, my leadership ability, ability to handle vendors, arranging meetings with them and also organizational etiquettes were developed. I personally handled 62 Content providers who provides service to the 50 million Grameenphone's customer in the country. It is very important to note that Grameenphone's revenue firstly comes from its voice service and then from SMS service, Data and the fourth category is from its Value Added Services. I was assigned with a project called the Integrity Due Diligence (IDD) whose purpose was to conduct the due diligence assessment of the 62 business partners who gives this value added services (VAS) to Grameenphone's customers. Grameenphone does business with its partners and if the partners by chance are related to any fraudulent activities, then Gp's brand would be at stake. Grameenphone will pfcourse be liable for any corrupt or fraudulent activities by its business partners. IDD is the collection and analysis of information to find out the risk involved with maintaining the contractual relationship. To avoid this Grameenphone introduced this policy to conduct the Due diligence of the third parties. The following diagram shows the process which I followed to complete the assigned project.

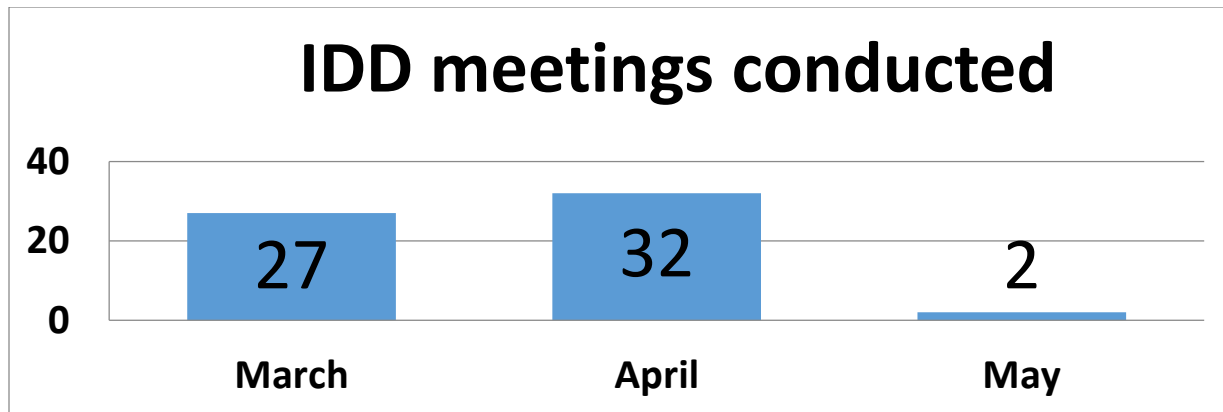


- Business partner screening-** In this step I had to screen the content providers, i.e the vendors. I arranged meetings with them and personally conducted the meetings. My supervisor assisted me with the format of the meeting and gave me the responsibility to conduct the meeting and screen the vendors. For this process some questions were prepared by me and was approved by my supervisor so that I could ask them to the vendors for their background checking. I had to conduct 62 meetings which went for 3 months. Each meeting was about 40 minutes long. The IDD template was already prepared by the legal team of Grameenphone Ltd, and the information I got from the vendors was put in it. Also

for this particular step, I had to collect some legal documents, which was vital for the screening process. Below shows the list of items I had to collect from the vendors. It was a difficult job since some vendors were reluctant to provide the given documents and hence several follow-ups had to be made.

Name of the Vendor /Partner :
Location :
Area of work and/or, Category :

Sl.	Document(s)	YES	NO	N/A	Remarks
01.	Memorandum / Articles of Association	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide copy if applicable</i>
02.	Certificate of Incorporation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide copy if applicable</i>
03.	Trade License (renewed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide updated Trade License</i>
04.	VAT Registration Certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide Updated Documents</i>
05.	TIN (Tax Identification Number) Certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide Updated Documents</i>
06.	Company Profile (registered address, contact person and telephone no, list of customers, revenue of last two financial years)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>not older than 30 days from the date of submission</i>
07.	Year of Experience in the same Industry and/or, same area of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide certification</i>
08.	Bank Solvency Certificate from any Scheduled Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide copy letter from bank</i>
09.	Confidentiality and Non-Disclosure Agreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please sign and stamp on each page of the hard copy</i>
10.	Agreement on Responsible Business Conduct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please sign and stamp on each page of the hard copy</i>
11.	Vendor/partner Information Form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please fill up properly</i>
12.	Vendor/partner Relationship Form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please fill up properly</i>
13.	<Other requirement, please add and specify>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Please provide copy if applicable</i>



2. **Due Diligence Assessment-** In this step, I had to sit with the CST members. After completing each meetings, the information gathered from there was evaluated. Certain criteria was given by the legal team whose inclusion meant that Gp's involvement with that vendor might be harmful for GP. This vendors were given a red flag. The CST members were

- Md Jahangir Alam, Lead specialist, Global Sourcing
- Nandit Ranjan Deb, Specialist, Product
- Husnea Ara Baly, Finance
- Kazi Rukhsana Sahelin, Legal & Compliance

Information given by the vendors were verified here.

3. **Integrity Due Diligence Report-** Based on the information and evaluation, I had to make IDD report for each of the 62 vendors. Each report was 40 page long and had to done by hand. The template was provided by the Legal team.
4. **Conclusion/Agreement-** The report was then presented to the CST members. They once again reevaluated them and came to a conclusion whether to continue business with the vendor or not. After this I had to take sign of the Chief Procurement Officer of Grameenphone on the completed reports.

5. **Post Due diligence Activities-** Unfortunately I couldn't be a part of this step since my contract was over. In this step the audit will check the reports I made and will give their final consent.

Below shows the summary of tasks that I have done during my internship tenure-

- **Project Management, Sourcing @ Grameenphone** *[January 2016-May 2016]*
 1. Management of Project IDD (Integrity Due Diligence) and execution of policies on behalf of my supervisor and task owner of the following:
 - Carried out interviews of all Content Providers (62) of GP
 - Made detailed reports (62) for all the content providers of GP
 - Arranged meetings with Cross functional sourcing teams (CST) about the position of the GP vendors in the market
 - Maintained liaison with the Chief Procurement Officer (CPO) of GP to give briefings on the reports and took his approval on them.
 - Continuous integration with the Finance, Legal and Digital teams for the generation of the IDD reports.
 2. Management of communication with the vendors for maintaining liaison with them and GP company policies.
 3. Job rotation at different teams of GP Global sourcing management (inventory and delivery management, billing and archiving, sim & scratch card management, general contracting, technology contracting and sourcing support service)

2.5 Recommendations

Grameenphone limited is an excellent workspace where working is fun and the colleagues are extremely helpful. During my tenure, I never felt an alien rather I was one of them working from 8-5 p.m. The facilities always motivate the employees to give their best. However, there are some recommendation that I would like to suggest for the internship program of Grameenphone.

1. Some teams are overburdened with work which results in decreasing the efficiency of the individuals. For this problem I would like to suggest them to increase the hire they usually do.
2. Interns are chosen after a very rigorous process so they should be the first choice whenever there is a vacancy in the respectable department given that the job responsibility matches with the caliber of the intern.
3. The number of meetings are too high. It is often seen that an employee spends 85% of his work time in meetings. This should be reduced.
4. Interns should be given access to some basic needs like printing.

Otherwise Grameenphone is an excellent platform to showcase one's skills and people are very helpful there.

Part 3- Discussion on the IOT project by Grameenphone Ltd'

Part 3- Discussion on the IOT project by Grameenphone Ltd

General Statement of the project- Through my report I have tried to aware my audience about the Internet-Of- Things (IOT) Technology which is to be launched by Grameenphone. I have discussed about what is it and how it can facilitate our lifestyle. In addition to that I have tried to find out whether the market is ready to accept this technology through conducting a survey randomly over 30 people. I have discussed in which sectors can IOT be implemented and how the sectors will be benefited by this. Finally I have made a SWOT analysis about IOT based on my research and tried my level best to fulfill the objective of the report.

3.1 Objectives of the report

Primary Objective

- To introduce the basics of IOT
- To create awareness about IOT
- To present the pros and cons of implementing IOT in the telecommunication sector of Bangladesh
- SWOT analysis based on my research.

Secondary Objective

- To present a background information on Grameenphone Ltd
- To present my learnings at Grameenphone Limited
- To relate theoretical learning with the practical field
- To learn how telecommunication sector conducts their work
- To identify the threats and weakness of the project

Methodology

3.2.1 Data Collection Method

For the purpose of this report, data has been collected from both primary and secondary sources.

Primary data collection

The primary source was my internship tenure during which I worked in Grameenphone and gathered information about my research topic from the IOT team. Also I have conducted research on a sample of 30 people through questionnaire. Also I have interviewed Mr. Jahangir Alam, lead specialist of Global Sourcing about the pros and cons of implanting IOT by Grameenphone Ltd.

Secondary data collection

Secondary source of data collection were the financial report of Grameenphone Ltd and the journals related to IOT technology.

3.2.2 Sample Selection

To conduct my research, I have randomly chosen a sample of 30 people. I am very much indebted to them since they helped me to complete my project by filling out the questionnaire. The sample consisted of three groups.

- Employee of Grameenphone Ltd.
- Students of BRAC University.
- Employees of different organization.

3.2.3 Data Analysis and Presentation

I have used the responses of my questionnaire to find out the percentage of outcomes. I have presented the outcomes in pie chart.

3.3 Limitations

- Due to time constraints, a rigorous market survey could not be conducted. A sample of only 30 people is not enough to come to a conclusion.
- Also due to confidentiality issues, I could not share many information of Grameenphone which would have been helpful for my project like the information on cost analysis and product evaluation they did before the pilot project.

Chapter 1: Introduction to the topic

1.1 What is IOT-

IOT is a system where physical devices are connected to each other with sensors within and these items are in turn connected to the internet via wireless connection. Internet of things will

Connect non-living things with living things- the vision of IOT is to connect everything starting from industrial equipment to everyday objects. The sorts of things extent from gas turbines to vehicles to utility meters. It can likewise incorporate living beings, for example, plants, ranch creatures and individuals. For instance, the Cow Tracking Project in Essex utilizes information gathered from radio situating labels to screen dairy animals for ailment and track conduct in the group. Fundamentally anything you can connect a sensor and availability to can take an interest in the new associated biological communities.

Use sensors for data connection- The physical articles that are being associated will have one or more sensors. Every sensor will screen a particular condition, for example, area, vibration, movement and temperature. In IoT, these sensors will associate with each other and to frameworks that can comprehend or present data from the sensor's information bolsters. These sensors will give new data to an organization's frameworks and to individuals. Before, individuals conveyed with individuals and with machines. Suppose the greater part of your hardware had the capacity to impart. Now IoT-empowered items will share data about their condition and the encompassing environment with individuals, programming frameworks and different machines. This data can be partaken in realtime on the other hand gathered and shared at characterized interims. Going ahead, everything will have an advanced character also, network, which implies you can distinguish, track and speak with articles.

In very simple words, IOT, most commonly known as internet-of- things, is a network of devices connected together in order to exchange information. The devices are embedded with software, sensors and network connectivity which will help them to collect and exchange data. The whole infrastructure creates an opportunity for the machines to communicate with each other. The

devices can be anything starting from cellphones, headphones, washing machines or any electronic devices. Overall, IOT is a giant network of connected devices and the relationship will be between people-people, people-things and things to things.

The idea of internet of things was initially utilized by British innovation pioneer Kevin Ashton in 1999. His objective was to portray a framework in which objects in the physical world could be associated with the internet by sensors. IOT is now a part of corporate supply chains to number and track products without the requirement for human intercession. Today, the Internet of Things has turned into a mainstream term for portraying situations in which Internet availability and figuring ability reach out to an assortment of articles, gadgets, sensors, and ordinary things.

The question may arise that what is the need of machine to machine connection. For example, your alarm clock will wake you up at 6 a.m and will notify your coffee machine to brew coffee and also will notify your toast maker to toast bread for you. Wouldn't it be amazing if your office utility room knew it was running short of stationeries and ordered more itself or if your watch told you at what time doing which work you were most active and productive? IOT addresses these things and makes life a lot easier.

1.2 Why IOT is a popular topic

IOT products are aimed at automating our lives. All the lights will be switched of as soon as you step out of the house, your warehouse will send notifications as soon it gets short of certain products and what not. There are numerous points of interest of joining IoT into our lives, which can help people, organizations, and society once a day. For people this new idea can come in numerous structures including wellbeing, security, monetarily, and consistently arranging. The joining of IOT into the human services framework could end up being inconceivably gainful for both an individual and a general public. A chip could be actualized into every person, taking into consideration healing centers to screen the indispensable indications of the patient. By following their crucial signs, it could show regardless of whether genuine appraisal is vital. With the majority of the data that is accessible on the Internet, it can likewise unnerve individuals into trusting they require more care than what is truly required. Healing centers as of now battle to survey and deal with the patients that they have. By observing individual's wellbeing, it will permit them to judge who needs essential consideration. The Internet of Things can likewise help individuals with their

own wellbeing. ADT, which is a home security framework, permits people to screen their security frameworks at home through their telephones, with the capacity to control it. IOT can likewise work as a device that can spare individuals cash inside their family units. In the event that their home apparatuses can convey, they can work in a vitality effective way. At last, IOT can help individuals with their ordinary arrangements. By permitting physical gadgets to impart, it is taking the information that is separately gathered, sharing it, and afterward making an interpretation of the data into approaches to make our present frameworks more productive.

Organizations can likewise profit from the Internet of Things. IoT can be valuable in a wide range of classes including resource following and stock control, transportation and area, security, singular following, and vitality preservation. As specified some time recently, IoT takes into account the correspondence between gadgets, usually alluded to as Machine-to-Machine (M2M) correspondence. With this being conceivable, physical gadgets can discuss to individuals telling them their condition and where it is found. Gadgets, for example, trucks or ships consider the most extreme ability to be filled by correspondence amongst gadgets and after that handing-off that data to a man to benefit from the information supplied. These consolidated amplify income by cutting expense of inefficiencies inside the business. A particular case from "A Successful 'Web of Things' Hinges on M2M" article, is the operation of Nestles Nespresso Coffee Machine, which has "the capacity to screen variables, for example, temperature setting, vibration, and weight guarantees quality yield, conceivably prompting more prominent consumer loyalty and proceeded with rehash business" (Frenzel 2012). Despite the fact that the thought appears to be entirely basic, it can be extremely profitable for an organization to use the IoT to guarantee quality administration is given to their clients.

Another favorable position of IoT is the capacity to track singular shoppers and focusing on these buyers taking into account the data supplied by the gadgets. As it were, it gives a more "customized" framework that could conceivably build business deals and expands their demographic. Furthermore, with the expanded measure of gadgets associated with the Internet the Smart Grid grows, preserving more vitality (Frenzel, 2012). Gadgets can settle on choices and

adjust without human direction to lessen their vitality utilization. The IoT has numerous points of interest to organizations, people, customers, nature, and society, however as with any innovation, there are dependably repercussions and debates that emerge.

Also it can create revolution in business in various ways. Some of the ways are discussed below:

1. **Opens new opportunities:** IOT opens the entryway for new business opportunities and helps organizations advantage from new income streams created by cutting edge plans of action and administrations. IoT-driven developments manufacture solid business cases, lessen time to market and expand return on investments. IOT can possibly change the way buyers and organizations approach the world by utilizing the scope of IOT. In addition to these, IOT can help in maximum utilization of assets. IOT can be used to track and identify underutilized assets (machineries, equipment, tools, etc) using sensors and connectivity and help the business to utilize them. This in turn reduces the operating cost.
2. **Efficient process:** Being associated with a most extreme number of gadgets to the web, IoT permit organizations to be quick witted with continuous operational bits of knowledge while decreasing working expenses. The information gathered from logistics system, production line floor, and store network will lessen stock, time to market and downtime because of upkeep.
3. **Safety and security:** IoT administrations coordinated with sensors and camcorders screen work environment to guarantee hardware wellbeing and secure against physical dangers. The IoT network organizes various groups to determine issues instantly.

1.2 What it means for business

As we have seen earlier that IOT impacts business in every way. Devices and the Internet of Things will change the sorts of gadgets that interface into an organization's frameworks. These recently associated gadgets will deliver new sorts of information. The Internet of Things will help a business pick up efficiencies, outfit knowledge from an extensive variety of hardware, enhance operations and expansion consumer loyalty. IoT will likewise have a significant effect on individuals' lives. It will enhance open security, transportation and social insurance with better data and quicker interchanges of this data. While there are numerous ways that the Internet of Things could sway society and business, there are no less than three noteworthy advantages of IOT that will affect each business, which include: communication, control and cost savings

Communication- IoT conveys data to individuals and frameworks, for example, state and strength of equipment (e.g.it's on or off, charged, full or exhaust) and information from sensors that can screen a man's imperative signs. By and large, we didn't have admittance to this data before or it was gathered physically what's more, occasionally. For instance, an IOT-empowered HVAC framework can report if its air channel is perfect and is working properly or not. Practically every organization has a band of assets it could track. GPS-empowered resources can impart their present area and development. Area is vital for things that move, for example, trucks, but at the same time it's pertinent for finding things and individuals inside an association. In the medicinal services industry, IoT can help a clinic track the area of everything from wheelchairs to cardiovascular defibrillators to specialists.

Control- Much of the time, a business or buyer will likewise have the capacity to remotely control a gadget. For instance, a business can remotely turn on or close down a particular bit of gear or alter the temperature in an atmosphere controlled environment. In the mean time, a customer can utilize IoT to open their car or begin the washing machine. Once an execution benchmark has been built up, a procedure can send alarms for oddities and potentially convey a mechanized reaction. For instance, if the brake cushions on a truck are going to come up short, it can provoke the organization to take the vehicle out of administration and naturally plan support.

Cost- Numerous organizations will utilize IoT to save cash. Estimation gives real execution information and hardware wellbeing, rather than just gauges. Organizations, especially modern

organizations, lose cash when machineries falls flat. With new sensor data, IoT can help an organization spare cash by minimizing machineries failure and permitting the business to perform arranged upkeep. New smart meters in homes and organizations can likewise give information that makes a difference individuals comprehend vitality utilization and open doors for cost funds.

Chapter 2- Research and analysis

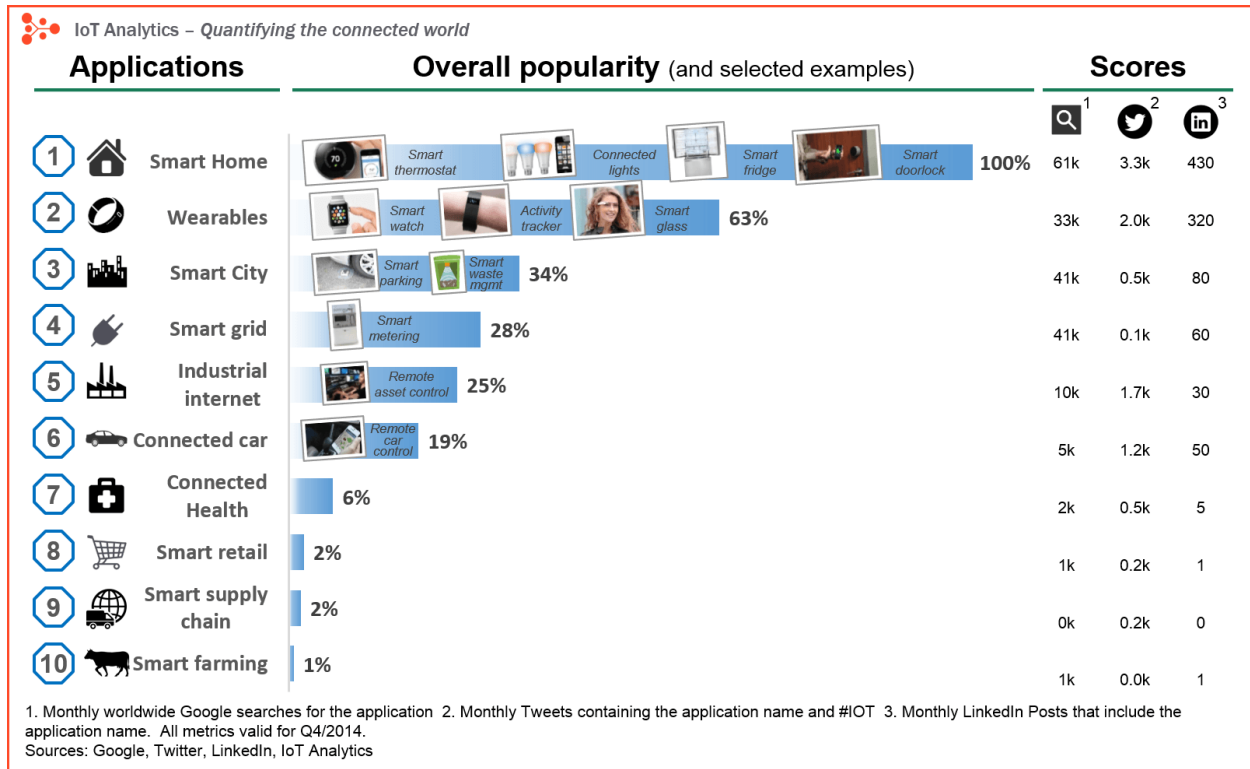
2.1 Vital areas to be impacted by IOT

Another zone with an enormous IoT effect is the health services, with an expected 30.3% of the entire gadgets. Applications are altogether different and will incorporate versatile wellbeing observing, electronic recordkeeping and pharmaceutical shields. A rate around 8% of the remote things will be connected in the retail range, with utilizations like stock following or cell phone obtaining. Security will likewise be profited with IoT sway, since it will help, among others, with biometric and facial acknowledgment locks. The transportation will be an incredible zone for IoT applications as well, with self-stopping autos or GPS locators as a reasonable cases.

A recent study from Affinova and Aquity Group declared that the most needed thing is the refrigerator which could control the temperature itself and inform their proprietors when an item is absent. 59% of individuals addressed that they would pay more for a smart fridge than for another thing. Other well-known gadgets are a light, sprinklers and indoor regulators which are going to switch on for their own. Yet, home gadgets are going to have an incredible interest too. Some brands have officially created coffee machines ready to interface with cell phones.

Mention that countless applications will likewise require VOiP administrations, smart device will need to call user for alerting in certain situations. A great case of a calling administration is in the health sector: if an elderly individual who lives alone gets a cardiac arrest, the associated smart phone will call the hospital along with the relatives.

List of some IOT applications



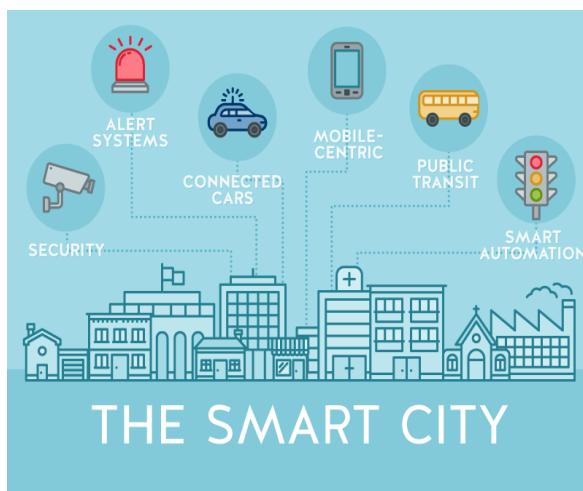
Though IOT has not entered to Bangladesh yet, the technology has already been used in a lot of companies in the western world. The above diagram shows the popularity barometer for the usage of IOT some sectors.

1. Smart home-



A smart home is the one in which the gadgets have the ability to communicate with each other. A smart home gives the owner the ability to redo and control home environment for expanded security and effective energy management. There are many IoT advancements accessible for checking and building smart homes. Famous product manufacturers like like Belkin, Philips, Amazon and Haier have effectively settled themselves as noticeable companies in this particular sector. For example Nest learning thermostat can save upto 15% on cooling bills and 12% on heating bills.

2. Smart cities-



IOT applications use internet to collect data and analyze them in order to build a smart city. The applications can be used to get real information which can be used to create new insights. IoT offers changing urban areas by enhancing infrastructure, making more proficient and financially savvy city administrations, upgrading open transportation, diminishing traffics and keeping people safe in a community. Smart monitoring, more secure and computerized transportation, more intelligent administration frameworks and ecological observing all are case of IOT applications for smart cities. Smart city are the genuine considerable answers for the inconveniences caused by population outburst, pollution and shortage of energy supplies. For example Libelium has launched a smart parking solution for smart cities which will notify drivers about available parking space with respect to the size of the cars. Along with this, there is also smart wastage system which helps with smart trash picking and avoid overflow.

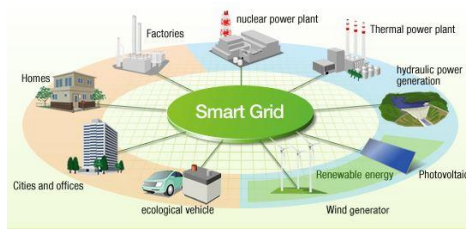
3. Smart wearables-



Wearables are one of the most popular things in IoT right now. Apple, Samsung, Jawbone and a lot of others are making huge revenues from these objects.

Wearable IoT tech is a huge area and comprises of a variety of gadgets. These gadgets extensively cover the wellness, wellbeing and entertainment necessities. The essential from IOT innovation for wearable applications is to be profoundly vitality productive or ultra-low power and small sized. For example charge HR is a high performance IOT wearable wgoch will monitor your heartbeats, track workouts and sleeping pattern.

4. Smart grid



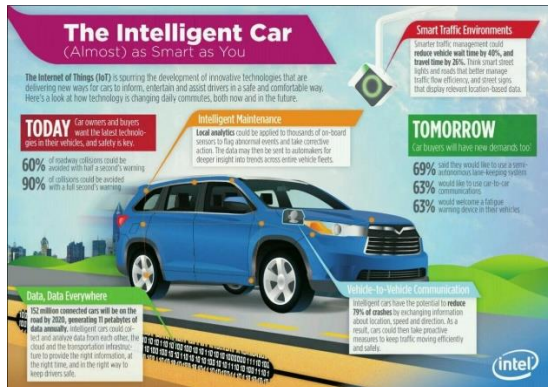
Power grids from now on will not be only smart enough but also will be highly reliable. Smart grid idea is turning out to be extremely prominent. The fundamental thought behind this idea is to gather information in computerized form and break down the conduct or power buyers and suppliers for enhancing productivity and in addition financial matters of power use. For example, the smart metering solution offered by Landis+Gyr helps consumers to better understand the need of the energy and where and when to use to them and how to use them efficiently.

5. Industrial automation-



Industrial automation is a standout amongst the most significant utilizations of IoT. With the help IOT foundation supported with cutting edge sensor systems, remote network, inventive equipment and machine-to-machine correspondence, customary computerization procedure of commercial ventures will change totally. IoT mechanization answers for commercial ventures from all enormous names like NEC, Siemens, Emerson and Honeywell are as of now in the business sector. For example the embedded data collector from the smart structure helps us with vital information about the strength and quality of concrete used in smart stations.

6. Connected Cars-



Google's self driving autos are known to all. IoT is making connected cars a plausibility. Any new innovation takes no less than two or three years to spread in standard car industry. This is the reason there is not such buildup around associated IOT illustrations. Organizations and new companies all are declaring creative innovations to bolster connected cars platform.

7. Connected Health-



Health sector is going to be advantaged by the usage of IOT. For example Philips Medication Dispensing service is designed for those patients who face difficulties in order to maintain their dosage of medicine. This device notifies the patient when to take medicine and refills on its own.

8. Smart retail-



The potential of iot in the retail sector is tremendous. For example our home appliances will be able to notify us of any shortage of supplies and will order them on their own. Also in the retail sector it is very important to collect consumer data, knowing their likes and designing products of their accord. It can all be done by IOT.

9. Smart supply chain-



An IoT empowered production network can be imagined as an intelligent interconnected system that ties together numerous levels of suppliers, contract makers, administration suppliers, wholesalers and clients, physically situated crosswise over various districts of the world. Data made, prepared and deciphered by appropriated shrewd articles and frameworks in this canny system dispenses with perceivability holes, and infuses colossal adaptability into the system.

10. Smart agriculture-



IOT in this sector is used so that farmers can monitor crucial vitals like soil condition, temperature and soil quality using sensors. As a result it helps the farmers to improve the yield of crops.

2.2 Top producers of IOT

Below is the table of the top producers of IOT-

Company	IOT devices manufactured
Intel	IOT platform
Samsung	Epop
Google	Brillio iot
IBM	IOT environment
Amazon	Smart home
Microsoft	Microsoft Iot
ARM	IOT chip
CISCO	IOT security
Sales force	IOT at work
QUALCOMM	Connecting IOE

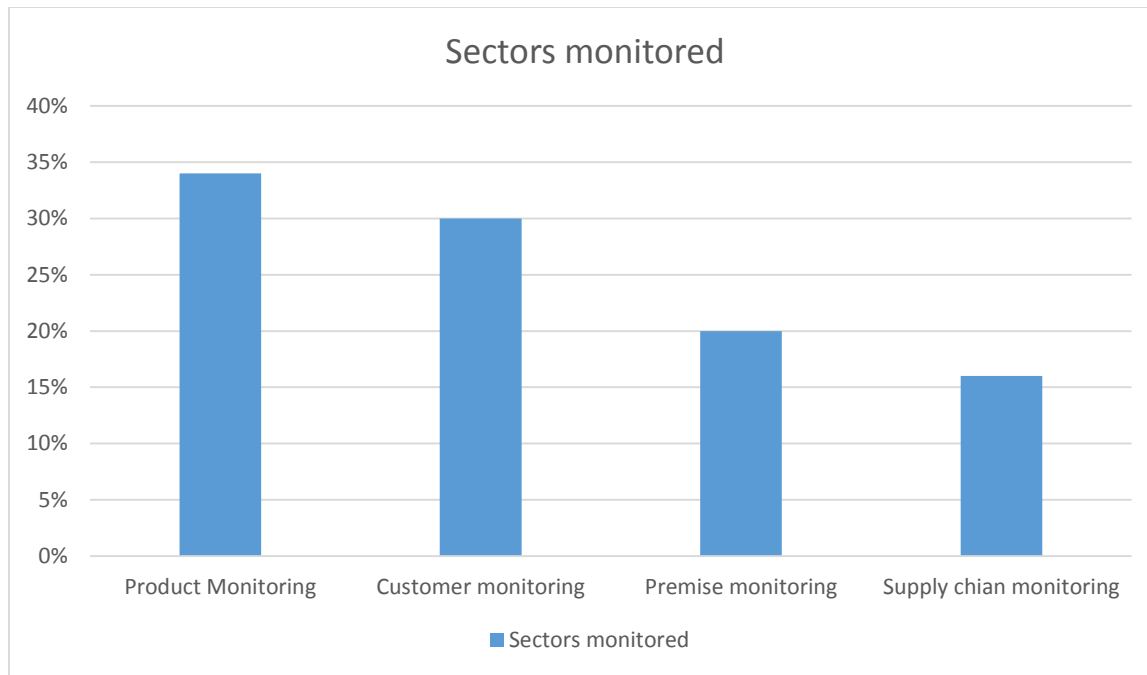
Chapter 3- Findings and Discussion

3.1 How Grameenphone Ltd can be benefited by implementation of IOT technology.

IoT has been one of the best doors that telecom industry has had in the most recent years. IOT will require a lot of information, and telecom industry must be fit for keeping it safe and secure. According to Diana Daniels, *“telecom business need to understand their environment: how their customers are connected, and how their services and products help them to the purpose. Then, they shall not forget or confuse their business model; and plan, if possible, an evolution of their infrastructure to potentially build a connected platform”*. Since this industry has the ownership of the wireless framework through which information travels, it takes up the essential position in the value chain. This position will in the long run interpret into major IoT opportunities for transferring of information.

No other telecom companies have started to use this technology yet so Grameenphone will get the benefit of first entrant in the business.

During my internship period at Grameenphone, I had the opportunity to meet the GM of marketing division and the GM of Sourcing department. When I disclosed about the IOT technology, they said that GP is already in the verge of utilizing IOT in its digital business. They have also run a trial version of IOT in 2015 from February to April. With no surprise, they have noticed the tremendous effect it had on their business. It has been summarized below-



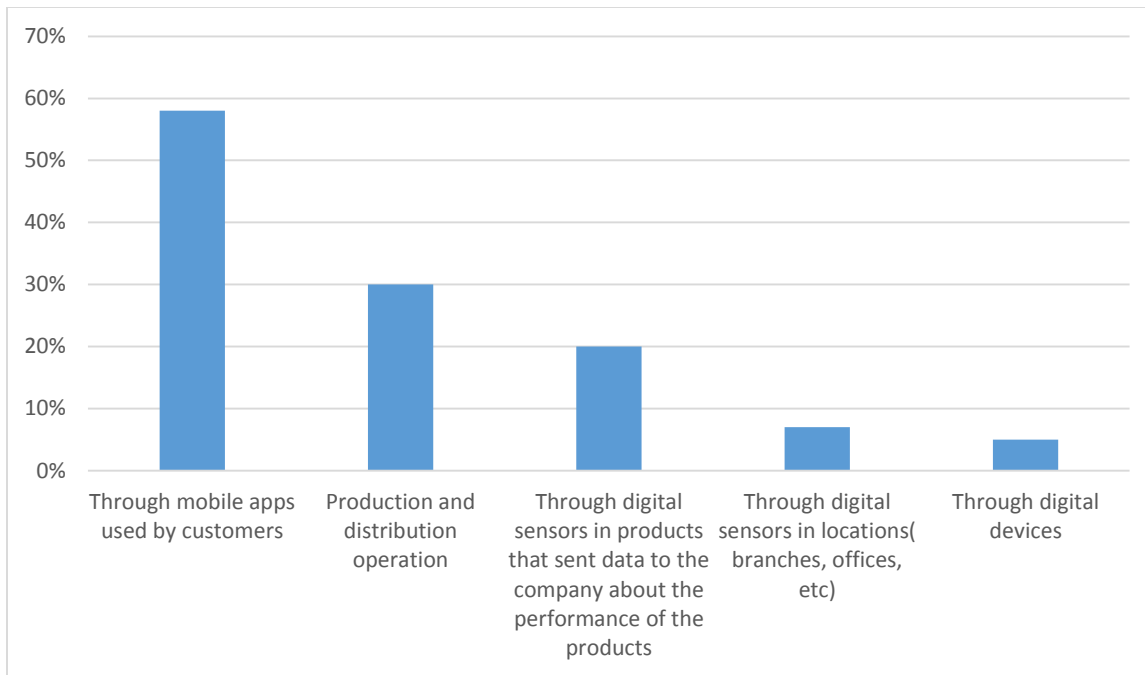
It has been seen that the efficiency of tracking products increased by 34%. Also the after service once their products or services were sold to customers were monitored. It was really beneficial for them since they could monitor all of these just by a simple technology.

Grameenphone usually monitors their customers through social networks where they leave their feedbacks or by calling them directly which was a time consuming process. But when IOT was implemented, customer monitoring increased by 30%. They were monitored by the digital devices they carry and by the smart wearables given to them while using their service.

Also the efficiency of premise monitoring increased by 20% where customers could be tracked for their experience at GP's stores, branches and offices. This way more complaints were solved.

Finally supply chain was also monitored. Tracking of products in warehouse became so easy that the employees of sourcing were free of the hassle to visit warehouse everyday.

Following shows the way how Grameenphone used IOT technology in the trial period.



Is the market ready to accept IOT?

To find the readiness of the market to accept IOT products, I have conducted a small survey which comprised of 30 sample. The result showed that the market will be happily accept the product if their lives are accelerated by the use of it. The questionnaire and the result are given below.

Questionnaire for Launching IOT in Bangladesh

1. Age Group

a) 18-25 (b) 25-32 (c) 32- above

2. Income Range (in BDT)

a) 0-30,000 (b) 30,000-60,000 (c) 60,000-90,000 (d) 90,000 – above

3. How often do you buy smart devices?

a) Regularly b) Often c) Frequently

4. Would you like to purchase a product which is IOT enabled?

(a) Yes (b) No

5. How easily you handle technology gadgets?

(a) Very Easily (b) Find it difficult

6. How much more would you spend on an IOT product if it makes your life easier?

(a) 2 times more (b) 3 times more (c) not interested

7. Which telephone operator would you choose for the data service required in IOT?

(a) GP (b) Banglalink (c) Robi (d) Airtel (e) Teletalk

3.2 Results and Conclusion

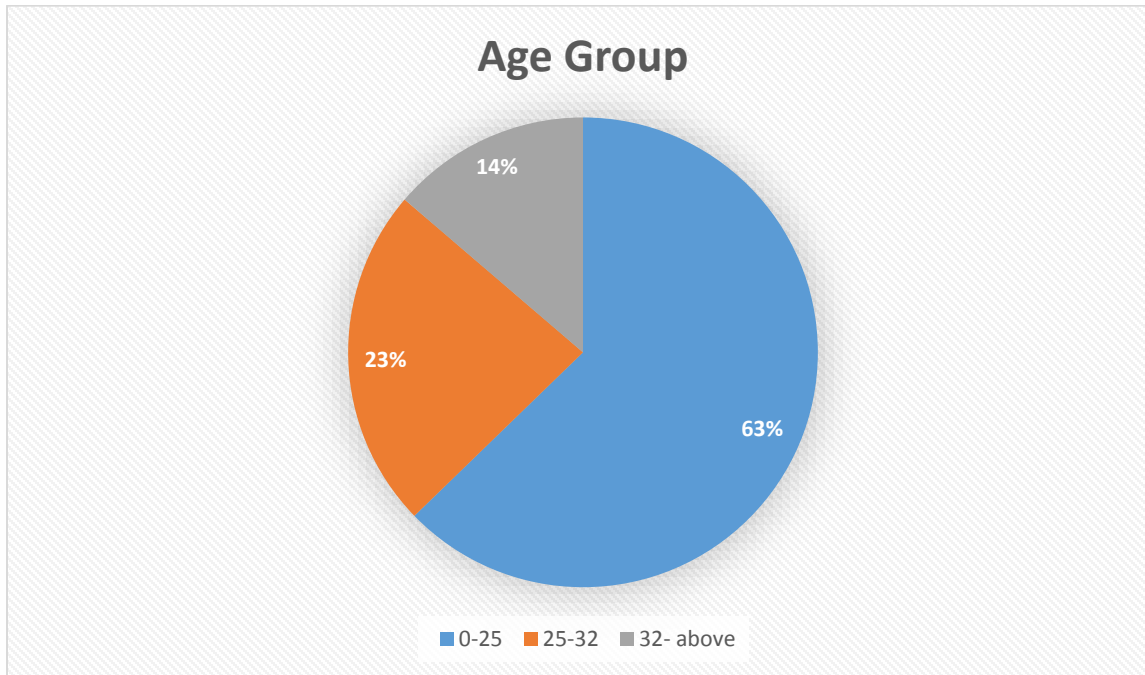


Figure: Age group of the correspondents

Out of the 30 correspondents, 16 of them were in the age group of 0-25 years, 6 of them were in the age group of 25-32 years and the rest 8 were in the group of 32 years and above.

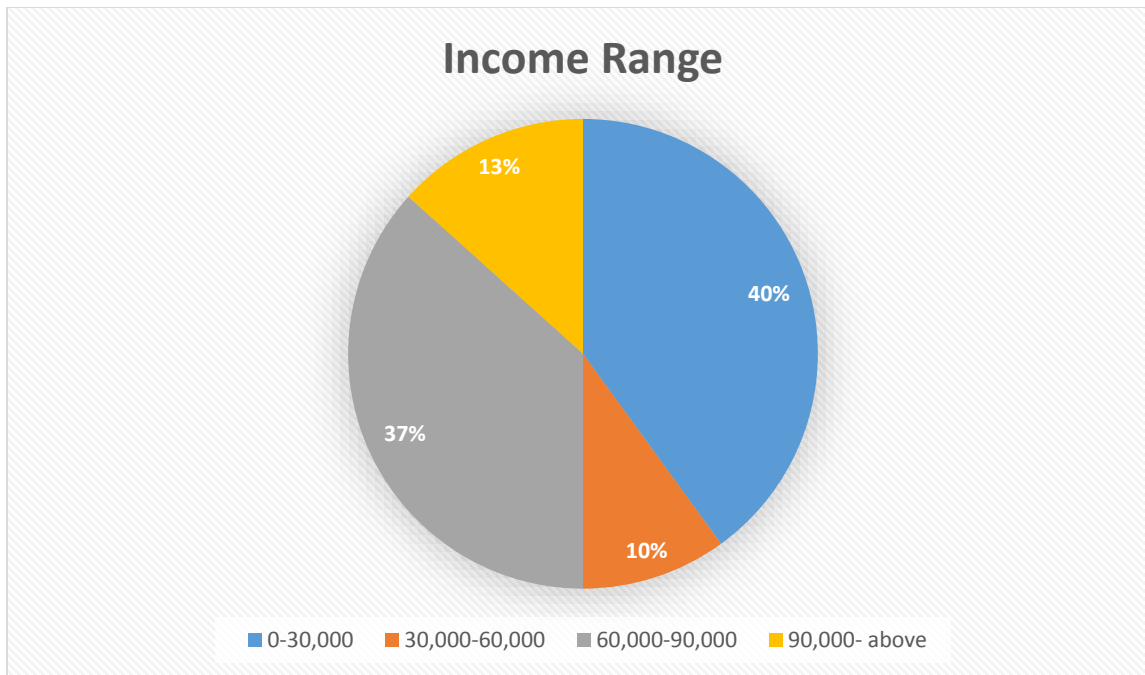
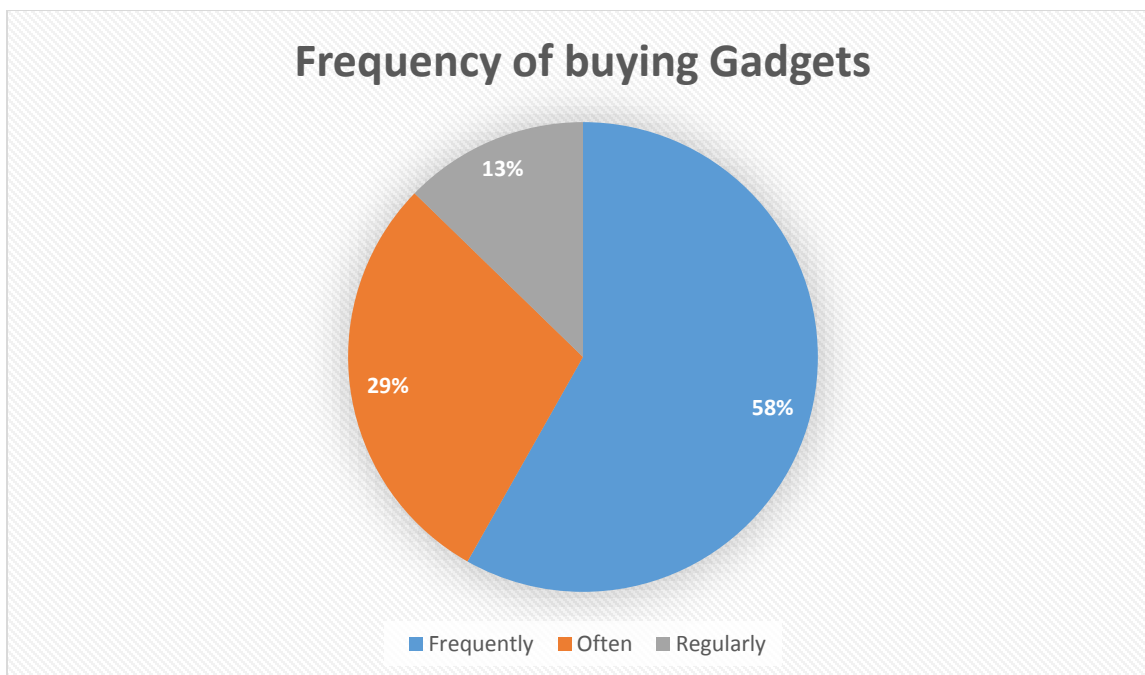
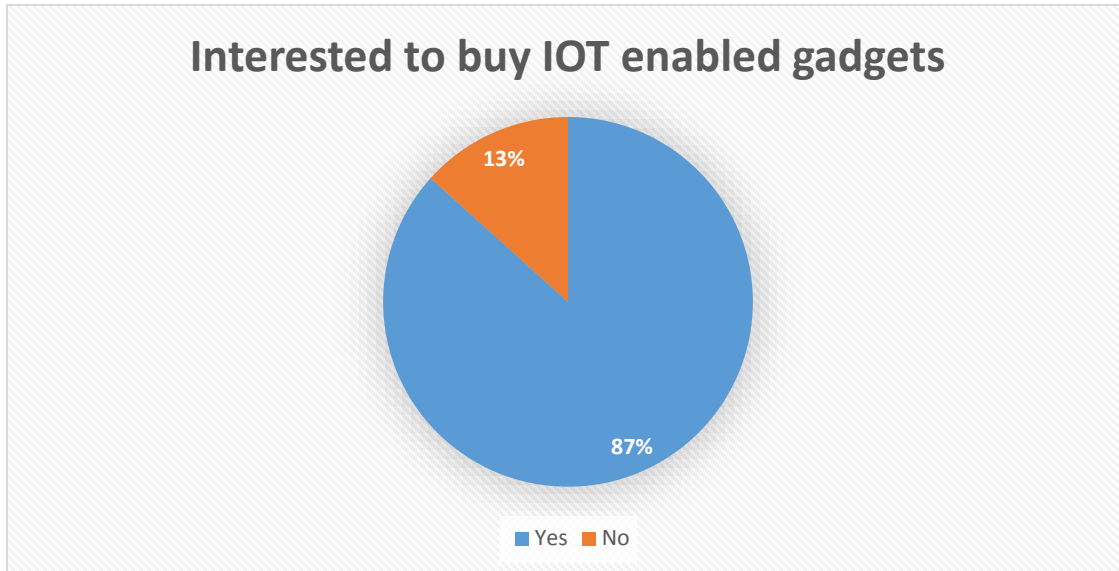


Figure- Income Level of the correspondents

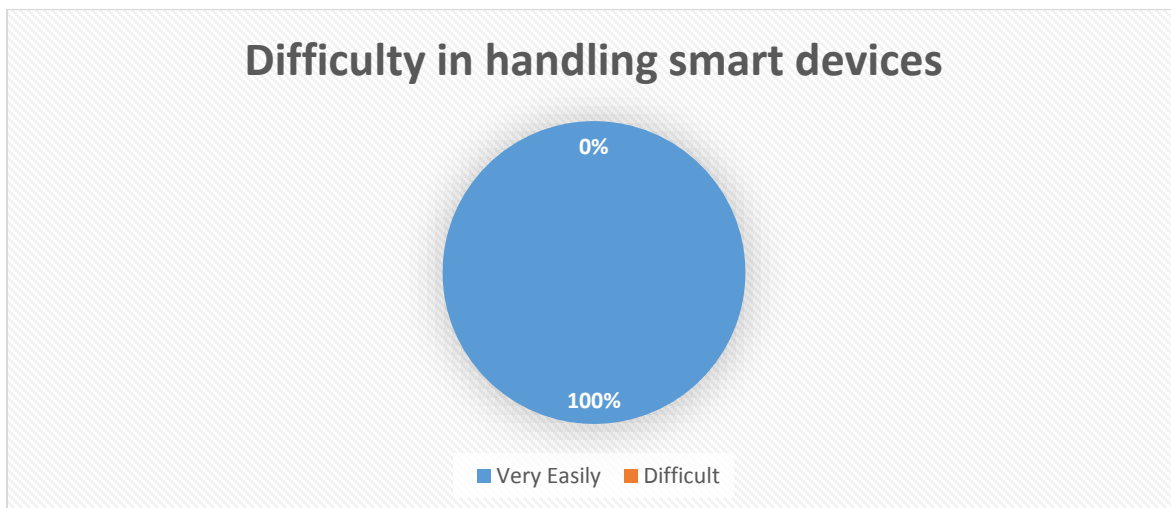
Out of the 30 correspondents, 12 of them had an income between 0-30,000 BDT, 3 of them had a range of 30,000-60,000 BDT, 11 of them had a range of 60,000-90,000 BDT and 4 of them had an income above 90,000.



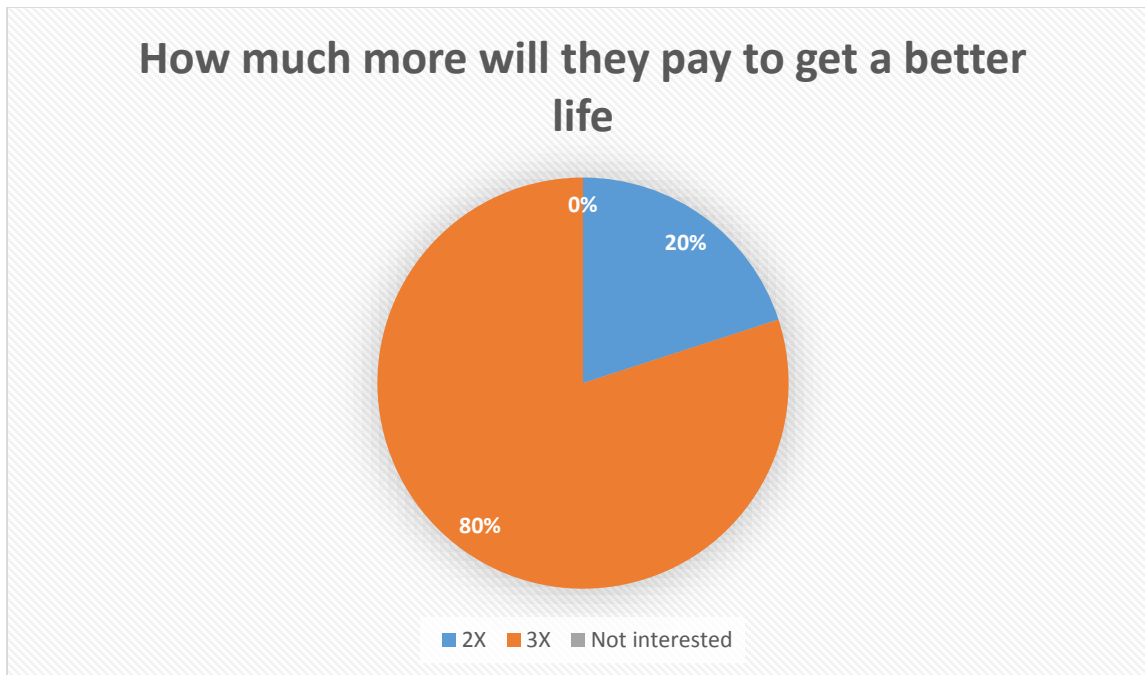
From the sample, 16 of them frequently buy gadgets, 8 of them often buy and 6 of them regularly buy gadgets.



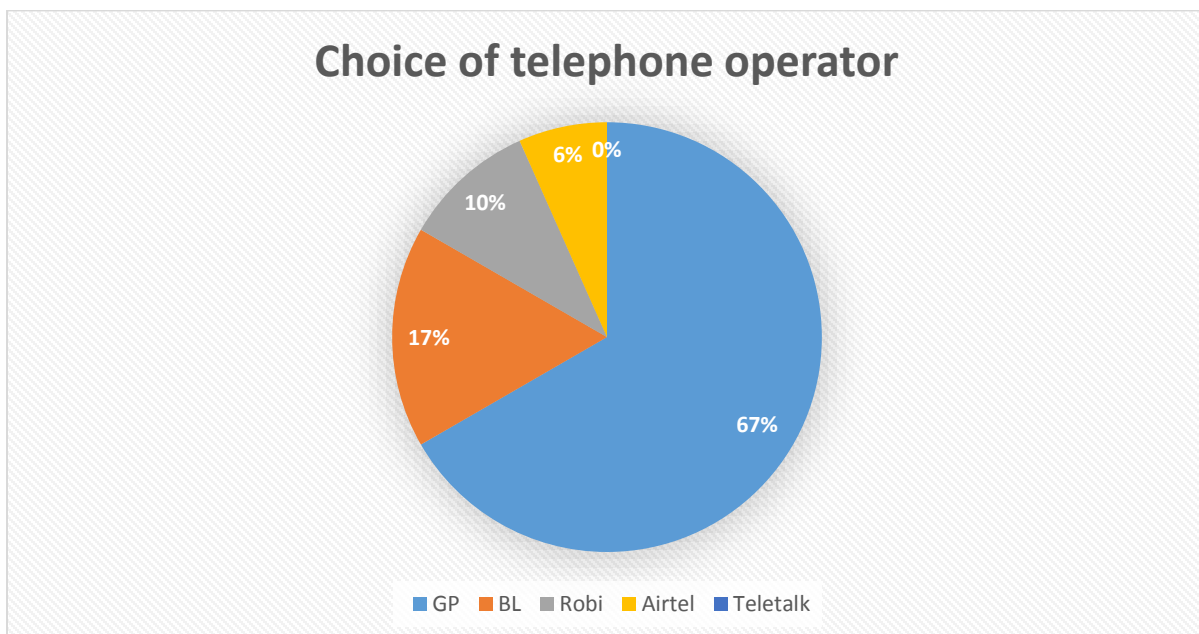
26 of the correspondents were interested to buy IOT enabled gadgets and only 4 of them were reluctant to buy IOT enabled smart devices.



All 30 of my correspondents find it very easy to operate smart devices.



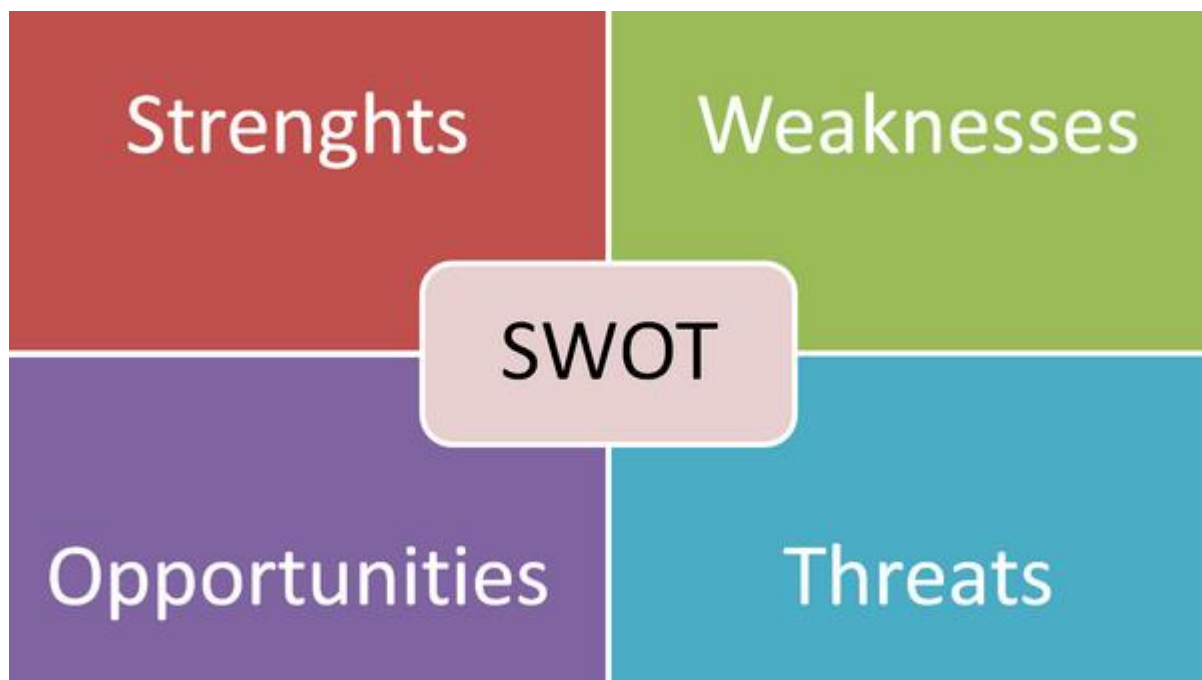
6 of the correspondents said that they will be willing to pay 2 times more to get a smart life and surprisingly more percent of the correspondents were willing to pay 3 times more to get a smart life.



Most of them chose Grameenphone to be their server for letting them use the technology of IOT. GP got 20 votes, Banglalink got 5 votes, Robi got 3 votes and Airtel got only 2 votes.

From my survey, it is very clear that the market is ready to accept this new technology and more than half of the correspondents chose Grameenphone to be their operator during the course of their IOT usage. So definitely, Grameenphone will be the winner if they can be the pioneer in this technology because people have faith in Grameenphone and they are ready to accept this technology, so of course it would be very profitable for them to implement this technology. People could easily speculate how easy their lives will be if they adopt the technology of IOT. Without a doubt, with the advantage of coordinated data preparing, modern items and regular articles will tackle savvy attributes and abilities. They may likewise tackle electronic characters that can be questioned remotely, or be furnished with sensors for recognizing physical changes around them. In the long run, indeed, even particles as little as dust may be labeled and organized. Such advancements will transform the simply static objects of today into recently powerful things, inserting knowledge in our surroundings, and fortifying the formation of inventive items and totally new administrations.

SWOT analysis if IOT is implemented by Grameenphone Ltd:



Strengths:

- **Can be modelled to reduce costs-** Like I said previously, a very basic example of IOT is to control the lightings of a house. This can be implemented in offices too. The organization can remotely control lighting in its structures. A large portion of the lights are computerized, with office lights turning on at 8 a.m. and constantly being used till 5 p.m. no matter if its needed or not. IOT can easily be installed and if no activity is seen within 15 minutes, the lights will be automatically turned off. This gives an extra security reward; if the framework demonstrates that the lights in the back of the distribution center turned on amidst the night, the organization can investigate whether it was on the grounds that a gatecrasher entered the building. What's more, if the lights are coincidentally left on toward the end of the night, they can be remotely closed down.
- **Environment Friendly-** Connected devices can be demonstrated to cut down carbon discharges and henceforth ensure nature. Smart cars and smart homes limit vitality utilization and subsequently, lessen carbon emissions. A late report by the Carbon War Room predicts that the Internet of Things can lighten carbon emission by 19%.
- **Innovation-** Innovation has effectively directed the innovation business towards the present zenith. The time of associating gadgets to understand a keen biological system empowers untold conceivable outcomes. Circumstances like these sprout advancement and outlook changing thoughts. IoT is still in phases of earliest stages, yet it is sheltered to say that extraordinary things can be normal from it sooner rather than later.
- **Ease of use-** How about we not preclude that all from claiming us need to be celebrated lounge chair potatoes and control the gadgets around us with a solitary begin from a solitary spot. The Internet of Things will have the capacity to associate devices with each other empowering them to convey information. This diminishes our work and enhances the general way of life. Along these lines, we can plan to say farewell to numerous remotes and switches soon.

Weaknesses:

- **Security-** There is a high chance that the hackers will intrude in our personal lives and can get hold of the sensitive information given the vulnerability of the infrastructure of internet these days.
- **Data challenge-** The data needed for this technology should be put away and broke down for acquiring data about specific parameters. When all devices are associated, the measure of information gathered will increment manyfold. Accumulation, investigation and capacity of every one of that information is a strenuous undertaking and we require better foundation to deal with the huge information traveling for this purpose.
- **Massive investments-** Organizations wishing to end up early movers in the IoT market need to contribute a great deal of cash to make connected devices. Aside from the generation costs, there is an immense cost appended to the Research and Development of the items too. This high cost may scare new market participants. Organizations need to stay ready to profit from such ventures after some time.
- **No specific road map-** Associations wishing to wind up early movers in the IoT market need to contribute a lot of money to make related devices. Beside the era costs, there is a massive cost annexed to the Research and Development of the things as well. This high cost may unnerve new market members. Associations need to stay prepared to benefit from such ventures after some time.

Opportunities:

Medicinal services Applications: Paradigm-moving to the field of individual human services is the plan that is driving the transformation of associated gadgets. There are a few open doors for engineers to develop and make answers for make our lives less demanding. Late improvement of the Health Kit and Research Kit by Apple is only a stage forward toward enhancing human services. With such a large number of thoughts livening up from time to time and the condition of current innovation, anything is conceivable. As potential clients, this is a win-win circumstance for us.

Wearables: Smart watch, savvy glass and shrewd garments, every one of them convey the "smart" tag with them. Today, watches can record our day by day action, our workout standard and considerably more. Savvy glasses are coming up to make everything around us intuitive or into visualizations. This is driving us towards a period where all that we wear and hold can think for its own.

Framework Management: The base administration part is another field that can benefit as much as possible from IoT. Wearable gadgets like Google Glass and brilliant watches have as of now been sent by seaward penetrating organizations and development organizations. Microsoft's Holo Lens guarantees to assume a critical part in the field of base.

Making PCs more ubiquitous : This fair goes to demonstrate that designers are meaning to incorporate PCs in our lives in a fine, mind boggling way such that we don't feel them as isolated elements. The late surge of keen wearables intends to understand the fantasy to make processing totally universal among us.

Energizing venture opportunities: IoT carries with it a variety of potential speculation opportunities. IoT has a tremendous upside potential for individuals hoping to put resources into chip making organizations, arrangement making.

Threats:

Vulnerability to hackers : When we consider programmers, we envision truly insightful people working enthusiastically on their Alienwares to cut down a site. Presently, with associated devices in the frame, these programmers will have the capacity to control our daily lives. This open

welcome to programmers to attempt to control each gadget around is a genuine danger for IoT and it obstructs clients moving to connected devices.

Not Meeting People's Expectations. Individuals have reasonable and over-the-top trusts from IoT. These overstated desires are a risk to IoT if the items neglect to experience the client desires.

Absence of interest because of high cost: Ofcourse, smart watches, glasses or even lights are not very cheap. A pack of 3 smart bulb is right around three times the expense of customary ones. It is awesome for us that organizations are creating associated gadgets, yet they will be of no utilization if the proposed target group of onlookers is not ready to bear the cost of them. Extensive offering costs is a major risk approaching over IoT and its development.

Chapter 4- Conclusion

Internet of things (IoT) – holds huge guarantee for speculation and advancement that will mean wide societal advantage and enhancements in innumerable parts of our lives.

At its most essential, the Internet of Things is a mark for a future in which standard, ordinary things – from family unit machines to autos to mobile devices – are equipped with sensors and associated with the Internet to share their information. Seen all the more extensively, the IoT will offer ascent to a whole environment for interconnected devices, articles, frameworks, and information all cooperating. In this new world, most correspondences will be machine-to-machine (M2M), and there will be a nonstop trade of data between gadgets, sensors, PCs and systems.

While the potential for advantages in an IoT world are broadly perceived, various approach issues affect the IoT crosswise over business sectors and utilizations, for example, interoperability, protection, security and range accessibility, among others. In my opinion, Grameenphone can be the pioneer in the telecom industry of Bangladesh to use IOT technology in their business and gain more appreciation from the customers followed by revenue.

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