

*DEDICATED TO
OUR
PARENTS*

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ACKNOWLEDGEMENT

In the name of almighty Allah

We the members of Group-Random, 4th year B.S. Hons' , Department of Statistics, Biostatistics & Informatics, University of Dhaka ,want to mention the contribution of all those who have inspired and guided us to complete this project report successfully. First of all we would like to convey our indebtedness to our supervisor MD. Ahsan Uddin, Assistant professor, Department of Statistics, Biostatistics & Informatics, University of Dhaka, for his inevitable and strict supervision, constructive criticism, valuable suggestion, cordial help and strong support in carrying out our research work. We also reveal a debt of gratitude to him for correction without which it would not be possible to complete this report timely.

We would like to thank the personnel of offices of different telecom organizations who helped by giving their opinions and information about their operator. We are also grateful to the all the people who served as the respondent for our study.

We are also grateful to the librarian of our Department for his co-operation in supplying relevant records. We want to give special thanks to the members of others group specially the group leaders for their suggestions & moral support.

Finally, we would like to thank our chairman Professor Nitai Kumar Chakrabarty for his kind support and encouragement to carry out this research. We express our special thanks to those honorable professors & lecturers of our department who helped us by giving their valuable opinions about our topic.

Date: April 15, 2012

GROUP-RANDOM

ABSTRACT

Telecommunication has a significant social, cultural and economic impact on modern society. The companies have used telecommunications to help build global business empires. Now telephone and technologies like short message service (SMS) also had a significant impact on social interactions. Also in cultural terms telecommunication has increased the public's ability to access to different means of entertainment. So, it is very pertinent topic to conduct a research on. With this view, it is essential to investigate the present condition of the telecom companies of Bangladesh, consumers' ground of preference for respective mobile operator, comparison of the companies, their role in advancement on the economy of Bangladesh and consumers' view on this. So, we (members of Random group) have conducted a research on this topic with the ideas discussed above. The study was conducted between January 2012 & April 2012. We used convenient sampling for data collection. We collected data from both the consumers & offices of telecom organizations. 292 respondents have been interviewed and data was collected from all 7 telecom organizations. We have gathered both qualitative and quantitative information in each case. After data collection was finished we have done the data processing section. Then we have made univariate & bivariate analysis of data. In univariate analysis we have showed frequency distribution table & graph to present some comparison. In bivariate analysis section, we have performed chi-square test in addition to cross table and graph. In chi-square table we have identified the association between different variables. In our study we have also fitted some binary logistic model. Our findings are presented later in this report. At last we may recommend some potential measures to overcome the existing problems for the betterment of consumers as well as telecom organizations.

CHAPTER 1

*Introduction &
Objectives*

1.1 INTRODUCTION

The need for the Communications over the longer distance has become the most important aspect of the human lives. The term telecommunication is applied on the number of things such as internet, mobile phones, VOIP, satellite systems, radio, television, LAN and satellite phones. It is a great medium for the distant educational resources, business promotion, voice communication and entertainment. It has reduced the need of physical travel as with its power we can communicate with each other through the video conferencing, emails, chats, and internet phone calls. It has made the people from all around the world to come closer to each other. It has great impact on the large number of the businesses. The prospect is not different for a developing country like Bangladesh.

The invention of telephone was very significant for human civilization, the first step towards developing means of communication. In our study we mainly want to learn about the proposals of telephone companies to common people and the government of Bangladesh. Bangladesh is an Asian country that came into existence in 1971. Bangladesh Telegraph and Telephone Department was set up under the Ministry of Posts and Telecommunications to run telecommunication services in Bangladesh on the birth year of Bangladesh. In the telecom sector earth shaking changes cropped up when Bangladesh government allowed private sector participation in telecom sector by granting the permission to operate as a private service provider in 1989. This permission has led many non-government telecom organizations to Bangladesh.

Now we all know that we have six mobile phone organizations and a single landline company in Bangladesh. So, the consumers have a scope to choose the most suited operator for them. It is also a matter of concern that whether the organizations run by government (BTCL & Teletalk) are struggling more to survive the competition compared to non-

government organizations. The upcoming trend in global telecom is offering the opportunities in our life that can make every day life even easier. So we want to study the role these companies are playing in the improvement of economical and social aspects of Bangladesh. In an addition we would like to investigate consumers' opinion and suggestions on these fragments.

1.2 PROBLEM STATEMENT

Nowadays, the phone is not only used for making calls, among many other functions it is used for communicating through text-messages and so called multi-media messages, as well as to connect us to the internet. So it is very relevant to study the present condition of telecom organizations. As we have already discussed the existing competition in the market, we are interested to identify the ground of preference of particular mobile operator. We also have a aspiration to observe the comparison between government and non-government telecom organizations. There have been researches about telecom organizations separately but none of them has provided the reasonable information about the requirement of consumers. So, we have conducted a research to investigate the present scenario and to find out some probable actions to solve the presented problems.

1.3 OBJECTIVES OF RESEARCH

The prime objective of our study is- "Assessment of different telecom organizations in Bangladesh and potential approaches to expand their role in the financial system of Bangladesh."

In brief the objectives of our study may summarize as follows:

1. To examine the current position of all telecom organizations.
2. To evaluate different telecom organizations.
3. To establish the basis of preference for particular organizations.
4. To verify the deficiencies of government telecom organization.
5. To find out the required actions to overcome the existing problems.
6. To describe the impact of the advancement of organization on the economy of Bangladesh.
7. To recommend some constructive propositions for the desired improvement of the organizations.

1.4.1 RESEARCH HYPOTHESIS

Our research hypothesis is that,

There is a high prevalence among consumers of mobile operators and landline users. There is an association between study variable (age, education, income, services and facilities provided by telecom organizations) and preference of particular telecom operator.

1.4.2 RESEARCH QUESTIONS

As a part of our study has qualitative study, we therefore may outlay some research questions as following:

- What are the main reasons for preferring particular telecom organization?
- What are the multidimensional problems in telecom system?
- What are the necessary actions to overcome telecom related problems?

1.5 LIMITATION OF THE STUDY

While conducting this research we faced following hindrances:

1. For the lack of enough time & financial support our research study has gone through some difficulties. In this research study our sample size is small compared to our target population.
2. There was more scope to study relative factors in this research, but it was not possible for us to achieve those findings due to short time spend.
3. In some cases we had to use secondary data which were not up to date compared to primary data.
4. Here we could not use proper sampling technique as we did not have a good sampling frame. For this reason we had to use judgment sampling..

CHAPTER 2

Literature Review

Before embarking on any research study, to avoid repetition it is necessary to ascertain whether same study has been done elsewhere. Review of related literature gives the necessary information required to conduct his/her research in a proper manner. These include books, journals articles, and online pages. Mobile phone has become an indispensable part of Bangladesh's everyday-life and has made a "safe haven" in one of our pockets much like our wallet that we never want to leave at home while we head for our work! Thanks to the telecom-revolution and its relentless evolution that together have made it possible even in developing countries like Bangladesh. This is the dominant device that we now express ourselves through, get our work done and share our pains and pleasures with.

1. Rana Alamgir & Nitin Anand in their report, "A study of Bangladesh Telecom Market"¹, mainly detected "How suitable is Bangladesh telecom market for an internationalized telecom company (TeliaSonera), and what could be a preferable entry strategy for such market?" The purpose of this paper is to investigate Bangladesh telecom market in order to find out the potentiality of the market which could be considered by the company to think about starting a business there and also to determine a suitable entry strategy from the company depending on the factors have been investigated.
2. Raiyan Mahmood Moon, Shaffat Fahmi and Sohib Murtuza in their report "Mobile telecom industry in Bangladesh"² analyzed that, this mobile telecom industry on the basis of its customer, competitors, industry perspectives, environmental analysis, marketing perspectives and finally they have made some recommendations that they believe would contribute to the further growth and expansion of the industry. Each of the sections mentioned assumes an in-depth analysis. For example, in customer analysis, segments, buying motives and unmet needs have been addressed. Similarly, in competitor analysis, we have identified the major competitors both direct and indirect ones that are affecting the industry, and figured out the substitute products which can possibly invade its market share. In industry perspectives, we have distinguished the very characteristics of the industry,

including products and markets, and identified the industry size and growth (both actual and potential) on the basis of historical information and future projections.

3. Ifty Islam in his report ,“ The Bangladesh Telecom Sector:Challenges & opportunities”³ mainly concentrates on the economical impact of telecom in Bangladesh and its opportunities and challenges. It includes that telecom are a major contributor to National fiscal Revenue and so it is in the interest of the Govt. to keep the sector expanding . And italso mentioned that t he VAS contribution to revenue is upwards of 20% in emerging markets such as China, even without introduction of 3G, as compared to sub 10% in India. For Bangladesh it is key to encourage the development of a robust VAS ecosystem in areas such as Agricultural VAS, Mobile Banking, M-Health and M/E-Commerce.
4. In a report of NEWSTODAY “TELECOM SECTOR IN BANGLADESH”⁴ ,has mentioned that the almost exponential growth in the Telecoms sector in Bangladesh in the last 5-10 years has had the same transformative impact on Bangladesh's economy as the growth of Ready Made Garments and Remittances. They would emphasize at the outset that the bulk of this report focuses on the Mobile Phone Operators given that they form the dominant part of the Telecoms sector by revenues, employment and coverage.

As of September 2010, the BTRC has reported that there are 65.14 million mobile subscribers in Bangladesh and with competition in the sector intensifying, one would expect the rate of growth to remain strong going forward.

5. Fahim Hussain in his research paper, “Telecom Regulatory Environment in ‘Digital Bangladesh’: Exploring the Reasons Behind Poor sector Specific Performance” explores the key reasons behind the poor performance of the regulator as well as the policymakers in major Telecom sectors of Bangladesh. Telecommunication industry is considered to be one of the key enablers for the present government’s ‘Digital Bangladesh’ vision. The government has laid out strategies in important national priority areas (e.g., education, healthcare, agriculture, etc.) to integrate

telecom based solutions for ensuring a sustainable future growth. But in reality, the government is not following up its words with actions. Based on the findings from LIRNEasia's Telecom Regulatory Environment Survey of 2011 among the key industry stakeholders, the paper analytically explores the reasons behind Bangladesh's below par achievements in Mobile, Fixed, and Broadband industries. Failure in developing an effective policy framework, absence of an independent regulatory body and long term planning, and de-liberalization of telecom regulatory process with high level of uncertainty have been identified by this research as some of the primary challenges in the Bangladeshi telecom sector. In order to address the challenges identified, the paper proposes a set of recommendations in the areas of licensing process, universal service obligation, anti-competitive practices, and quality of service. Establishment of an effective and independent regulatory body, market based approach for international connectivity, addressing the bottlenecks to ensure better QoS (across the industry), transparent licensing process based on market value, private participation in USO related activities- are some of the major ways identified by this research, which should help Bangladesh to overcome the present policy-implementation disconnects and positively assist towards establishing a true, equitable 'Digital Bangladesh'

6. Research and Markets Offers Report: Bangladesh - Mobile Market Overview, Forecasts, and Broadcasting [Professional Services Close - Up] has announced the addition of the "Bangladesh - Mobile Market Overview, Forecasts, and Broadcasting" report to its offerings. In a release, Research and Markets noted that report highlights include: Following deregulation of the mobile market and the entry of two new operators (bringing the total number of mobile providers to five) in 2005, Bangladesh has witnessed a period of booming growth in mobile subscriber numbers. While growth has slowed slightly over the last two or three years, the market continues to expand in a healthy fashion. Foreign investment interest has also continued to be high. This report describes how the mobile market is growing and the impact this growth is having on the developing nation, as well as providing an outline of the main players. The report also has a brief overview of the TV

broadcasting sector. The first 3G licence in the country had been awarded to state-owned operator Teletalk, but the licensing process had become bogged down in red tape; other operators keen to get 3G licences start; overall mobile subscriber growth remains strong (nearly 30 percent annually)as penetration continues to rise; government reduces SIM tax from BDT800 to BDT606 in what is clearly a major development for the market; mobile ARPU starting to increase after bottoming out' in 2009; Companies covered in this report include: -GrameenPhone -CityCell (PBTL) -Orascom Telecom Bangladesh (formerly Sheba Telecom) -Banglalink -Robi Axiata (formerly Aktel) -Teletalk (Bangladesh Telegraph and Telephone Board) -Airtel Bangla (formerly Warid Telecom).

7. From telecom market research, the report, "Internet in Bangladesh", the first connectivity of internet was only in 1996. Though It was somewhat late, over the past few years the growth is rapid. The government's high internet tariff is impeding the growth of this sector. Recently the government is decided to reduce the tariff 50%.^[1] As of 2005 more than 180 Internet Service Providers are operating in the country.^[2] ISP's are regulated by the Bangladesh telecommunication regulatory commission (BTRC).Also, this paper announced that he number of internet users in Bangladesh as of March 2009 is over 600,000 compared to 100,000 in 2000.^[3] However, only 0.3% of the population uses the internet and thus making Bangladesh the lowest usage percentage per population of the internet in the world with the exception of North Korea, Myanmar and Sierra Leone.^[4] But on April, 2010 Akhtaruzzaman Manju, president of Internet Service Providers' Association of Bangladesh, told Xinhua that the country's six cell phone operators and Internet Service Providers have so far provided over 800,000 internet connections. "We've estimated that nearly 10 million people in the country are using 800,000 internet connections on sharing basis," he said, adding the number of internet users in the country is increasing yearly by around 15–16 percent.^[5] The number of Internet subscribers in Bangladesh is likely to reach 18.3 million by the year 2020-translating to a 32 percent household Internet penetration at around the same time", says a study by an international research group. "This increased internet

penetration would resulted in 2.6 per cent contribution to the country's GDP by 2020 while creating 129 thousand more jobs by the same year" the research added^[6]. About broadband internet access, the report include that , though broadband internet access is available it charges high for high speed connection than other south Asian countries, though this is rapidly changing. Broadband internet and e-commerce in Bangladesh is slowly progressing.WiMAX service is now available from some internet service providers. In Bangladesh Broadband is legally defined as 128/128 kbit/s, which is not in line with ITU.^[7] Therefore most of the Broadband internet services and also subscribers are using bandwidth that may not be considered a broadband in other countries and may not be broadband in international standards.

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7. Telecom Market Research report, "Internet in Bangladesh",7th April.

Chapter 3

Methodology

3.1 METHODOLOGY CONSIDERATIONS

Methodology in conducting any research work needs a very careful consideration. Methods should be such that it would enable the researcher to collect valid and reliable information and to analyze data to arrive at a correct decision. To collect data from field two questionnaires were developed in our study, one is for consumers of telecommunication service, and the other is for telecom organizations.

3.2 THE STUDY TYPE

This study is both qualitative and quantitative study on the current situation of telecom system to find out the basis for particular characteristics, comparison of different telecom organizations regarding demographic prospect as well as the outlook of consumers' on those organizations and some feasible steps to recommend for better telecommunication service.

3.3 SURVEY AREA

The study is based on telecommunication service in Bangladesh. So, all the consumers of telecom service are considered as study population who reside in Bangladesh dispersedly. So, almost the whole country is the survey area. It is conducted by taking samples from some rural and urban areas in Bangladesh.

3.4 RESPONDENTS

The respondents were of two classes-

- 1) Consumers of telecom service, and
- 2) All the existing telecom organizations.

3.5 SAMPLING METHODOLOGY

The method of sampling used in this study was convenience sampling. Non-probability samples that are unrestricted are known as convenience sampling. Though it is less reliable, this method is applied in this study because of low cost and less time. We also were dispossessed of a perfect sampling frame. Also, in a qualitative study that we have as a segment in our study, often it is not feasible to use probability sampling. So, our sample of this study consists of respondents living in an easily accessible locality and those who are willing to respond. We did not use any sampling in the case of collecting information from offices of telecom organizations. We have collected every available information regarding telecom organizations directly or indirectly.

3.6 SAMPLE SIZE DETERMINATION

Here we use the following formula for sample size determination,

$$n = pqz^2/d^2$$

Where,

p=assumed proportion in the target population estimated to have a particular characteristic.

$$q=1-p$$

$$z=1.96$$

$$\alpha=0.05, \text{ where } \alpha \text{ is the level of significance}$$

z is the standard normal deviate whose value is 1.96 at level $\alpha=5\%$

d=the degree of dispersion

Here,

$$p=0.5$$

$$q=0.5$$

$$d=6\% \text{ or } d=0.06$$

$$z=1.96 \text{ at } \alpha=5\%$$

$$n = pqz^2/d^2$$

$$=1.96^2 * 0.5 * 0.5 / 0.06^2$$

$$=266.778$$

$$\sim 300$$

Here we have taken 292 samples for data analysis.

3.7 METHODS OF DATA COLLECTION

We used two different questionnaires for general consumers and offices of different telecom organizations. Both primary and secondary data were collected in this study

3.7.1 PRIMARY DATA

We have used Personal interview and telephone interview methods of data collection to achieve information from consumers. We have visited offices of telecom organizations and have gained our desired information from relevant personnel of those offices.

3.7.2 SECONDARY DATA

Some Secondary data will be collected from-

- BTCL annual report 2009-2010
- Teletalk office information has been collected from published online articles regarding Teletalk.

3.8 TECHNIQUE OF ANALYSIS OF DATA

After having entered the data into the computer and necessary correction, all statistics analysis were done by well known statistical software SPSS. Besides, SPSS package program, well known package like MS word, MS excel were also used for various purposes such as report writing, graphical representation, interpretation and conclusion.

3.9 VARIABLES

The main purpose of the study is assessment of different organization in Bangladesh and potential approaches to expand their role in the financial system of Bangladesh.

In our study our variables for consumers of telecom service are- Age, Sex, Occupation, Education, Relationship status, Economical condition, Location, Income Level, First operator, Reason behind using the first operator, Number of used operator, Current operator, previous operator, Reason for changing operator, Reason for using current operator, Network quality, Number of activated operators at a time, monthly usages, Opinion about overall charges, satisfaction with value added service, Satisfaction with service in which certain conditions are applied, Necessity of repeated informative message, Necessity of special offers provided in many occasions for any interval of time, satisfaction level by using internet in mobile Use of dial-up connection, satisfaction level by using dial-up, Opinion about complaint management or problem resolution process of

customer care, Availability of land line in home, duration of connected with land line, available number of land lines in home, Number of calls made by using land line per day, Preference while communicating with friends or relatives on abroad, Reason behind preference, Opinion about advertisement quality of operator, Opinion about the brand image, benefits receiving from mobile operator, benefits receiving from land line, Problems while using current mobile operator, Suggestions for solving these problems, Problems behind using land line, Suggestion for solving these problems, Opinion on increasing crime associated with cell phone, Impact of using cell phone on young generation, Type of impact of using cell phone on young generation, positive side of telecom system, Roll in development sector, Overall satisfaction level , development needed from land line, development needed from mobile operator, Preference of telecom system, Reason behind preference, Total satisfaction level.

In our study our variables for Telecom organizations are-

Number of regions of BD in which service is available, Number of subscribers possessed ,Types of produced product, Maximum Fnf number offered, Number of employees in company, Opportunity of part-time Job , Number of countries in which international roaming facility is provided, Number of customer care centers, Number of customer care points, Amount of tax pay to the Govt. of BD, Amount of income of the organization in per year,

Chapter 4
Briefing on Telecom
Organization

4.1 TELECOM INDUSTRY

World telecom industry is an uprising industry, proceeding towards a goal of achieving two third of the world's telecom connections. Over the past few years information and communications technology has changed in a dramatic manner and as a result of that world telecom industry is going to be a booming industry. Substantial economic growth and mounting population enable the rapid growth of this industry.

In recent years, significant advances have been made in the telecom sector, one of the key driving forces of economic development. In this sector, influenced by numerous parameters such as GDP (Gross Domestic Product), education, qualified workforce, foreign trade volume, incentives, and national strategies, significant differences are observed in telecom infrastructure and the use of telecom services among various countries and regions.

The introduction of telecommunication industry has been pretty late in our country compared to that of the neighboring countries. This is very much attributable to the political unrest in early 1990s. Though the first telecom company, Citycell, was introduced ages ago, the device has not become so pervasive until 1997, the year when the biggest telecom of the country, GrameenPhone (GP) hit the market with its GSM technology. Since then there was no looking back. The industry grew at such an incredible rate in just a decade that anyone could hardly imagine. Now there are a number of players battling so hard for their respective market share and the consumers as well as the economy benefitted tremendously from this fierce competition. The following sections elaborate on almost every aspect of the industry, ranging from how it became so big, what fueled the growth to what are the risks and opportunities that it currently renders for the players.

The telecom industry is one of the few technical industries that have intense internal competition. With majority of the telecom companies of the country being multinational subsidiaries, who have vast finances at their disposal, and the Bangladesh market

providing a population of roughly (and unofficially) around 200 million many of whom are intent of carrying more than one subscription, competitive price wars are ever present As mobile telecom is mainly a service industry, the main service of the industry is voice transfer service which is the heart of the industry. The second important service provided by this industry is the data transfer service i.e. Internet. Internet is provided in the form of EDGE & GPRS by the operators. Text message (SMS and in some cases Media messages or MMS) is also an important service. To get the services, customers need to buy SIM card or RIM card.

The tangible products of the industry are mobile sets & Internet modems. Those are not produced by the mobile operators but various mobile set & modem manufacturers make it for them.

Recently various kinds of utilities bills can be paid by GP & Teletalk. After sales & customer service are also important services provided by mobile operators. Mobile phone has become an indispensable part of Bangladesh's everyday-life and has made a "safe haven" in one of our pockets much like our wallet that we never want to leave at home while we head for our work! Thanks to the telecom-revolution and its relentless evolution that together have made it possible even in developing countries like Bangladesh. This is the dominant device that we now express ourselves through, get our work done and share our pains and pleasures with.

The Internet user – While Internet Connectivity is now incorporated (or optionally incorporable) in almost all products of the industry, there are some users who are turning to telecom operators solely for Internet connectivity through the use of mobile (or modem) devices. The primary attraction that operators provide to this segment is the portability of such devices. In an era of information on the go, the need for wireless connectivity to the Internet is in high demand, and portable wireless connectivity devices such as Citycell's

ZOOM and GrameenPhone's & Banglalink's EDGE modem have taken advantage of the situation.

In our neighboring country, India, 3G mobile service had been introduced in 2008. Bangladeshi people also seeking for it as it allows simultaneous use of speech and data services and higher data rates. In our country, data transfer rate is really slow. People often face buffering problems while using Internet, and so people want higher data transfer rate. People also want 3G because of its higher security features as it allows the UE (User Equipment) to authenticate the network it is attaching to, the user can be sure the network is the intended one and not an impersonator. As people are continuously being exposed to news of technological updates of other countries, the demand is being created for 3G mobile service.

4.2 DIFFERENT TELECOM ORGANIZATIONS:

4.2.1 GOVERNMENTS:

➤ BTCL

BTCL or Bangladesh Telecommunications Company Limited, formerly BTTB, began operations on July 1, 2008. The Bangladesh government initially owns all shares of BTCL but it would offload shares in the next one year for public. The value of BTCL is estimated to be at Tk 15,000 crore. BTCL has a total of 12,636 officials and staffs.

In pursuance of an ordinance promulgated by the president on 24 February 1979, the department was restructured into Bangladesh Telephone and Telegraph Board (BTTB) with a mandate to provide basic telecommunication services throughout the country. Now it has become BTCL.

BTCL provides land-line telephone services in the urban areas, domestic long-distance calling and international services. In 2004, Bangladesh Government issued a number of PSTN licenses but they were barred to provide service in the lucrative Dhaka market (which account for majority of the nationwide market). This monopoly of BTCL was broken when 6 other operators started to receive their licenses from 2007. These 6 operators include PeoplesTel, RanksTel, National Telecom Limited, WorldTel, Dhaka Phone and Telebarta.

BTCL provides dial-up Internet access in all 64 districts of the country, making it the most-accessible Internet service provider in the country. As of January 2009 its total dial-up subscriber is 32,433^[citation needed]. Since the beginning of 2007 BTCL have improved its Dial-up Internet service for better customer satisfaction. It also handles the .bd domain.



Internet services

BTCL has also started providing consumer-level broadband Internet services under the branding of BCUBE. The service is provided through ADSL2+ technology.

BTCL has outsourced its BCUBE sales and customer support to EMEM Systems Ltd.

➤ TELEALK

Teletalk Bangladesh Limited brand name "Teletalk"(Bengali: টেলিটক) is a GSM based state-owned mobile phone company in Bangladesh. TeleTalk started operating on 29 December 2004. It is a Public Limited Company of Bangladesh Government, the state-owned telephone operator. TeleTalk provide GPRS and EDGE internet connectivity and now waiting for the license from Government to start the 3G which is the latest cellular information service .Teletalk is the first operator in the country that gave BTTB (now BTCL) incoming facility to its subscribers.

The mission statement of Tele Talk is "Desher Taka Deshey Rakhun" ("Keep your Money in your Country")

TeleTalk is the 6th largest mobile phone operator in Bangladesh with 1.147 million subscribers as up to July, 2010 [1].



Numbering Scheme

Teletalk uses the following numbering scheme for its subscribers:

+880 155 N₁N₂N₃N₄N₅N₆N₇

4.2.2 NON-GOVERNMENT:

➤ GRAMEENPHONE

Grameenphone widely known as GP, is the leading telecommunications service provider in Bangladesh. With more than 32 million subscribers (as of June 2011), Grameenphone is the largest cellular operator in the country.

Grameenphone received a license for cellular phone operation in Bangladesh from the Ministry of Posts and Telecommunications on November 28, 1996. Grameenphone started operations on March 26, 1997, the Independence Day in Bangladesh.

Grameenphone originally offered a mobile-to-mobile connectivity (widely known as GP-GP connection), which created a lot of enthusiasm among the users. It became the first operator to reach the million subscriber milestone as well as ten million subscriber milestone in Bangladesh.



Numbering scheme

Typical GrameenphoneSIM Card

Grameenphone uses the following numbering scheme for its subscribers:

+880 17 ABCDEFGH

➤ BANGLALINK

Banglalink (Bengali: বাংলালিঙ্ক), is the second largest cellular service provider in Bangladesh after Grameenphone. As of November, 2009, Banglalink has a subscriber base of 12.99 million.^[3] It is a wholly owned subsidiary of Orascom Telecom.

Banglalink had 1.03 million connections until December, 2005. The number of Banglalink users increased by 257 per cent^[4] 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 August 20, 2008, Banglalink got past the landmark of 10 million subscriber base.^[5]



Numbering scheme

Banglalink uses the following numbering scheme:

+880 19 N₁N₂N₃N₄N₅N₆N₇N₈

Where, **880** is the ISD code for Bangladesh and is needed only in case of dialing from outside Bangladesh.

19 is the access code for Banglalink as allocated by the Government of Bangladesh. Omitting +880 will require using 0 in place of it instead to represent local call, hence 019 is the general access code.

N₁N₂N₃N₄N₅N₆N₇N₈ is the subscriber number.

➤ ROBI

RobiAxiata Limited, DBARobi (formerly known as **Aktel**), is a joint venture between Axiata Group Berhad, Malaysia (70%) and NTT DoCoMo Inc, Japan (30%). Robi is the third largest mobile phone operator in Bangladesh with more than 14 million subscribers as of June 2011.^[1]

Robi boasts of the widest international roaming service in the market, connecting over 500 operators across 207 countries. It is the first operator in the country to introduce GPRS.

RobiAxiata Limited is a joint venture company between Axiata Group Berhad, Malaysia and NTT DOCOMO INC, Japan. It was formerly known as Telekom Malaysia International (Bangladesh) which commenced operations in Bangladesh in 1997 with the brand name AKTEL. On 28 March 2010, the service name was rebranded as 'Robi' and the company came to be known as RobiAxiata Limited.



Numbering scheme

Robi uses the following numbering scheme for its subscribers:

+88018 N₁N₂N₃N₄N₅N₆N₇N₈

➤ CITYCELL

Citycell (Pacific Bangladesh Telecom Limited) is the first mobile communications company of Bangladesh. It is the only CDMA network operator in the country. Citycell is currently owned by SingTel with 45% stake and the rest 55% owned by Pacific Group and Far East Telecom.

By the end of 2007 Citycell had refurbished its old brand identity and introduced a new logo and corporate identity; the new logo is very reminiscent of the old logo. However the slogan has remained unchanged "because we care"

In 1989 Bangladesh Telecom Limited (BTL) was awarded a license to operate cellular, paging, and other wireless communication networks. Then in 1990 Hutchison Bangladesh Telecom Limited (HBTL) was incorporated in Bangladesh as a joint venture between BTL and Hutchison Telecommunications (Bangladesh) Limited. HBTL began commercial operation in Dhaka using the AMPS mobile technology in 1993 and became the 1st cellular operator in South Asia.^[2] Later that year Pacific Motors bought 50% of BTL. By 1996 HBTL was renamed as Pacific Bangladesh Telecom Limited (PBTL) and launched the brand name "Citycell Digital" to market its cellular products.



Numbering Scheme

Citycell uses the following numbering scheme for its subscribers:

+88 011 N₁N₂N₃N₄N₅N₆N₇N₈

➤ AIRTEL BANGLA

Airtel Bangladesh Ltd. is a GSM-based cellular operator in Bangladesh. Airtel Bangladesh is the sixth mobile phone carrier to enter the Bangladesh market, and launched commercial operations on May 10, 2007. Warid Telecom International LLC, an Abu Dhabi based consortium, sold a majority 70% stake in the company to India's BhartiAirtel Limited for US\$300 million. Bharti Airtel Limited took management control of the company and its board, and rebranded the company's services under its own **airtel** brand on 20 December 2010. The Bangladesh Telecommunication Regulatory Commission approved the deal on Jan 4, 2010.

Airtel Bangladesh had 5.045 million subscribers as of June 2011.^[4]



Numbering Scheme

Airtel Bangladesh uses the following numbering scheme:

+880 16 N₁N₂N₃N₄N₅N₆N₇.

Chapter 5

Analysis of Data

5.1 CONSUMERS

5.1.1 Univariate analysis

Table 1.1.1 : Frequency distribution table of number of consumer using an operator by the operator.

	Mobile operator					
	GP	BL	Airtel	Citycell	Robi	Teletalk
frequency	147	102	84	17	34	11
percent	50.3	34.9	28.8	5.8	11.6	3.8
Total	292	292	292	292	292	

The above table reveals that 50.3 percent of our 292 respondents use the GP operator which is clearly the largest portion. The second highest percentage is occupied by the BL operator users. Here only 3.8 percent of our respondents use Teletalk. The following doughnut chart shows the above frequency distribution.

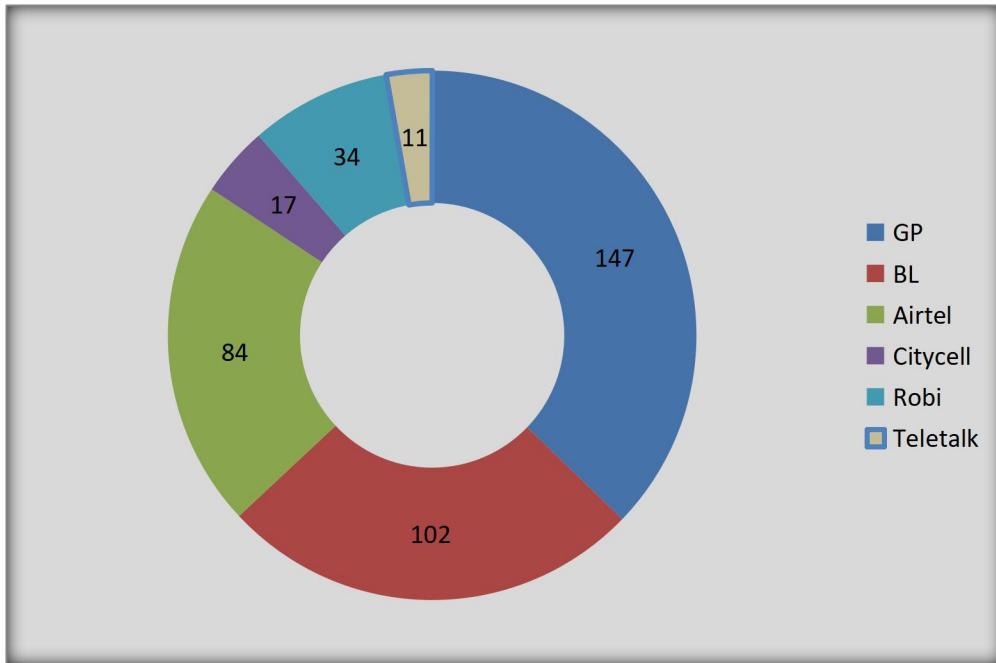


Figure 1.1.1: Doughnut chart of current user number of operators in the sample.**Table 1.1.2: Frequency distribution table for monthly usage (tk).**

monthly usage(tk)	operator					
	GP	BL	Airtel	Citycell	Robi	TeleTalk
	<300	31	35	25	5	13
	300-	48	32	31	5	9
	500					
	500- 700	28	22	13	3	7
700+	40	13	15	4	5	1

From the table we see that a large number of people response who use GP and their monthly usage (tk) is very high than the others. The following bar diagram shows the above frequency distribution .

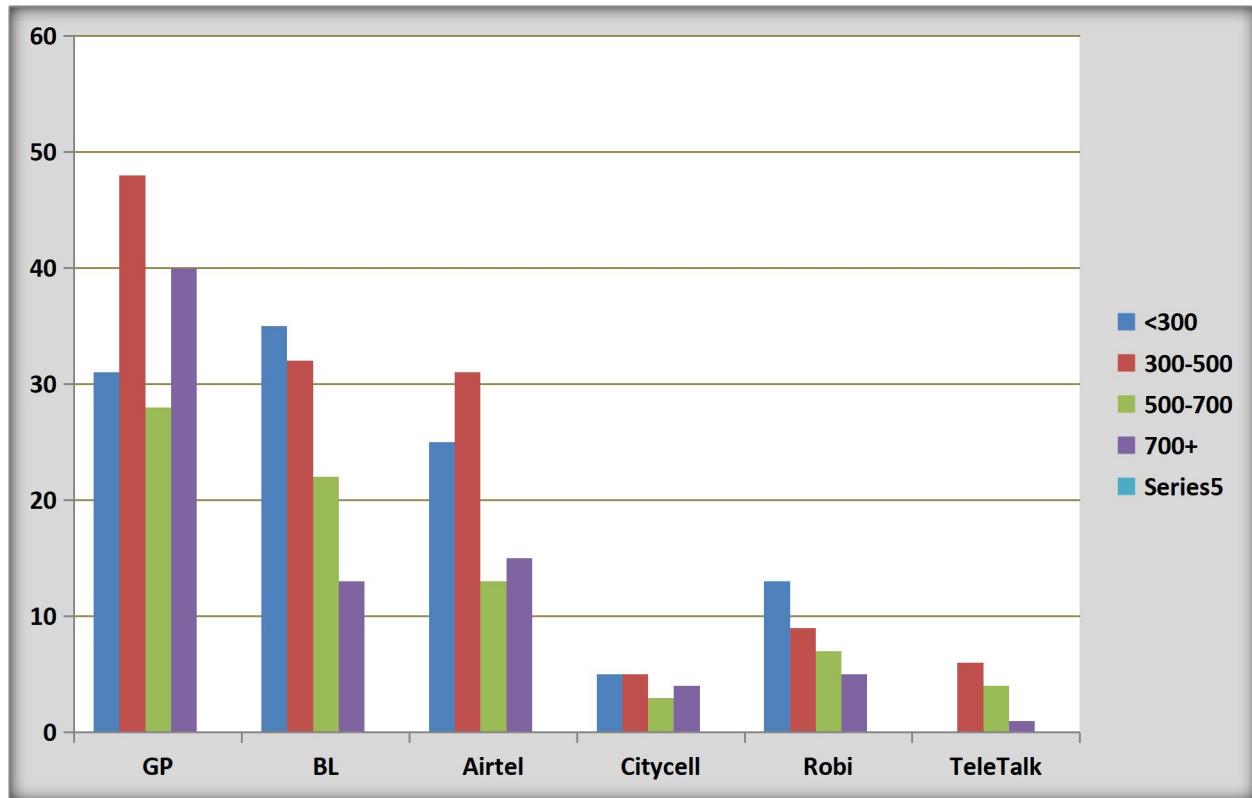


Figure 1.1.2:Bar diagram of monthly usage (tk).**Table 1.1.3: Frequency distribution table for no. of calls using land line per day.**

No. of calls using land line per day					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	4.04040404	4.444444444	4.444444444
	1-3	50	50.50505051	55.55555556	60
	4-6	25	25.25252525	27.77777778	87.77777778
	7-9	10	10.1010101	11.11111111	98.88888889
	9+	1	1.01010101	1.11111111	100
	Total	90	90.90909091	100	
Missing	System	9	9.090909091		
	Total	99	100		

From the above table, we can see that 50 respondents out of 99 respondents make 1-3 no. of calls per day which is a highest frequency than others. The following doughnut chart shows the above frequency distribution.

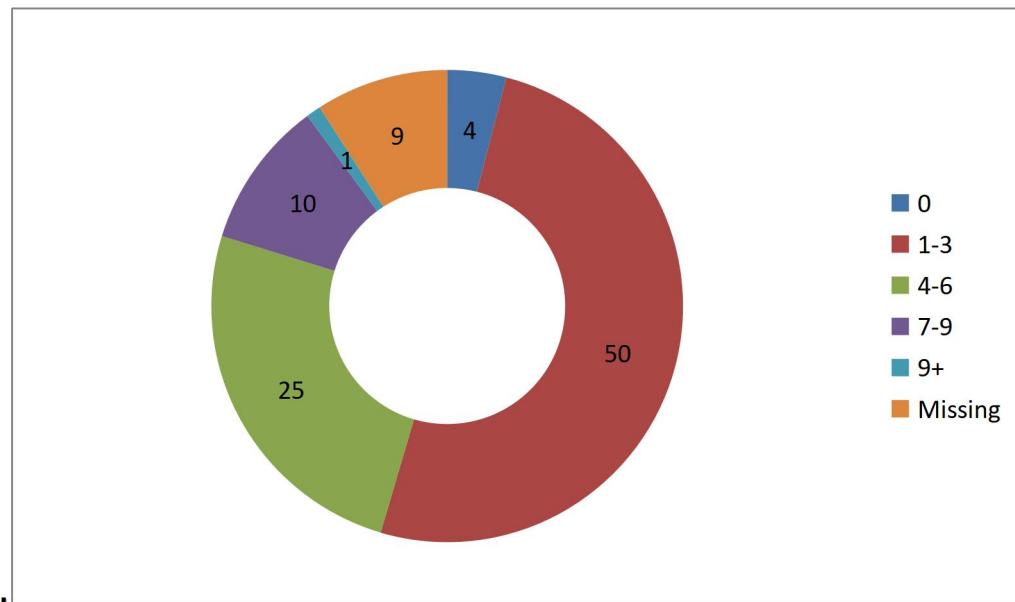
**Figure 1.1.3: Doughnut chart of no. of calls using land line per day in the sample.**

Table 1.1.4 : Frequency distribution table of reasons for preferring mobile operator over landline for communication on abroad.

Reason for preferring mobile operator for communication on abroad	Frequency
reasonable	42
habit	11
better connection	43
available	53
portable	79
TOTAL	228

From the above table we can see that, most of our respondents prefer mobile operator over landline for communication on abroad. 79 of them prefer it because it is portable and 53 of them prefer it because it is available to them. The following pie chart shows the above frequency distribution.

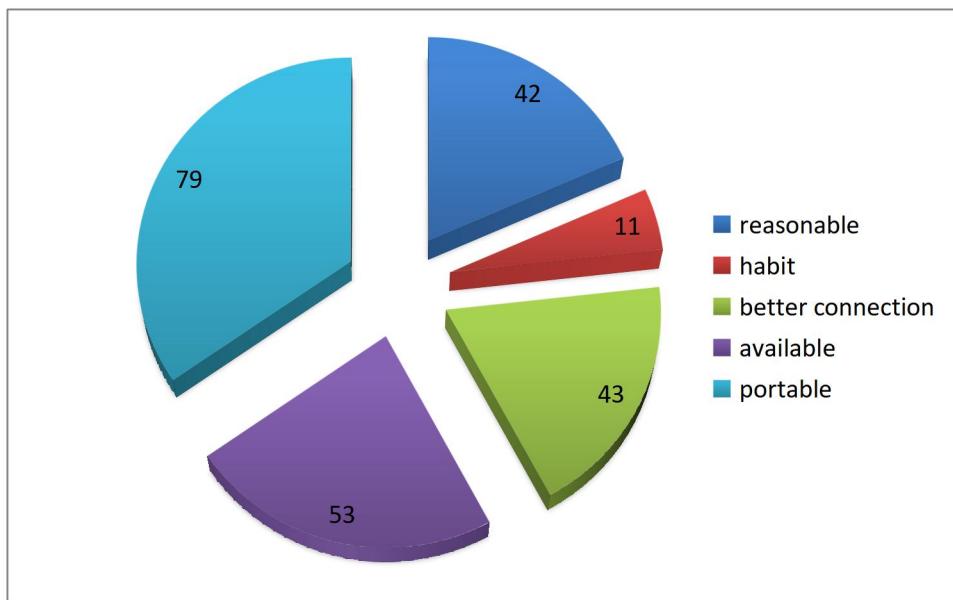


Figure 1.1.4: Pie chart for reason of preference of mobile operator for communication on abroad.

Table 1.1.5: Frequency distribution table of reasons of preferring landline for communication on abroad.

Reasons for preferring land line for communication on abroad	Frequency
reasonable	14
habit	9
better connection	7
no need to charge the battery	3
TOTAL	33

From the above table we can see that, only 33 of our 292 respondents prefer landline for communication on abroad. 14 of them prefer landline of reasonable call rate. 9 of them use it out of habit. The following pie chart represents the above frequency distribution.

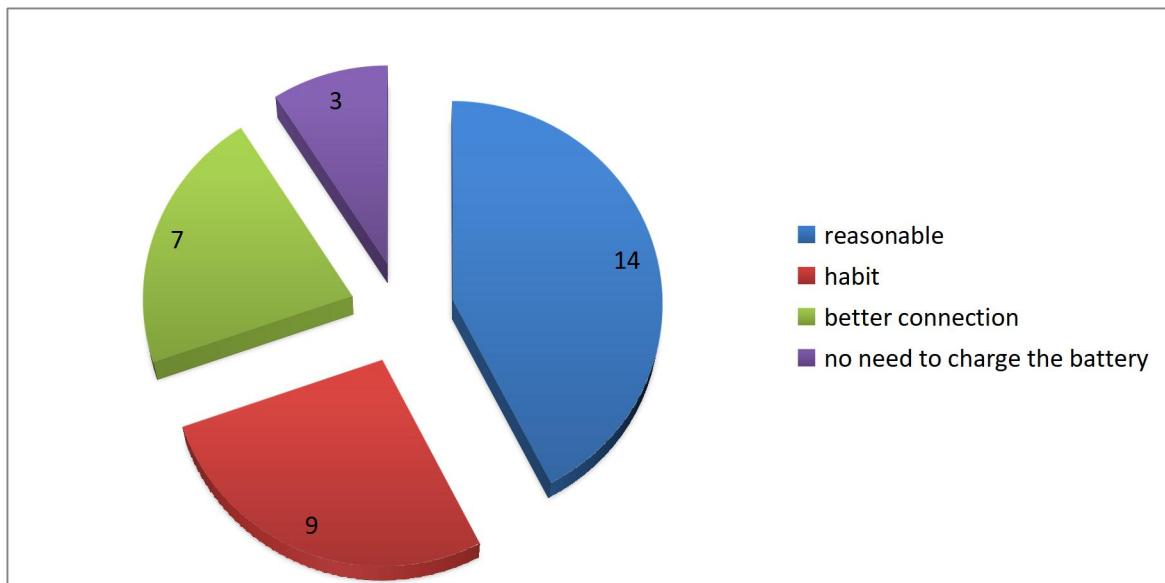


Figure 1.1.5: Pie chart for reasons of preferring landline for communication on abroad.

Table 1.1.6: Frequency distribution table for the reasons of using different operators as a current operator.

comparison on different operator					
	better network	low call rate	better CCS	FNF	other
airtel	16	55	7	33	4
robi	12	14	4	8	8
banglalink	27	62	6	32	9
citycell	6	13	0	3	1
GP	89	34	13	31	18
total	150	178	30	107	40

From the above table, we can see that better network quality is the reason for using GP in the most cases. Here also banglalink is used for the reason of low call rate. GP provides better customer care service in the most cases. Citycell is mainly used for low call rate. Overall airtel and banglalink are preferred for low call rate. The following bar diagram shows the frequency distribution.

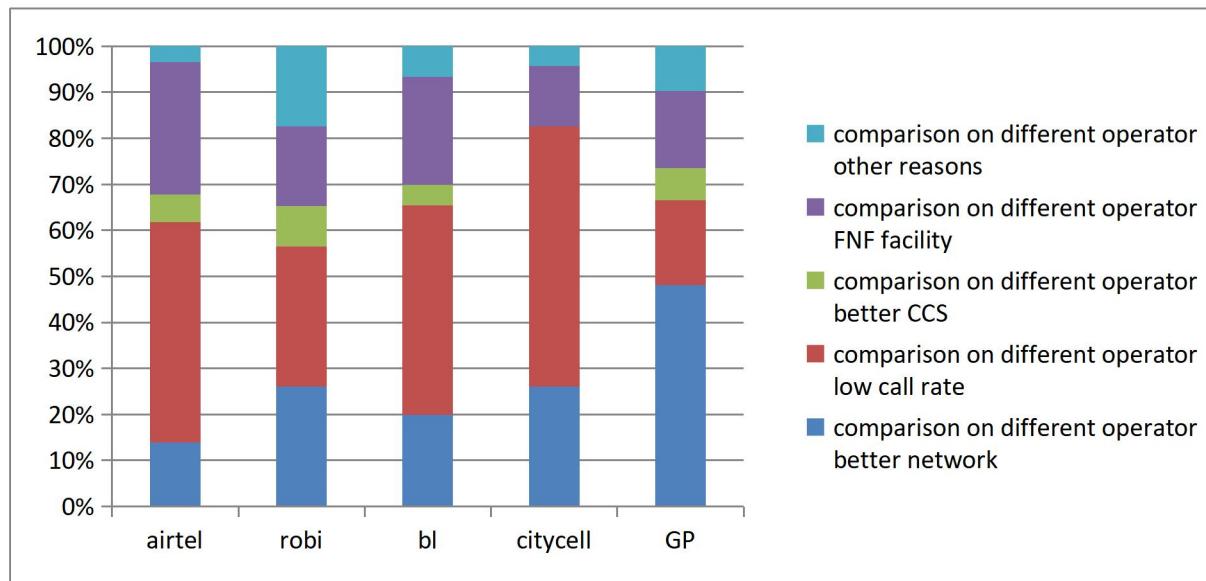


Figure 1.1.6: Bar diagram for the reasons of using different operators as a current operator in the sample.

Table 1.1.7: Frequency distribution table of the reasons of using teletalk as a current operator.

	frequency	Percentage
better network quality	3	17
lower call rate	8	48
better CCS	1	6
FNF facility	2	12
others	3	17
total	17	100

From the table we can say that 48% of the consumers of teletalk operator use it for lower call rate. And only 6% of the consumers use it for better customer care service. The following bar diagram presents the above frequency distribution.

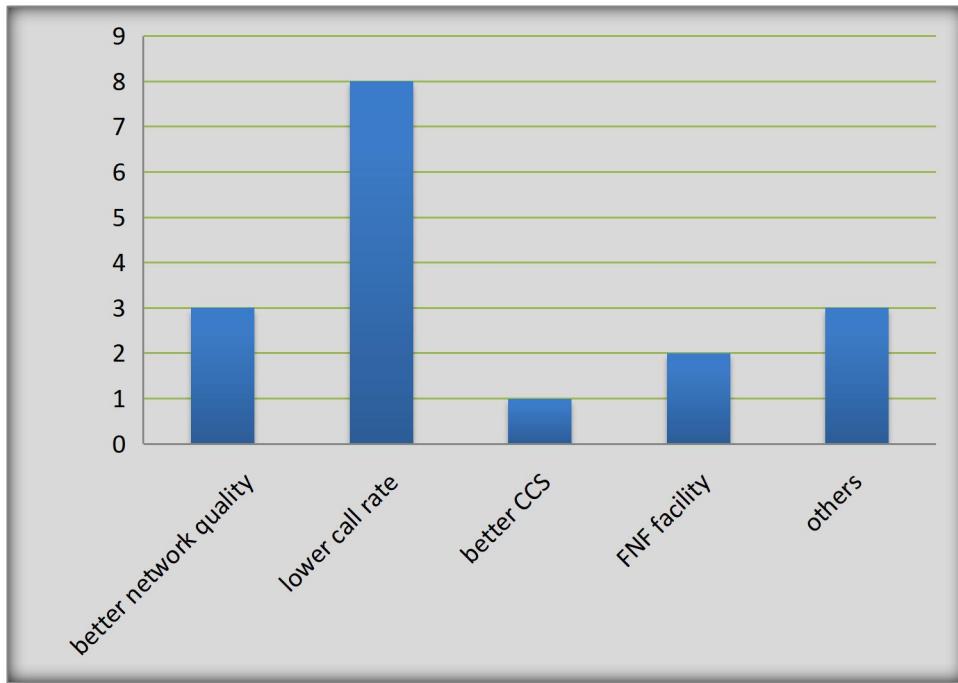


Figure 1.1.7: Bar diagram for the reasons of using Teletalk as a current operator

Table 1.1.8: Frequency distribution table of the facilities receiving from landline.

	Frequency	Percent
clear sound	3	3.030303
Cheap	39	39.39394
longer duration of calls	20	20.20202
health issue	9	9.090909

From the table we can see that most of the respondents think that call rate of landline is cheap & it gives the facility of longer duration of call. 13% think they receive health issue facility from landline & only 4% of the respondent get clear sound as a facility for using landline.

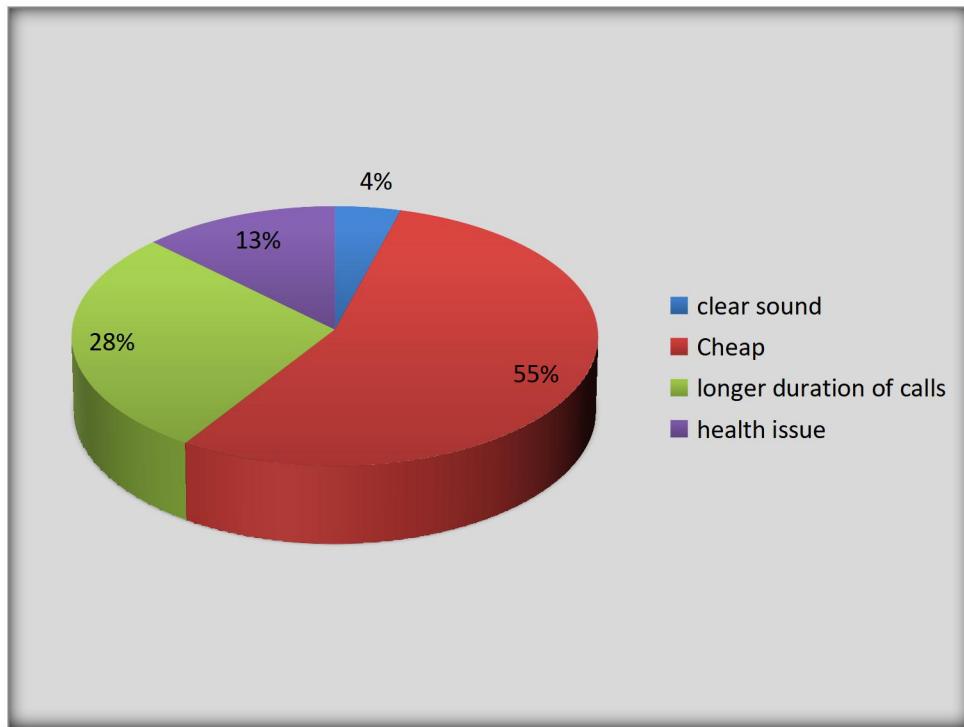


Figure 1.1.8: Pie chart for facilities receiving from landline.

Table 1.1.9: Frequency distribution table of problem of using land line.

	problem of using land line				
	High call rate	cross connection	portion	service problem	others
frequency	7	43	50	34	13
percent	89	53	46	62	83

It can be described that, among 292 respondents' 50 respondents face portation problem when using land line which can be seems to be a major problem. The 2nd highest no occupied in cross connection problem. The following bar diagram shows the above frequency distribution.

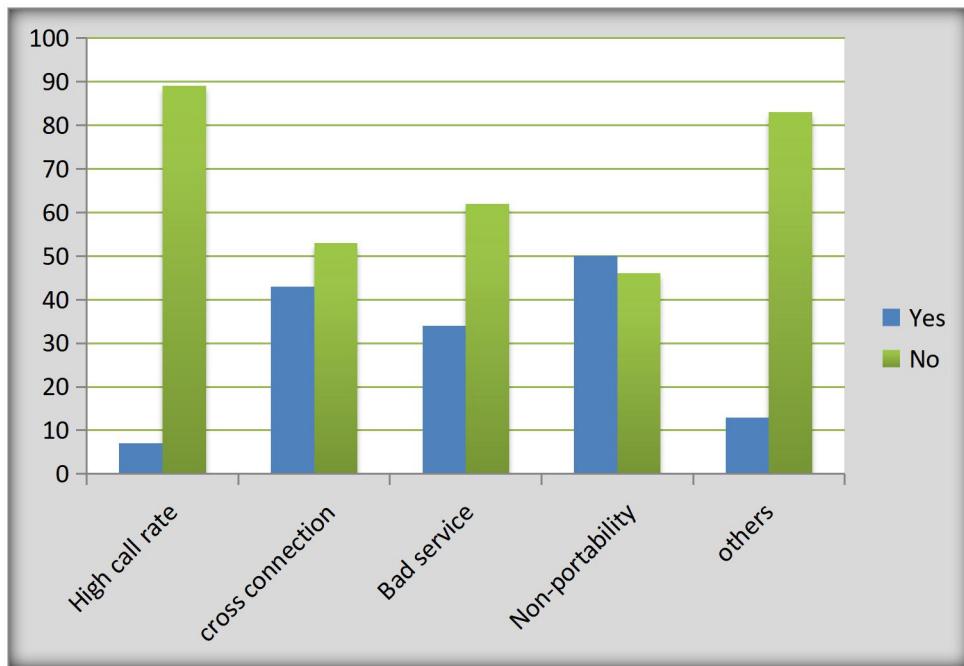


Figure 1.1.9: Bar diagram of problem using land line in the sample.

Table 1.1.10: Frequency distribution table of Suggestion for solving the problems of landline.

	Frequency	Percent
clear sound quality	2	2.020202
remove cross connection problem	18	18.18182
increase availability	20	20.20202
introduce special services	19	19.19192
portability facility	14	14.14141

The above table says that most respondent want availability of landline as a suggestion for solving the problems of landline. Introducing special services, solving cross connection problem and portability facility are also the suggestions for this case.

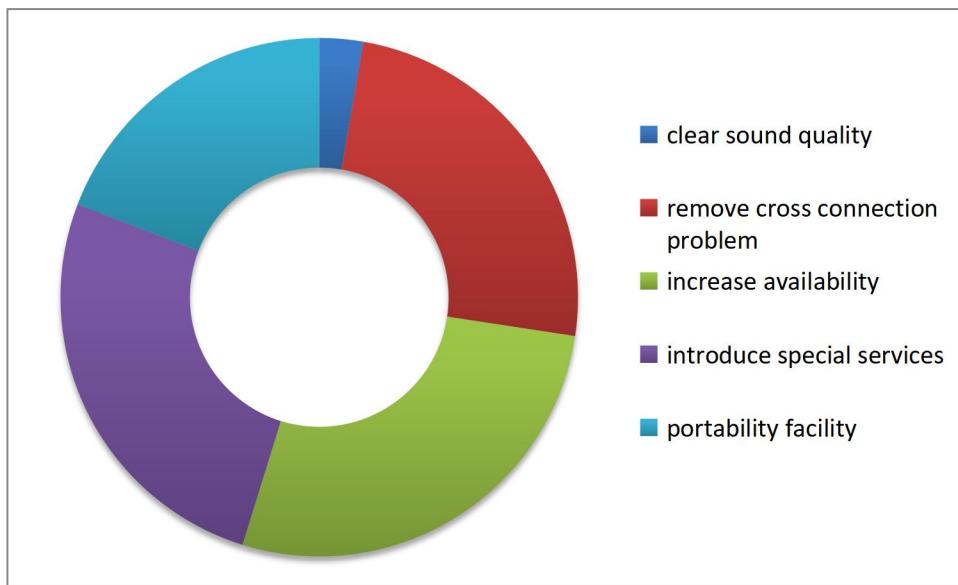


Figure 1.1 10: Doughnut chart of suggestion for solving the problems of landline.

Table 1.1.11: Frequency distribution table of benefits receiving from mobile operator.

benefits receiving from mobile operator	frequency	Percent
easy to communicate	150	57.9
entertainment purpose	36	13.8
internet facility	23	8.9
help in business	23	8.9
good CSR (corporate social responsibilities)	25	9.7
low call rate	2	0.08

From the above table we can see that, 150 respondents out of 292 respondents use mobile phone for easily communicate with others which is a larger proportion. The following pie chart shows the above frequency distribution.

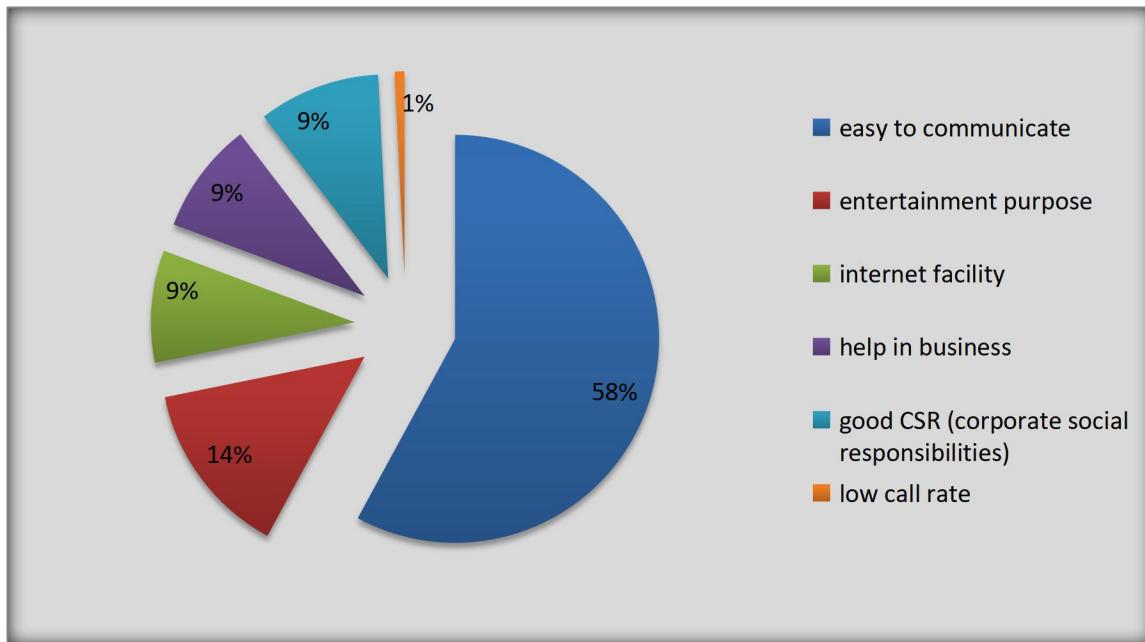


Figure 1.1.11: Pie chart of benefits receiving from mobile operator in the sample.

Table 1.1.12: Frequency distribution table of Preferring mobile operator as telecom system.

Preferring mobile operator as telecom system	frequency
portable	163
browsing network	19
easy recharge system	22
available	58
cheap	2
others	1
Total	265

It can be concluded that, among 292 respondents 265 respondents prefer mobile over landline as telecom system. 163 of them prefer mobile operator for easy portability and 58 respondents prefer for availability of mobile operator. Here only 2 respondents prefer for

cheaper call rate. The following bar diagram shows the above frequency distribution.

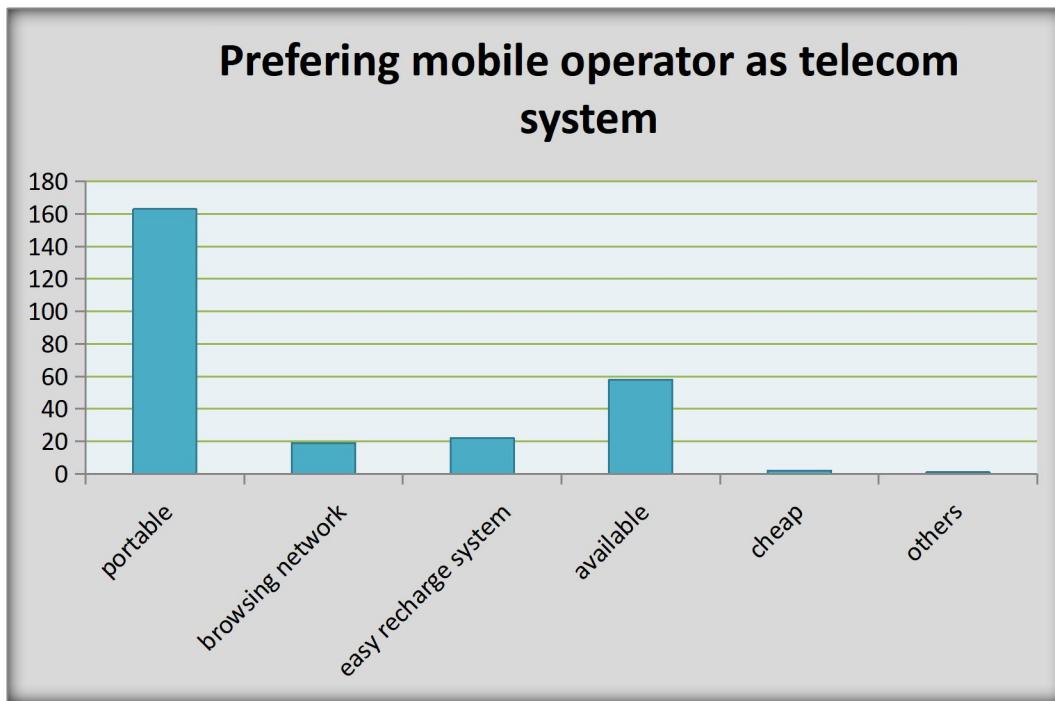


Figure 1.1.12: Bar diagram of Preferring mobile operator as telecom system in the sample.

Table 1.1.13: Frequency distribution table of developments wanted from mobile operator.

developments wanted from mobile operator	frequency	Percent
stronger network service	63	25
introduce 3G facility	49	19
increase internet speed	17	7
satellite based network system	13	5
expand network	36	14
easy international roaming	19	8
reduce call rate	56	22

From the following pie chart, it can be described that, 25% people wants a strongest network service, 22% people wants lower call rate and 19% people wants to introduce 3G facilities. So we can conclude that network development is required for better communication.

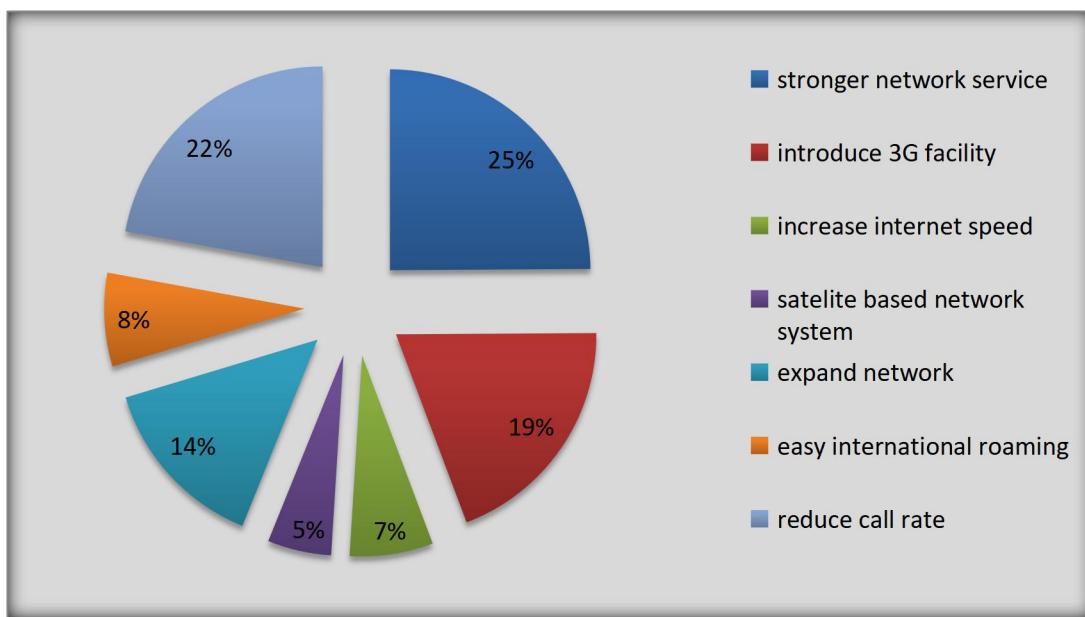


Figure 1.1.13: Pie chart of developments wanted from mobile operator.

Table 1.1.14: Frequency distribution table of suggestion for solving the problems of mobile operator.

suggestion for solving the problems of mobile operator	frequency	percent
improve technology for network	69	29
decrease call rate	109	45
more coverage	41	17
better customer care service	21	9

From the above table, we can say that a huge range of respondents suggest that decreasing call rate will solve the prime problem faced by consumers of mobile operator. It is followed

by the suggestion of improving technology for network. The following bar diagram shows the above frequency distribution.

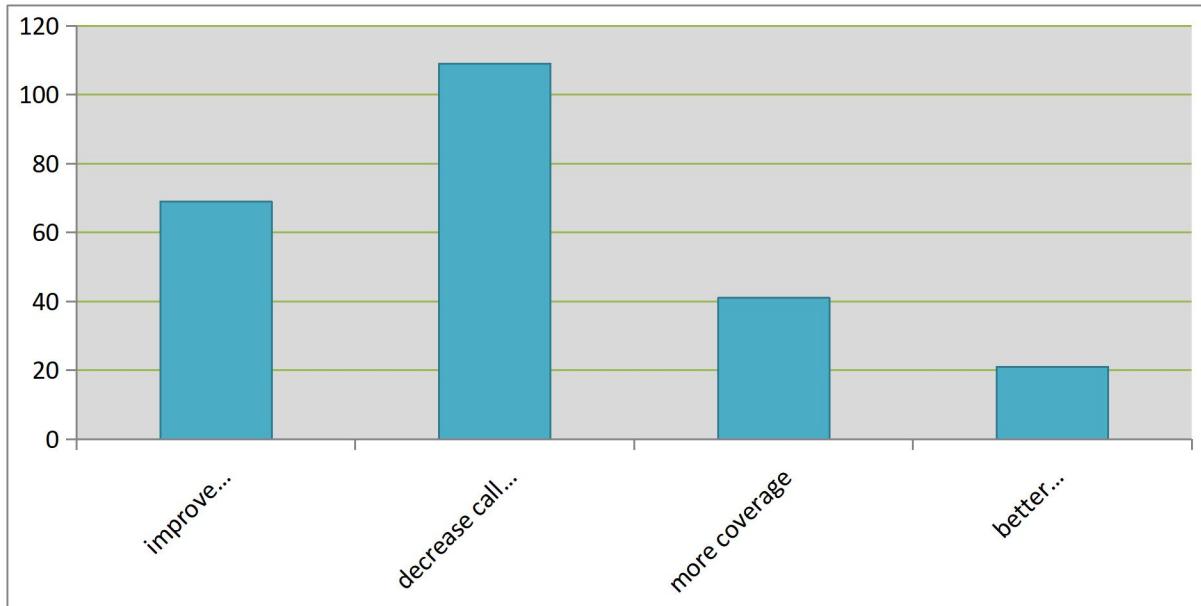


Figure 1.1.14: Bar diagram of suggestion for solving the problems of mobile operator.

Table1.1.15: Frequency distribution table of view on the effect of telecom system on young generation.

	Frequency	Percent
Positive	46	15.75342
Negative	160	54.79452
both	69	23.63014
Total	275	94.17808

From the above table we can see that majority are expressed their opinion that there is a highly negative effect of telecom system on the young generations. The following doughnut chart shows the above frequency distribution.

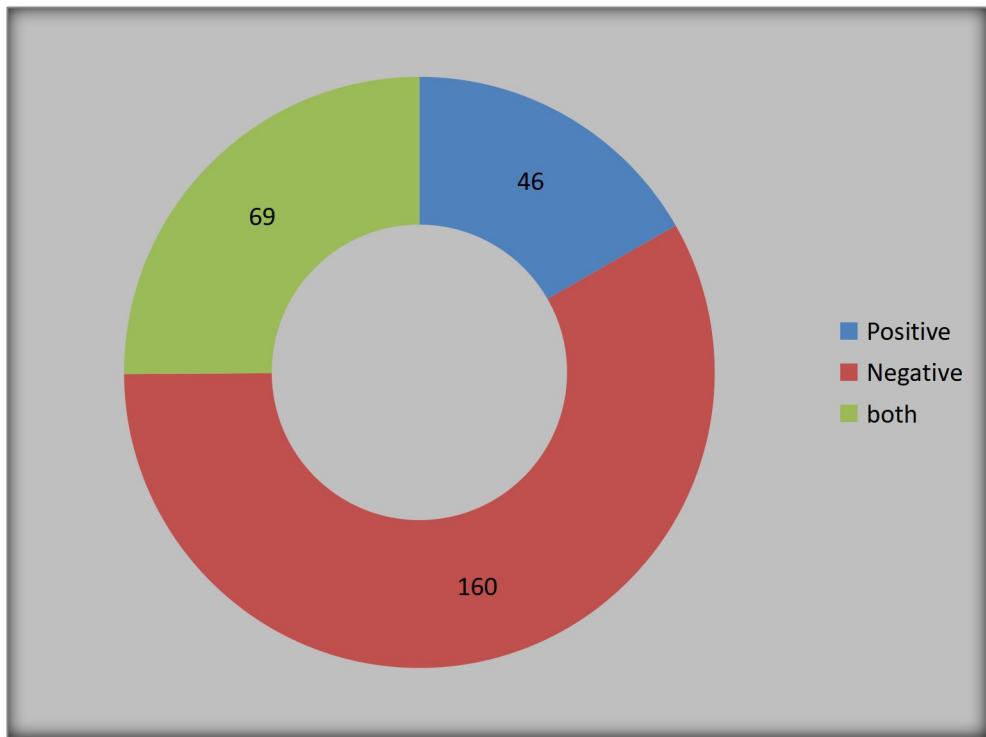


Figure1.1.15: Doughnut chart for view on the effect of telecom system on young generation.

Table1.1.16: Frequency distribution table of the view on mobile phone contributing to increase crime.

	Frequency	Percent
Yes	234	82
No	51	18
Total	285	100

From the above table, we see that 80.1% of the respondents think that using cell phone increases crime which is a very high percentage. The following pie chart shows the above frequency distribution.

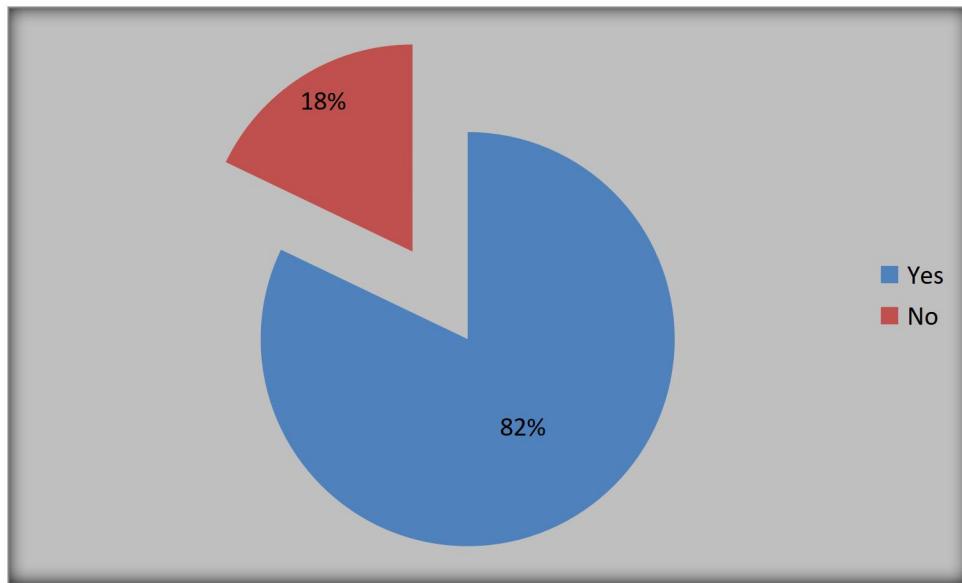


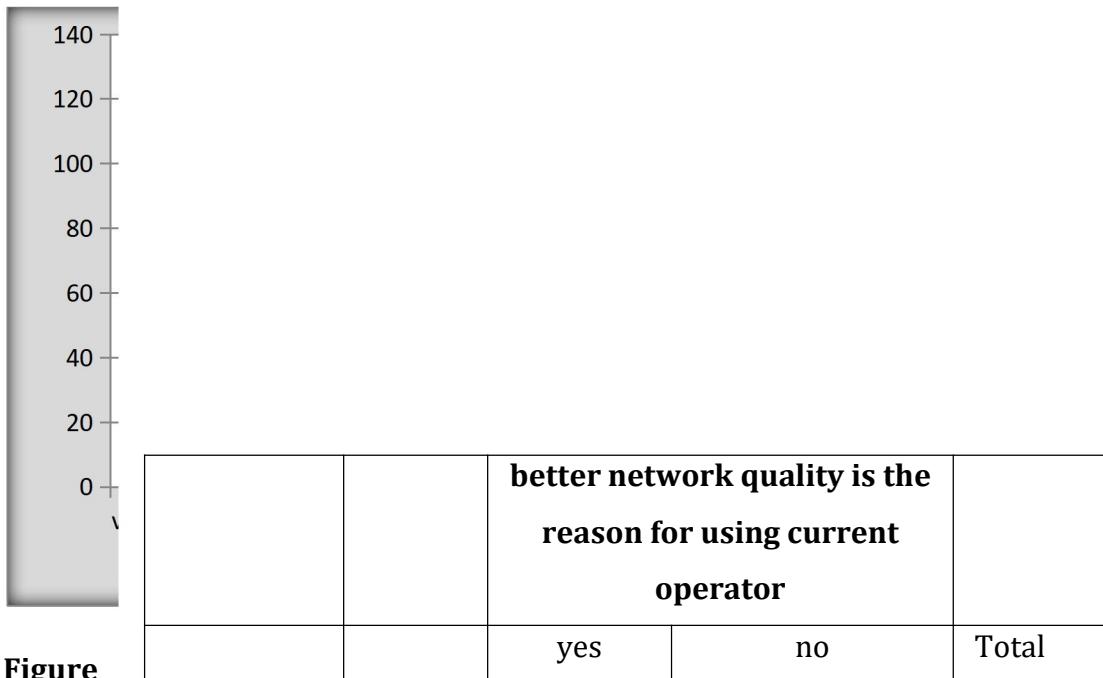
Figure 1.1.16: Pie chart for the view on mobile phone contributing to increase crime.

Table 1.1.17: Frequency distribution table of the view on the positive sides of telecom system.

	Frequency	Percent
easy communication system	132	54.54
help in emergency situation	47	19.4
increase GDP	15	6.2
easy bill paying facility	5	2.1
introducing scope in banking and shopping sector	16	6.6
save time	21	8.7
detect crime	6	2.46
Total	242	100

From the above table we can see that 132 respondents express their views that easy communication system is most positive side of telecom system and easy bill paying system

is also a positive side on the view of 5 respondents. The following bar diagram shows the above frequency distribution.



1.1.17:

Bar diagram of view on the positive sides of telecom system.

5.1.2 Bi-variate analysis

To verify the association between different variables we perform bi-variate analysis. For this purpose we compute chi-square statistic & test the hypothesis using it.

- ❖ **Association between age of the respondent and better network quality is the reason for using current operator**

Table 1.2.1: Cross table of age of the respondent by better network quality is the reason for using current operator.

	<19	5	19	24
	19-25	31	71	102
Age of the respondent	26-30	26	34	60
	31-35	10	9	19
	36-40	10	15	25
	40+	28	18	46
Total		110	166	276

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.50445	5	0.00363609
Likelihood Ratio	17.70192	5	0.003344145
Linear-by-Linear Association	14.61201	1	0.00013207
N of Valid Cases	276		

H₀: There is no association between age of the respondent and better network quality influencing the choice of current operator.

H₁: There is association between age of the respondent and better network quality influencing the choice of current operator.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-square=0.004<.05. Hence our null hypothesis is rejected. So, we can conclude that there is

an association between age of the respondent and better network quality influencing the choice of current operator.

❖ **Association between age of the respondent and Better customer care service is the reason for using current operator**

Table 1.2.2: Cross table of age of the respondent by Better customer care service is the reason for using current operator.

		Better customer care service is the reason for using current operator		Total
		Yes	No	
Age of the respondent	<19	1	23	24
	19-25	6	97	103
	26-30	8	52	60
	31-35	0	19	19
	36-40	2	23	25
	40+	4	42	46
	Total	21	256	277

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.33244	5	0.376669288
Likelihood Ratio	6.392116	5	0.269911444
Linear-by-Linear Association	0.27816	1	0.597909607
N of Valid Cases	277		

H₀: There is no association between age of the respondent and Better customer care service influencing the choice of current operator.

H₁: There is association between age of the respondent and Better customer care service influencing the choice of current operator.

	Lower call rate is the reason for using current operator	Total

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.37>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between age of the respondent and better customer care service influencing the choice of current operator.

- ❖ **Association between age of the respondent and Lower call rate is the reason for using current operator.**

Table 1.2.3: Cross table of age of the respondent by Lower call rate is the reason for using current operator.

		yes	no	
Age of the respondent	<19	13	11	24
	19-25	56	47	103
	26-30	30	30	60
	31-35	4	15	19
	36-40	13	12	25
	40+	10	36	46
	Total	126	151	277

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.96344322	5	0.001269625
Likelihood Ratio	21.11726159	5	0.000769759
Linear-by-Linear Association	12.5658433	1	0.000392861
N of Valid Cases	277		

H₀: There is no association between age of the respondent and Lower call rate influencing the choice of current operator.

H₁: There is association between age of the respondent and Lower call rate influencing the choice of current operator.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.001< .05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between age of the respondent and Lower call rate influencing the choice of current operator.

- ❖ Association between age of the respondent and satisfaction with offers given in special occasion for an interval of time.

Table 1.2.4: Cross table of age of the respondent by satisfaction with offers given in special occasion for an interval of time.

		satisfaction with offers in special occasion for an interval of time			Total
		yes	no	sometimes	
age of the respondent	<19	18	3	3	24
	19-25	75	27	5	107
	26-30	33	24	4	61
	31-35	9	8	2	19
	36-40	13	9	3	25
	40+	26	21	5	52
	Total	174	92	22	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.12964197	10	0.127406345
Likelihood Ratio	15.82403342	10	0.104781664
Linear-by-Linear	7.067298001	1	0.007850356

Association				
N of Valid Cases	288			

H₀: There is no association between age of the respondent and satisfaction with offers given in special occasion for an interval of time.

H₁: There is association between age of the respondent and satisfaction with offers given in special occasion for an interval of time.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.13> .05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between age of the respondent and satisfaction with offers in special occasion for an interval of time.

❖ **Association between age of the respondent and opinion on overall charges.**

Table 1.2.5: Cross table of age of the respondent by opinion on overall charges.

	opinion on overall charges					Total
	very reasonable	reasonable	average	high	very high	

Age of the respondent	<19	3	10	7	3	1	24
	19-						
	25	2	37	46	22	2	109
	26-						
	30	1	22	20	11	6	60
	31-						
	35	0	8	9	3	0	20
	36-						
Total		8	106	103	61	13	291

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.34640477	20	0.081159208
Likelihood Ratio	27.29629631	20	0.127131845
Linear-by-Linear Association	2.477315237	1	0.115499256
N of Valid Cases	291		

H₀: There is no association between age of the respondent and opinion on overall charges.

H₁: There is association between age of the respondent and opinion on overall charges.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.08> .05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between age of the respondent and opinion on overall charges.

- ❖ **Association between sex of the respondent and satisfaction on services with condition applied.**

Table 1.2.6: Cross table of sex of the respondent by satisfaction on services with condition applied.

		satisfaction on services with condition applied			Total
		yes	no	sometime	
sex of the respondent	male	79	89	8	176
	female	37	66	9	112
Total		116	155	17	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-
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			sided)
Pearson Chi-Square	4.688	2	.096
Likelihood Ratio	4.701	2	.095
Linear-by-Linear Association	4.671	1	.031
N of Valid Cases	288		

H₀: There is no association between sex of the respondent and satisfaction on services with condition applied.

H₁: There is association between sex of the respondent and satisfaction on services with condition applied.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.09> .05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between sex of the respondent and satisfaction on services with condition applied.

- ❖ **Association between sex of the respondent and satisfaction with offers in special occasion for an interval of time.**

Table 1.2.7: Cross table of sex of the respondent by satisfaction with offers in special occasion for an interval of time.

		satisfaction with offers in special occasion for an interval of time			Total
		yes	no	sometimes	
sex of the respondent	male	117	49	11	177
	Female	57	43	11	111
Total		174	92	22	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.286(a)	2	.043
Likelihood Ratio	6.252	2	.044
Linear-by-Linear Association	5.754	1	.016
N of Valid Cases	288		

H₀: There is no association between sex of the respondent and satisfaction with offers in special occasion for an interval of time.

H₁: There is association between sex of the respondent and satisfaction with offers in special occasion for an interval of time.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.043<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between sex of the respondent and satisfaction with offers in special occasion for an interval time.

- ❖ **Association between occupation of the respondent & better network quality is the reason for using current operator.**

Table 1.2.8: Cross table of occupation of the respondent by better network quality is the reason for using current operator.

		better network quality is the reason for using current operator		Total
		yes	no	
occupation of the respondent	Govt. service	11	8	19
	private service	23	38	61
	laborer	1	5	6
	business	21	8	29
	student	32	73	105
	housewife	12	18	30
	housekeeper	2	2	4
	others	8	14	22
Total		110	166	276

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.005(a)	7	.004
Likelihood Ratio	21.021	7	.004
Linear-by-Linear Association	1.315	1	.251
N of Valid Cases			276

H₀: There is no association between occupation of the respondent and **better** network quality is the reason for using current operator.

H₁: There is association between occupation of the respondent and better network quality is the reason for using current operator.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.004<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between occupation of the respondent and better network quality is the reason for using current operator.

- ❖ Association between occupation of the respondent & Better customer care service is the reason for using current operator.

Table 1.2.9: Cross table between occupations of the respondent by better customer care service is the reason for using current operator.

		Better customer care service is the reason for using current operator		Total
		yes	no	
Occupation of the respondent	Govt. service	2	17	19
	private service	8	53	61
	laborer	0	6	6
	business	1	28	29
	student	5	101	106
	housewife	1	29	30
	housekeeper	0	4	4
	others	4	18	22
Total		21	256	277

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.971(a)	7	.190
Likelihood Ratio	9.883	7	.195
Linear-by-Linear Association	.372	1	.542
N of Valid Cases	277		

H₀: There is no association between occupation of the respondent & better customer care service is the reason for using current operator.

H₁: There is association between occupation of the respondent & better customer care service is the reason for using current operator.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.190>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between occupation of the respondent & better customer care service is the reason for using current operator.

- ❖ Association between occupation of the respondent and satisfaction on services with condition applied.

Table 1.2.10: Cross table occupation of the respondent by satisfaction on services with condition applied.

		satisfaction on services with condition applied			Total
		yes	no	sometimes	
occupation of the respondent	Govt. service	6	17	0	23
	private service	28	29	4	61
	laborer	3	4	0	7
	business	16	12	1	29
	student	49	53	9	111
	housewife	9	20	3	32
	housekeeper	0	4	0	4
	others	5	16	0	21
Total		116	155	17	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.770(a)	14	.108
Likelihood Ratio	25.201	14	.033
Linear-by-Linear Association	1.347	1	.246
N of Valid Cases	288		

H₀: There is no association between occupation of the respondent & satisfaction on services with condition applied.

H₁: There is an association between occupation of the respondent & satisfaction on services with condition applied.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.108> .05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between occupation of the respondent & satisfaction on services with condition applied.

❖ **Association between occupation of the respondent and satisfaction with offers in special occasion for an interval of time.**

Table 1.2.11: Cross table of occupation of the respondent by satisfaction with offers in special occasion for an interval of time.

		satisfaction with offers in special occasion for an interval of time			Total
		yes	no	sometimes	
occupation of the respondent	Govt. service	8	12	3	23
	private service	37	20	4	61
	laborer	5	2	0	7
	business	19	8	3	30
	student	78	26	7	111
	housewife	14	13	4	31
	housekeeper	2	2	0	4
	others	11	9	1	21
Total		174	92	22	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.531(a)	14	.229
Likelihood Ratio	18.120	14	.201
Linear-by-Linear association	.433	1	.510
No of Valid Cases	288		

H₀: There is no association between occupation of the respondent & satisfaction with offers in special occasion for an interval of time.

H₁: There is an association between occupation of the respondent & satisfaction with offers in special occasion for an interval of time.

Significance level: let our significance level be 0.05.

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.229>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between occupation of the respondent & satisfaction with offers in special occasion for an interval of time.

- ❖ **Association between relationship status of the respondent and the better network quality is the reason for using current operator.**

Table 1.2.12: Cross table of relationship status of the respondent and better network quality of current operator.

		better network quality is the reason for using current operator		Total
		yes	no	
relationship status of the respondent	single	35	79	114
	in a relationship	11	22	33
	married	60	61	121
	widow	3	4	7
	others	1	0	1
	Total	110	166	276

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.886(a)	4	.028
Likelihood Ratio	11.266	4	.024
Linear-by-Linear Association	9.415	1	.002
N of Valid Cases	276		

H₀: There is no association between relationship status of the respondent and better network quality is the reason for using current operator.

H₁: There is association between relationship status of the respondent and better network quality is the reason for using current operator.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.028<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between relationship status of the respondent and better network quality is the reason for using current operator.

- ❖ Association between relationship status of respondent and lower call rate is the reason for using current operator.

Table 1.2.13: Cross table of relationship status of the respondent and lower call rate.

		Lower call rate is the reason for using current operator		Total
		yes	no	
relationship status of the respondent	single	55	60	115
	in a relationship	22	11	33
	married	45	76	121
	widow	4	3	7
	others	0	1	1
	Total	126	151	277

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.801(a)	4	.029
Likelihood Ratio	11.257	4	.024
Linear-by-Linear Association	2.412	1	.120
N of Valid Cases	277		

H₀: There is no association between relationship status of the respondent and lower call rate is the reason for using current operator.

H₁: There is association between relationship status of the respondent and lower call rate is the reason for using current operator.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.029<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between the relationship status of the respondent and lower call rate is the reason for using current operator.

- ❖ Association between relationship status of the respondent and better customer care service is the reason for using current operator.

Table 1.2.14: Cross table of relationship status of the respondent and better customer care service.

		Better customer care service is the reason for using current operator		Total
		yes	no	
relationship status of the respondent	single	11	104	115
	in a relationship	0	33	33
	married	9	112	121
	widow	1	6	7
	others	0	1	1
	Total	21	256	277

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.888(a)	4	.421
Likelihood Ratio	6.328	4	.176
Linear-by-Linear Association	.169	1	.681
N of Valid Cases	277		

H₀: There is no association between relationship status of the respondent and better customer care service Is the reason for using current operator.

H₁: There is association between relationship status of the respondent and better customer care service is the reason for using current operator.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.421>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between relationship status of the respondent and better customer care service is the reason for using current operator.

❖ **Association between relationship status of the respondent and others.**

Table 1.2.15: Cross table between relationship status and others.

		others			Total
		yes	no	4	
relationship status of the respondent	single	9	106	0	115
	in a relationship	3	30	0	33
	married	20	102	0	122
	widow	0	6	1	7
	others	0	1	0	1
Total		32	245	1	278

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.232(a)	8	.000
Likelihood Ratio	13.693	8	.090
Linear-by-Linear Association	.561	1	.454
N of Valid Cases	278		

H₀: There is no association between relationship status of the respondent and others.

H₁: There is association between relationship status of the respondent and others.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.000<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between relationship status of the respondent and others.

- ❖ Association between relationship status of the respondent and ranking of value added services.

Table 1.2.16: Cross table of relationship status and ranking of value added services.

		ranking of value added services					Total
		very good	good	average	bad	very bad	
relationship status of the respondent	single	10	56	45	5	0	116
	in a relationship	6	11	13	3	1	34
	married	5	61	55	7	1	129
	widow	1	2	3	1	0	7
	others	0	0	0	1	0	1
Total		22	130	116	17	2	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.768(a)	16	.014
Likelihood Ratio	19.498	16	.244
Linear-by-Linear Association	3.433	1	.064
N of Valid Cases	287		

H₀: There is no association between relationship status of the respondent and ranking of value added services.

H₁: There is association between relationship status of the respondent and ranking of value added services.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.014<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between relationship status of the respondent and ranking of value added services.

❖ **Association between relationship status of the respondent and opinion on overall charges.**

Table 1.2.17: Cross table of relationship status of the respondent and opinion on overall charges.

		opinion on overall charges					Total
		very reasonable	reasonabl e	average	high	very high	
relationship status of the respondent	single	3	47	45	20	3	118
	in a relationship	1	10	13	9	1	34
	married	3	46	42	32	8	131
	widow	1	3	3	0	0	7
	others	0	0	0	0	1	1
Total		8	106	103	61	13	291

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.596(a)	16	.008

Likelihood Ratio	17.635	16	.346
Linear-by-Linear Association	2.480	1	.115
N of Valid Cases	291		

H₀: There is no association between relationship status of the respondent and opinion on overall charges.

H₁: There is association between relationship status of the respondent and opinion on overall charges.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.008<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between relationship status of the respondent and opinion on overall charges.

- ❖ Association between education of the respondent and opinion on overall charges.

Table 1.2.18: Cross table of education of the respondent and opinion on overall charges.

		opinion on overall charges					Total
		very reasonabl e	reasonab le	average	high	very high	
education of the respondent	literate (can sign only)	0	4	1	1	0	6
	primary	0	8	11	3	0	22
	secondary	0	10	5	2	4	21
	higher secondary	4	23	18	11	1	57
	graduate	3	36	44	29	4	116
	masters & above	1	25	23	15	4	68
Total		8	106	102	61	13	290

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.777(a)	20	.115
Likelihood Ratio	25.292	20	.190
Linear-by-Linear Association	1.803	1	.179
N of Valid Cases	290		

H₀: There is no association between education of the respondent and opinion on overall charges.

H₁: There is association between education of the respondent and opinion on overall charges.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=.115>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between education of the respondent and opinion on overall charges.

- ❖ **Association between education of the respondent and satisfaction with repeated informative message.**

Table 1.2.19: Cross table of education of the respondent and satisfaction with repeated informative message.

		satisfaction with repeated informative message			Total
		yes	no	sometime	
education of the respondent	literate (can sign only)	0	4	1	5
	primary	10	9	1	20
	secondary	12	7	2	21
	higher secondary	35	19	3	57
	graduate	56	54	6	116
	masters & above	25	35	9	69
Total		138	128	22	288

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.502(a)	10	.086
Likelihood Ratio	18.195	10	.052
Linear-by-Linear Association	1.278	1	.258
N of Valid Cases	288		

H₀: There is no association between education of the respondent and satisfaction with repeated informative message.

H₁: There is association between education of the respondent and satisfaction with repeated informative message.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=.086>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between education of the respondent and satisfaction with repeated informative message.

- ❖ Association between location of the respondent and opinion of respondent's about internet speed provided by their mobile operator:

Table 1.2.20: Cross table of location of the respondent_by opinion of respondent's about internet speed.

		opinion about internet speed					Total
		Very good	good	average	Bad	Very Bad	
location of the respondent:	urban	6	28	36	14	3	87
	rural	0	6	5	4	0	15
Total		6	34	41	18	3	102

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.803(a)	4	.591
Likelihood Ratio	4.022	4	.403
Linear-by-Linear Association	.145	1	.704
N of Valid Cases	102		

H₀: There is no association between location of the respondent and opinion of respondent's about internet speed provided by their mobile operator.

H₁: There is association between location of the respondent and opinion of respondent's about internet speed provided by their mobile operator.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.591>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between location of the respondent and opinion of respondent's about internet speed provided by their mobile operator.

❖ Association between use of dial-up connection and satisfaction level of respondent's by using dial-up connection:

Table 1.2.21: Cross table of use of dial-up connection and satisfaction level of respondent's by using dial-up connection:

		satisfaction level by using dial-up connection					Total
		Very Good	Good	Average	Bad	Very Bad	
use of dial-up connection from land line	yes	1	11	17	6	5	40
	No	1	4	3	0	0	8
Total		2	15	20	6	5	48

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.920(a)	4	.296

Likelihood Ratio	6.175	4	.186
Linear-by-Linear Association	4.369	1	.037
N of Valid Cases	48		

H₀: There is no association between use of dial-up connection and satisfaction level of respondent's by using dial-up connection:

H₁: There is association between use of dial-up connection and satisfaction level of respondent's by using dial-up connection:

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.296>.05. Hence our null hypothesis is accepted. So, we can conclude that there is no association between use of dial-up connection and satisfaction level of respondent's by using dial-up connection:

- ❖ **Association between age of the respondent and overall satisfaction on telecom system.**

Table 1.2.22: Cross table of age of the respondent by overall satisfaction on telecom system.

		overall satisfaction		Total
		unsatisfied	satisfied	
age of the respondent	<19	4	19	23
	19-25	49	59	108
	26-30	24	36	60
	31-35	2	17	19
	36-40	5	20	25
	40+	12	40	52
	Total	96	191	287

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.74499	5	0.001395169
Likelihood Ratio	21.02366	5	0.000801763
Linear-by-Linear Association	6.239799	1	0.012491066
N of Valid Cases	287		

H₀: There is no association between age of the respondent and overall satisfaction on telecom system.

H₁: There is association between age of the respondent and overall satisfaction on telecom system.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.0013<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between age of the respondent and overall satisfaction on telecom system.

- ❖ **Association between education of the respondent and identifying lack of proper service while using landline.**

Table 1.2.23: Cross table of education of the respondent by identifying lack of proper service while using landline.

		service problem while using land line		Total
education of the respondent		yes	no	
	primary	0	4	4
	secondary	0	6	6
	higher secondary	6	17	23
	graduate	24	28	52
	masters & above	11	26	37
	Total	41	81	122

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-	9.562879	4	0.048471134

Square			
Likelihood Ratio	12.55258	4	0.013682097
Linear-by-Linear Association	2.607068	1	0.106388268
N of Valid Cases	122		

H₀: There is no association between education of the respondent and identifying lack of proper service while using landline.

H₁: There is association between educations of the respondent identifying lack of proper service while using landline.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.048< .05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between education of the respondent and identifying lack of proper service while using landline.

- ❖ **Association between education of the respondent and reasons for preferring landline over mobile operator.**

Table 1.2.24: Cross table of education of the respondent by reasons for preferring landline over mobile operator.

		preferring landline as telecom system			Total
		cheap	health issue	habit	
education of the respondent	higher secondary	0	3	0	3
	graduate	1	4	7	12
	masters & above	5	2	1	8
	Total	6	9	8	23

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.74942	4	0.008139275
Likelihood Ratio	14.20175	4	0.006678215
Linear-by-Linear Association	3.156902	1	0.07560655
N of Valid Cases	23		

H₀: There is no association between education of the respondent and reasons for preferring landline over mobile operator.

H₁: There is association between education of the respondent and reasons for preferring landline over mobile operator.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.008<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between education of the respondent and reasons for preferring landline over mobile operator.

- ❖ Association between economical condition of the respondent's family and number of landline at the resident.

Table 1.2.25: Cross table of_economical condition of the respondent's family by number of landline at the resident.

		number of land line				Total
		1	2	3	4	
economical condition of respondent's family	mid-level	53	4	1	1	59
	rich	18	10	0	1	29
	very rich	0	0	1	1	2
Total		71	14	2	3	90

Chi-square test:

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.22963	6	1.06313E-08

Likelihood Ratio	24.22855	6	0.000474039
Linear-by-Linear Association	14.99719	1	0.000107671
N of Valid Cases	90		

H₀: There is no association between economical condition of the respondent's family and number of landline at the resident.

H₁: There is association between economical condition of the respondent's family and number of landline at the resident.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=1.06E-08<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between economical condition of the respondent's family and number of landline at the resident.

❖ **Association between economical condition of the respondent's family and identifying cross connection problem while using landline.**

Table 1.2.26: Cross table of economical condition of respondent's family by identifying cross connection problem while using landline.

		Cross connection is the problem while using land line		Total
		Yes	no	
economical condition of respondent's family	poor	0	2	2
	mid-level	24	65	89
	rich	17	13	30
	very rich	2	0	2
	Total	43	80	123

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.51373	3	0.003647643
Likelihood Ratio	14.39563	3	0.002413229
Linear-by-Linear Association	13.26163	1	0.000270894
N of Valid Cases	123		

H₀: There is no association between economical condition of respondent's family and identifying cross connection problem while using landline.

H₁: There is association between economical condition of respondent's family and identifying cross connection problem while using landline.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.003<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between economical conditions of respondent's family and identifying cross connection problem while using landline.

❖ **Association between economical condition of the respondent's family and satisfaction with development activities.**

Table 1.2.27: Cross table of economical condition of the respondent's family by satisfaction with development activities.

		satisfaction with development activities					Total
		Very Good	Good	Average	Bad	Very Bad	
economical condition of respondent's family	very poor	0	3	3	2	0	8
	poor	0	9	8	0	0	17
	mid-level	13	128	69	5	2	217
	rich	7	17	12	2	0	38
	very rich	0	2	0	0	0	2
	Total	20	159	92	9	2	282

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.58262	16	0.035444223
Likelihood Ratio	21.7722	16	0.150700461
Linear-by-Linear Association	5.742532	1	0.016558901
N of Valid Cases	282		

H₀: There is no association between economical condition of the respondent's family and satisfaction with development activities.

H₁: There is association between economical condition of the respondent's family and satisfaction with development activities.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.0035<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between economical condition of the respondent's family and satisfaction with development activities.

❖ **Association between income level of the respondent and satisfaction with development activities.**

Table 1.2.28: Cross table of income level of the respondent by satisfaction with development activities.

		satisfaction with development activities					Total
		Very Good	Good	Average	Bad	Very Bad	
income level of the respondent	no income	4	23	10	0	0	37
	<10000	0	41	23	5	0	69
	10000-20000	4	25	31	0	0	60
	20001-30000	5	14	8	0	1	28
	300000+	4	21	8	4	0	37
	Total	17	124	80	9	1	231

Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.60924	16	0.000887631
Likelihood Ratio	43.05318	16	0.000274343
Linear-by-Linear Association	4.42E-05	1	0.994694559
N of Valid Cases	231		

H₀: There is no association between age income levels of the respondent by satisfaction with development activities.

H₁: There is association between income levels of the respondent by satisfaction with development activities.

Significance level: let our significance level be 0.05

Comment: From the above chi-square table we see that the p-value for Pearson Chi-Square=0.0008<.05. Hence our null hypothesis is rejected. So, we can conclude that there is an association between income levels of the respondent by satisfaction with development activities

- **Table 1.2.29: Cross table of the opinion of respondents on overall charges provided by an operator.**

Opinion on overall charges	Mobile Operator						Total
	GP	BL	Tele Talk	City Cell	Airtrel	Robi	
very reasonable	3	2	0	1	3	1	10
reasonable	35	52	5	7	43	13	155
average	50	32	5	7	31	17	142
high	48	11	1	1	7	3	71
very high	11	4	0	1	0	0	16

From the above table we can see that 155 respondents out of 292 respondent's opinion is overall charges provided by their operator is reasonable ,which is clearly the largest portion in which 52 respondents are Banglalink operator users. Here only 10 respondent's opinion is the overall charges provided by their operator is very reasonable, and 16 respondents out of 292 respondents think that overall charges is very high in which 11 respondents are Grameenphone users. The following chart shows the above frequency distribution.

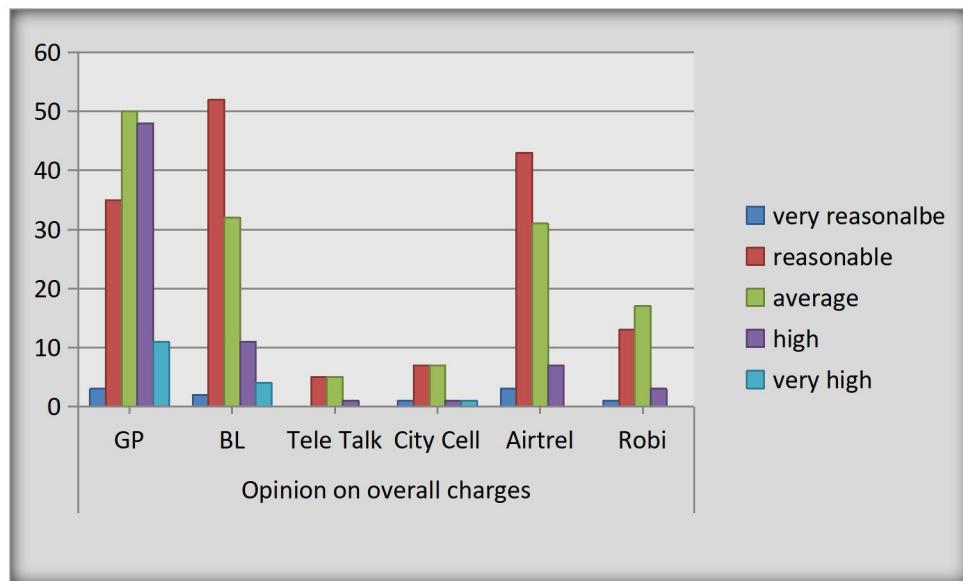


Figure 1.2.1: Multiple bar diagram for opinion on overall charges by mobile operator.

- **Table 1.2.30: Cross table of ranking of value added service by respondents:**

		Operators						Total
ranking	of value added services	GP	BL	Airtel	Tele Talk	City Cell	Robi	
very good		11	13	9	0	2	1	36
good		65	40	35	4	6	19	169
average		57	41	35	6	6	13	158
bad		11	5	3	1	2	0	22
very bad		2	0	0	0	1	0	3

From the above table we can see that 169 respondents rank value added service provided by their operator as good in which 65 respondents are Grameenphone users, and only 3 respondents out of 292 respondents rank the value added service as very bad. The following chart shows the above frequency distribution.

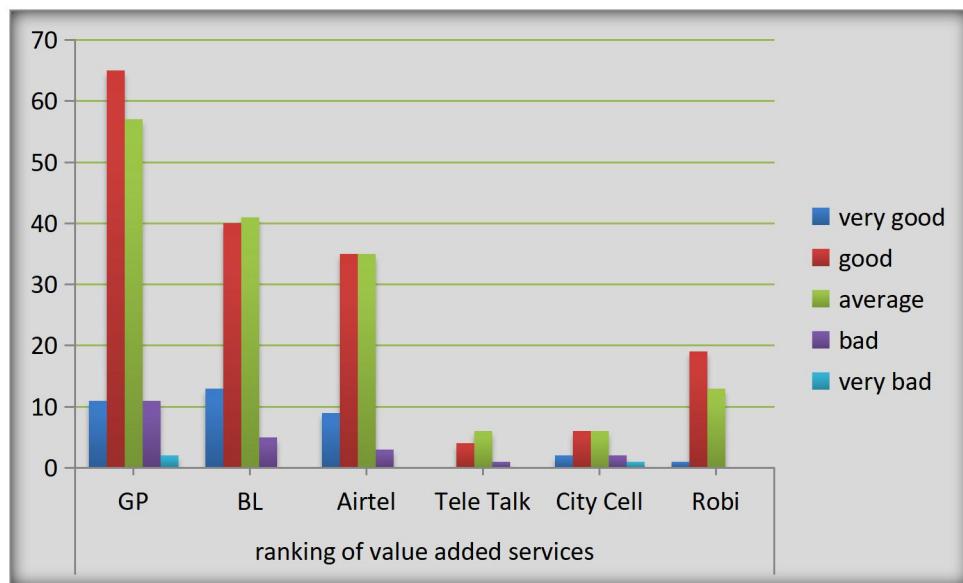


Figure 1.2.2: Multiple bar diagram for ranking of value added services by mobile operator.

Table 1.2.31: Cross table of opinion of respondents about internet speed provided by mobile operators.

		Mobile Operators						
		GP	BL	Airtel	Tele Talk	City Cell	Robi	Total
opinion about internet speed	Very good	3	2	2	0	1	0	8
	Good	23	8	12	0	2	8	53
	Average	24	17	19	1	2	2	65
	Bad	12	6	5	2	0	4	29
	Very Bad	3	1	3	0	0	0	7

From above table we can see that 65 respondents out of 292 respondent's opinion is the internet speed provided by their operator is average ,in which 24 respondents are GrameenPhone users. And Only 7 respondent's opinion is the internet speed is very bad. The following chart shows the above frequency distribution.

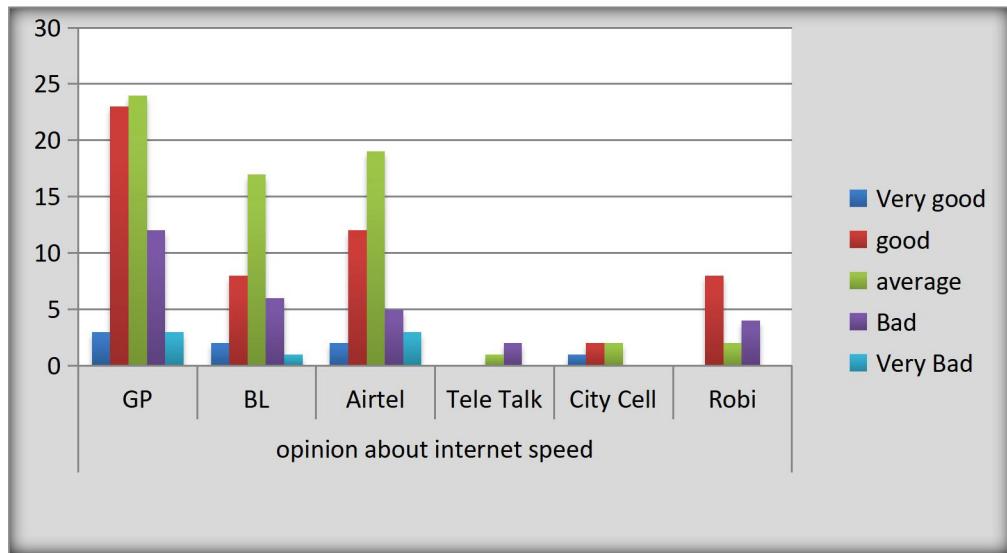


Figure1.2.3: Multiple bar diagram for opinion about internet speed by mobile operator.

Table 1.2.32: Cross table of opinion of respondents about complaint management

Opinion	Mobile Operator							Total
	GP	BL	Airtel	City Cell	Tele Talk	Robi		
Very Good	7	9	7	1	1	2	27	
Good	80	51	38	8	7	18	202	
Average	47	34	30	4	1	14	130	
Bad	7	3	5	2	1	0	18	
Very Bad	2	2	2	0	1	0	7	

From the above table we can see that 202 respondents out of 292 respondent's opinion about complaint management is good, in which 80 respondents are GrameenPhone users. And only 7 respondent's opinion about complaint management is very bad. The following chart shows the above frequency distribution,

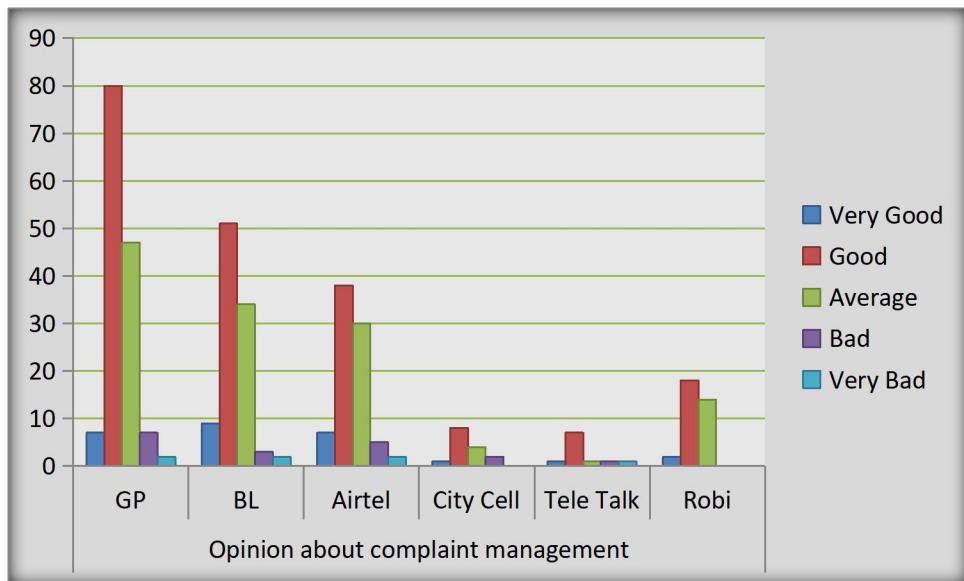


Figure 1.2.4: Multiple bar diagram for opinion on complaint management by mobile operator.

Table 1.2.33: Cross table of opinion of respondents about advertisement quality of mobile operator.

opinion	Mobile Operator							Total
	GP	BL	Airtel	Tele Talk	City Cell	Robi		
Very Good	45	31	20	0	4	5	105	
Good	79	50	42	8	5	19	203	
Average	17	15	19	2	5	8	66	
Bad	3	3	3	1	0	2	12	
Very Bad	1	2	0	0	2	0	5	

From the above table we can see that 203 respondents out of 292 respondent's opinion about advisertisement quality of mobile operator is Good, in which 79 respondents are Grameenphone users. And only 5 respondent's opinion about advertisement quality is very bad. The following chart shows the frequency table

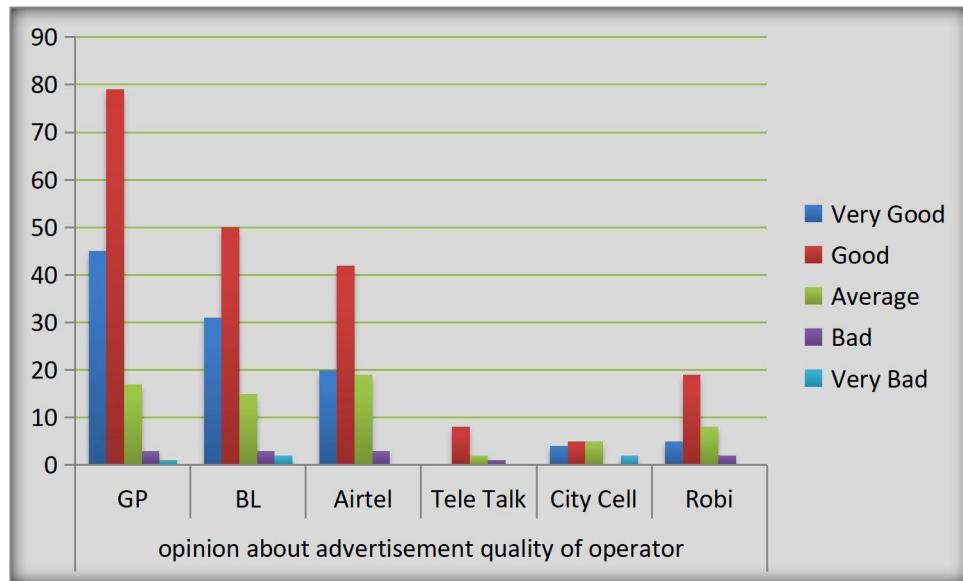


Figure 1.2.5: Multiple bar diagram for opinion on advertisement quality by mobile operator.

Table 1.2.34: Cross table of opinion of respondents about brand image of mobile operators.

		Mobile Operators						
opinion		GP	BL	Airtel	Tele Talk	City Cell	Robi	total
Very Good		48	19	11	1	3	5	87
Good		79	56	46	6	7	17	211
Average		15	19	21	4	4	9	72
Bad		2	2	0	0	1	1	6
Very Bad		0	0	0	0	0	0	0

From the above graph we can see that 211 respondents out of 292 respondent's opinion about brand image of their mobile operator is good in which 79 respondents are GrammenPhone users. The following chart shows the above frequency distribution.

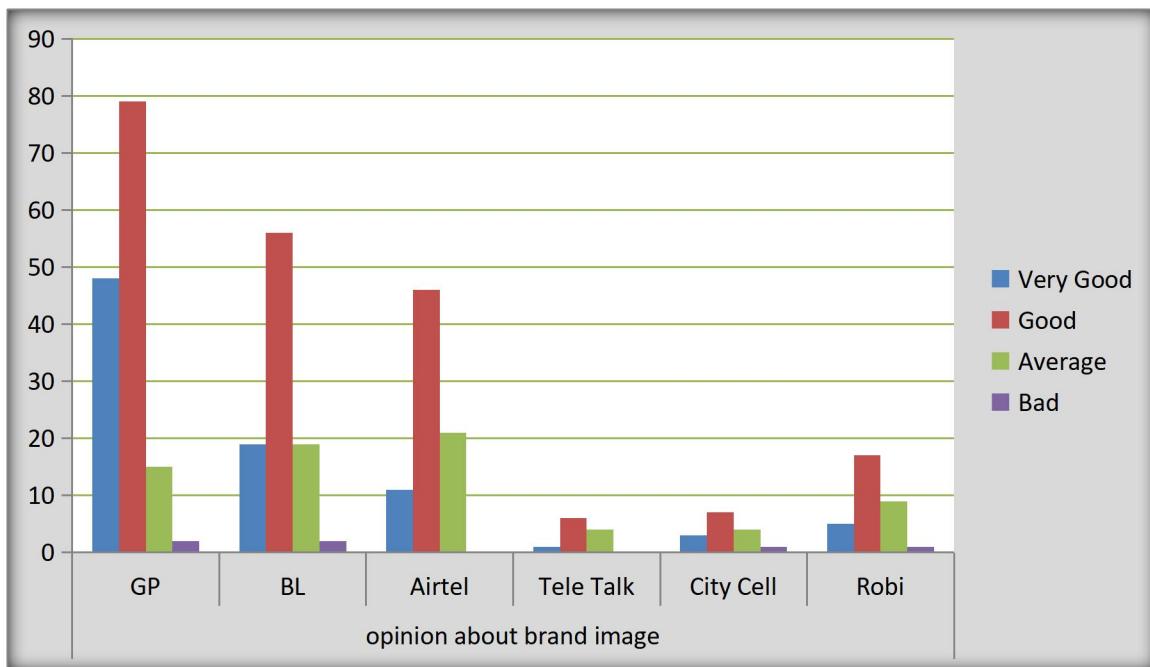


Figure 1.2.6: Multiple bar diagram for opinion on brand image by mobile operator.

5.1.3 Multivariate Analysis

Logistic Regression Model:-

Cox's linear logistic regression model is used not only to identify the contributing factors but also to predict the probability of success that is probability of occurring the event. If the outcome variable is dichotomous then logistic regression model gives much precise result. Our response variables depend on several factors. Here our motive is to identify the contribution of different factors that are found to be responsible for the occurrence of event.

5.1.3.1 Logistic regression model for GP:

We want to fit a regression model for Grameen phone, for which we select GP is the current operator as the binary response variable and the independent variables are- age, sex, economic condition, location, duration of using mobile (in years) of the respondent, better network quality, lower call rate, better customer care service, FnF facility, other reasons & first operator used by the respondent. For all independent variable but economic condition the last category is the reference category. For economic condition of the respondent fir category is the reference category.

Dependent Variable Encoding

Original Value	Internal Value
yes	0
no	1

Table 1.3.1: Table of Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	AGE			7.15043	5	0.209691	
	AGE(1)	-0.8279	0.831306	0.991815	1	0.319299	0.436967
	AGE(2)	-0.93156	0.571359	2.658312	1	0.10301	0.393938
	AGE(3)	-0.8292	0.603391	1.8885	1	0.169371	0.4364
	AGE(4)	-2.465	0.950939	6.719348	1	0.009537	0.085009
	AGE(5)	-0.59502	0.672332	0.783253	1	0.376148	0.551549
	SEX(1)	-0.74656	0.376415	3.93362	1	0.04733	0.473996
	ECOCOND			5.08646	4	0.278541	
	ECOCOND(1)	-2.14343	1.375779	2.427289	1	0.119239	0.117252
	ECOCOND(2)	-2.54906	1.206839	4.461296	1	0.034671	0.078155
	ECOCOND(3)	-2.86134	1.304482	4.811304	1	0.028274	0.057192
	ECOCOND(4)	-21.5621	28061.98	5.9E-07	1	0.999387	4.32E-10
	LOCATION(1)	0.045321	0.442985	0.010467	1	0.918512	1.046364
	YEARSUM			0.098775	2	0.951812	
	YEARSUM(1)	-0.13667	1.074773	0.01617	1	0.898813	0.872259
	YEARSUM(2)	-0.22837	1.008007	0.051325	1	0.820773	0.795834
	RESON51	2.563007	0.461907	30.7886	1	2.88E-08	12.97477
	RESON52	-1.40865	0.400548	12.36793	1	0.000437	0.244473
	RESON53	0.394869	0.59636	0.438418	1	0.507887	1.484189
	RESON54	-0.15844	0.419521	0.142633	1	0.705677	0.853474
	RESON55	0.231156	0.542373	0.181641	1	0.669967	1.260056
	FIRSTOP			35.42044	5	1.24E-06	
	FIRSTOP(1)	-0.86506	1.892661	0.208905	1	0.647627	0.421026
	FIRSTOP(2)	1.485127	1.903071	0.609	1	0.435165	4.415525
	FIRSTOP(3)	1.465132	2.198409	0.444157	1	0.505123	4.328114
	FIRSTOP(4)	-0.08549	1.971584	0.00188	1	0.965412	.918
	FIRSTOP(5)	1.81122	1.94948	0.863187	1	0.352848	6.117905
	Constant	0.827593	3.289363	0.063301	1	0.801353	2.287805

Interpretation:➤ Age of the respondent (age):

<19: $B=-.8279$ and $\exp(B) = 0.436967$. So, 40+ age group is $(1/0.436967) = 2.28$ times as likely to use GP as current operator compared to <19 age group considering other covariates fixed.

19-25: $B=-0.93156$ and $\exp(B) = 0.436967$. So, 40+ age group is $(1/0.393938) = 2.54$ times as likely to use GP as current operator compared to 19-25 age group considering other covariates fixed.

26-30: $B=-0.82929$ and $\exp(B) = 0.4364$. So, 40+ age group is $(1/0.4364) = 2.29$ times as likely to use GP as current operator compared to 26-30 age group considering other covariates fixed.

31-35: $B=-2.465$ and $\exp(B) = 0.085009$. So, 40+ age group is $(1/0.085009) = 11.75$ times as likely to use GP as current operator compared to 31-35 age group considering other covariates fixed.

36-40: $B=-0.59502$ and $\exp(B) = 0.551549$. So, 40+ age group is $(1/0.551549) = 1.80$ times as likely to use GP as current operator compared to 36-40 age group considering other covariates fixed.

➤ Sex of the respondent (sex):

Male: $B=-0.74656$ & $\exp(B) = 0.473996$. So, females are $(1/0.473996) = 2.11$ times as likely to use GP as current operator compared to males considering other covariates fixed.

➤ Economic condition of respondent's family (ecocond) :

Poor: $B=-2.14343$ & $\exp(B) = 0.117252$. So, very poor are $(1/0.117252) = 8.52$ times as likely to use GP as current operator compared to poor considering other Covariates fixed.

Mid-level: $B=-2.54906$ & $\exp(B) = 0.078155$. So, very poor are $(1/0.078155) = 12.8$ times as likely to use GP as current operator compared to mid-level considering other Covariates fixed.

Rich: $B=-2.86134$ & $\exp(B)= 0.057192$. So, very poor are $(1/0.057192) =17.48$ times as likely to use GP as current operator compared to rich considering other Covariates fixed.

Very rich: $B=-21.5621$ & $\exp (B)= 4.32E-10$. So, very poor are much more likely to use GP as current operator compared to very rich considering other Covariates fixed.

➤ Location of the respondent (Location):

Urban: $B=0.045321$ & $\exp (B) = 1.046364$. So, urban people are 1.046364 times as likely to use GP as current operator compared to rural people considering other Covariates fixed.

➤ Duration of using mobile (in years) (Yearsoum):

1-5: $B=-0.13667$ & $\exp (B) = 0.872259$. So, respondents using mobile for more than 10 years are $(1/0.872259) =1.14$ times as likely to use GP as current operator compared to respondents using mobile for 1-5 years considering other covariates fixed.

6-10: $B=-0.22837$ & $\exp (B) = 0.795834$. So, respondents using mobile for more than 10 years are $(1/0.795834) =1.25$ times as likely to use GP as current operator compared to respondents using mobile for 6-10 years considering other Covariates fixed.

➤ Better network quality (reson51):

$B=2.563007$ & $\exp (B) = 12.97477$. So, respondents who use particular operator for better network quality are 12.97477 times as likely to use GP as current operator compared to

respondents who do not use particular operator for better network quality considering other Covariates fixed.

➤ Low call rate (reson52):

$B=-1.40865$ & $\exp(B) = 0.244473$. So, respondents who do not use particular operator for low call rate are $(1/0.244473)=4.09$ times as likely to use GP as current operator compared to respondents who use particular operator for low call rate considering other Covariates fixed.

➤ Better customer care service (reson53):

$B=0.394869$ & $\exp(B) = 1.484189$. So, respondents who use particular operator for better customer care service are 1.484189 times as likely to use GP as current operator compared to respondents who do not use particular operator for better customer care service considering other covariates fixed.

➤ FnF facility (reson54):

$B=-0.15844$ & $\exp(B) = 0.853474$. So, respondents who do not use particular operator for FnF facility are $(1/0.853474) =1.17$ times as likely to use GP as current operator compared to respondents who use particular operator for FnF facility considering other Covariates fixed.

➤ Other reasons (reson55):

$B=0.231156$ & $\exp(B) = 1.260056$. So, respondents who use particular operator for other reasons are 1.260056 times as likely to use GP as current operator compared to respondents who do not use particular operator for other reasons considering other Covariates fixed.

➤ First used operator :

GP (Firststop (1)): $B=-0.86506$ & $\exp(B)=0.421026$. So, respondents who did not use GP as first operator are $(1/0.421026) =3.37$ times as likely to use GP as current operator compared to respondents who used GP as first operator considering other Covariates fixed.

BL (Firststop (2)): $B=1.485127$ & $\exp(B)=4.415525$. So , respondents who used BL as first operator are 4.415525 times as likely to use GP as current operator compared to respondents who did not use BL as first operator considering other Covariates fixed.

Airtel (Firststop (3)): $B=1.485127$ & $\exp(B)=4.415525$. So , respondents who used Airtel as first operator are 4.415525 times as likely to use GP as current operator compared to , respondents who did not use Airtel as first operator considering other Covariates fixed.

Citycell (Firststop (4)): $B=-0.08549$ & $\exp(B)=.918$. So, respondents who did not use Citycell as first operator are $(1/.918)=1.08$ times as likely to use GP as current operator compared to respondents who used Citycell as first operator considering other Covariates fixed.

Robi (Firststop (5)): $B=$ & $\exp(B)= 6.117905$. So, respondents who used Robi as first operator are 6.117905 times as likely to use GP as current operator compared to respondents who did not use Robi as first operator considering other Covariates fixed.

5.1.3.2 Logistic regression model for Citycell:

We want to fit a regression model for Citycell, for which we select Citycell is the current operator as the binary response variable and the independent variables are- sex of the respondent, age at which s/he first used mobile, better network quality, lower call rate, better customer care service, FnF facility, other reasons & respondent's opinion on advertisement quality of Citycell. For all independent variables the last category is the reference category.

Dependent Variable Encoding

Original Value	Internal Value
yes	0
no	1

Table 1.3.2: Table of Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	SEX(1)	.208	.597	.122	1	.727	1.232
	RESON51	.822	.739	1.236	1	.266	2.274
	RESON52	1.984	.815	5.934	1	.015	7.275
	RESON53	- 18.03 3	7950.17 9	.000	1	.998	.000
	RESON54	.309	.751	.169	1	.681	1.362
	RESON55	.588	1.217	.233	1	.629	1.800
	ADVQUAL			10.19 2	4	.037	
	ADVQUAL(1)	3.283	1.394	5.543	1	.019	26.647
	ADVQUAL(2)	4.110	1.397	8.650	1	.003	60.940
	ADVQUAL(3)	2.741	1.397	3.851	1	.050	15.504
	ADVQUAL(4)	21.25 6	11657.5 66	.000	1	.999	170318228 7.582
	FUMPAGE			5.147	3	.161	
	FUMPAGE(1)	-.705	.942	.560	1	.454	.494
	FUMPAGE(2)	.931	.812	1.315	1	.251	2.537
	FUMPAGE(3)	18.51 7	6876.55 0	.000	1	.998	110114379 .596
	Constant	28.87 9	15900.3 57	.000	1	.999	348265156 6266.362

Interpretation:➤ Sex of the respondent (sex):

Male: $B=0.208$ & $\exp(B) = 1.232$. So, males are 1.232 times as likely to use Citycell as current operator compared to females considering other covariates fixed.

➤ Better network quality (reson 51):

$B=.822$ & $\exp(B) = 2.274$. So, respondents who use particular operator for better network quality are 2.274 times as likely to use Citycell as current operator compared to respondents who do not use particular operator for better network quality considering other Covariates fixed.

➤ Low call rate (reson52):

$B=1.984$ & $\exp(B) = 7.275$. So, respondents who use particular operator for low call rate are 7.275 times as likely to use Citycell as current operator compared to respondents who do not use particular operator for low call rate considering other Covariates fixed.

➤ Better customer care service (reson53):

$B=-18.033$ & $\exp(B) = .000$. So, respondents who do not use particular operator for better customer care service are very much more likely to use Citycell as current operator compared to respondents who use particular operator for better customer care service considering other covariates fixed.

➤ FnF facility (reson54):

$B=.309$ & $\exp(B) = 1.362$. So, respondents who use particular operator for FnF facility are 1.362 times as likely to use Citycell as current operator compared to respondents who do not use particular operator for FnF facility considering other Covariates fixed.

➤ Other reasons (reson55):

$B=.588$ & $\exp(B) = 1.8$. So, respondents who use particular operator for other reasons are 1.8 times as likely to use Citycell as current operator compared to respondents who do not use particular operator for other reasons considering other Covariates fixed.

➤ Opinion on advertisement quality (Advqual):

Bad: $B=3.283$ & $\exp(B) = 26.647$. So, respondents who think Citycell has bad advertisement quality are 26.647 times as likely to use Citycell as current operator compared to respondents who think Citycell has very bad advertisement quality considering other Covariates fixed.

Average: $B=4.11$ & $\exp(B) = 60.94$. So, respondents who think Citycell has average advertisement quality are 60.94 times as likely to use Citycell as current operator compared to respondents who think Citycell has very bad advertisement quality considering other Covariates fixed.

Good: $B=2.741$ & $\exp(B) = 15.504$. So, respondents who think Citycell has good advertisement quality are 15.504 times as likely to use Citycell as current operator compared to respondents who think Citycell has very bad advertisement quality considering other Covariates fixed.

Very good: $B=21.256$ & $\exp(B) = 1703182287.582$. So, respondents who think Citycell has very good advertisement quality are 1703182287.582 times as likely to use Citycell as current operator compared to respondents who think Citycell has very bad advertisement quality considering other Covariates fixed.

➤ Respondents' age at first using mobile phone (Fumpage):

<15: B=-.705 and $\exp(B) = 0.494$. So, respondents who used mobile for the first time at the age of 35+ are $(1/0.494)=2.02$ times as likely to use Citycell as current operator compared to respondents who used mobile for the first time at the age of <15 considering other covariates fixed.

15-25: B=.931 and $\exp(B) = 2.537$. So, respondents who used mobile for the first time at the age of 15-25 are 2.537 times as likely to use Citycell as current operator compared to respondents who used mobile for the first time at the age of 35+ considering other covariates fixed.

26-35: B=18.517 and $\exp(B) = 110114379.596$. So, respondents who used mobile for the first time at the age of 26-35 are 110114379.596 times as likely to use Citycell as current operator compared to respondents who used mobile for the first time at the age of 35+ considering other covariates fixed.

5.1.3.3 Logistic regression model for BTCL:

We want to fit a regression model for BTCL, for which we select availability of landline at respondents' home as the binary response variable and the independent variables are- age, income & occupation of the respondent, location of respondents' family. For every independent (categorical) variable but location of the respondents' family the first category is the reference category. For location of the respondent the last category is the reference category.

Dependent Variable Encoding

Original Value	Internal Value
yes	0
no	1

Table 1.3.3: Table of Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	AGE			.420	5	.995	
	AGE(1)	-.058	.686	.007	1	.933	.944
	AGE(2)	-.054	.850	.004	1	.950	.948
	AGE(3)	-.196	.961	.041	1	.839	.822
	AGE(4)	.270	.955	.080	1	.777	1.310
	AGE(5)	.039	.917	.002	1	.966	1.039
	LOCATION(1)	2.021	.525	14.819	1	.000	7.545
	INCOME			5.357	4	.253	
	INCOME(1)	-.183	.495	.137	1	.711	.833
	INCOME(2)	-.521	.601	.752	1	.386	.594
	INCOME(3)	.321	.723	.197	1	.657	1.378
	INCOME(4)	.661	.736	.806	1	.369	1.936
	OCCUP			5.212	7	.634	
	OCCUP(1)	-.326	.681	.229	1	.632	.722
	OCCUP(2)	-	13617.		1	.999	.000
		20.235	565	.000			
	OCCUP(3)	.326	.710	.211	1	.646	1.386
	OCCUP(4)	.506	.822	.380	1	.538	1.659
	OCCUP(5)	1.193	.819	2.121	1	.145	3.297
	OCCUP(6)	-	19103.		1	.999	.000
		19.724	771	.000			
	OCCUP(7)	-.213	.759	.079	1	.779	.808
	Constant	-2.428	1.134	4.583	1	.032	.088

Interpretation:➤ Age of the respondent (age):

19-25: $B=-0.058$ and $\exp(B)=0.944$. So, <19 age group is $(1/0.944)=1.06$ times as likely to have landline connection compared to 19-25 age group considering other covariates fixed.

26-30: $B=-0.054$ and $\exp(B)=0.948$. So, <19 age group is $(1/0.948)=1.05$ times as likely to have landline connection compared to 26-30 age group considering other covariates fixed.

31-35: $B=-1.96$ and $\exp(B)=0.822$. So, <19 age group is $(1/0.822)=1.22$ times as likely to have landline connection compared to 31-35 age group considering other covariates fixed.

36-40: $B=.270$ and $\exp(B)=1.31$. So, 36-40 age group is 1.31 times as likely to have landline connection compared to <19 age group considering other covariates fixed.

40+: $B=.039$ and $\exp(B)=1.039$. So, 40+ age group is 1.039 times as likely to have landline connection compared to <19 age group considering other covariates fixed.

➤ Location of the respondent's family (Location):

Urban: $B=2.021$ and $\exp(B)=7.545$. So, urban people are 7.545 times as likely to have landline connection compared to rural people considering other Covariates fixed.

➤ Income of the respondent (Income):

<10000: $B=-.183$ and $\exp(B)=0.833$. So, respondent with no income is $(1/0.833)=1.20$ times as likely to have landline connection compared to respondent with income less than 10000 considering other covariates fixed.

10001-20000: $B=-0.521$ and $\exp(B)=0.594$. So, respondent with no income is $(1/0.594)=1.68$ times as likely to have landline connection compared to respondent with income 10001-20000 considering other covariates fixed.

20001-30000: $B=.321$ & $\exp(B)=1.378$. So, respondent with income 20001-30000 is 1.378 times as likely to have landline connection compared to respondent with no income considering other Covariates fixed.

30000+: $B=.621$ & $\exp(B)=1.936$. So, respondent with income 30000+ is 1.936 times as likely to have landline connection compared to respondent with no income considering other Covariates fixed.

➤ Occupation of the respondent (Occup):

Private Service: $B=-.326$ and $\exp(B) = .722$. So, government service holder is $(1/.722)=1.39$ times as likely to have landline connection compared to private service holder considering other covariates fixed.

Labourer: $B=-20.235$ and $\exp(B) = .000$. So, government service holder is very much more likely to have landline connection compared to labourer considering other covariates fixed.

Business: $B=.326$ & $\exp(B) = 1.386$. So, businessman is 1.386 times as likely to have landline connection compared to government service holder considering other Covariates fixed.

Student: $B=.506$ & $\exp(B) = 1.659$. So, student is 1.659 times as likely to have landline connection compared to government service holder considering other Covariates fixed.

Housewife: $B=1.193$ & $\exp(B) = 3.297$. So, housewife is 3.297 times as likely to have landline connection compared to government service holder considering other Covariates fixed.

Housekeeper: $B=-19.724$ and $\exp(B) = .000$. So, government service holder is very much more likely to have landline connection compared to respondents who work at private service holder considering other covariates fixed.

Others: $B=-.213$ and $\exp(B) = .808$. So, government service holder is $(1/.808)=1.24$ times as likely to have landline connection compared to respondents with other occupations considering other Covariates fixed.

5.1.3.4 Logistic regression model for overall satisfaction:

We want to fit a regression model for overall satisfaction of the respondent on telecom organisations, for which we select overall satisfaction as the binary response variable and the independent variables are- age, occupation & education, satisfaction with development activities, view on the positive side of telecom system, view on increase of crime using mobile operator of the respondent & location of respondents' family, For every independent (categorical) variable but location of the respondents' family the first category is the reference category. For location of the respondent the last category is the reference category.

Dependent Variable Encoding

Original Value	Internal Value
yes	0
no	1

Table 1.3.4: Table of Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	AGE			12.529	5	.028	
	AGE(1)	-2.469	1.076	5.269	1	.022	.085
	AGE(2)	-2.354	1.206	3.810	1	.051	.095
	AGE(3)	.557	1.768	.099	1	.753	1.746
	AGE(4)	-1.261	1.369	.848	1	.357	.283
	AGE(5)	-1.019	1.253	.662	1	.416	.361
	LOCATION(1)	-.314	.523	.359	1	.549	.731
	OCCUP			8.541	7	.287	
	OCCUP(1)	.675	.902	.559	1	.455	1.963
	OCCUP(2)	-1.953	1.617	1.459	1	.227	.142
	OCCUP(3)	-.131	.913	.020	1	.886	.878
	OCCUP(4)	.609	1.040	.343	1	.558	1.838
	OCCUP(5)	.875	1.005	.758	1	.384	2.398
	OCCUP(6)	3.490	2.278	2.346	1	.126	32.789
	OCCUP(7)	-.086	.985	.008	1	.931	.918
	POS_TELE	.102	.114	.803	1	.370	1.108
	INCRCRIM	.269	.537	.250	1	.617	1.308
	SATISFDE	-2.676	.390	47.055	1	.000	.069
	EDUC			2.434	5	.786	
	EDUC(1)	1.312	2.268	.335	1	.563	3.714
	EDUC(2)	1.651	2.334	.501	1	.479	5.213
	EDUC(3)	1.403	2.300	.372	1	.542	4.065
	EDUC(4)	1.875	2.259	.689	1	.406	6.523
	EDUC(5)	2.403	2.350	1.046	1	.306	11.055
	Constant	6.767	3.046	4.935	1	.026	868.559

Interpretation:➤ Age of the respondent (age):

19-25: $B=-2.469$ and $\exp(B)=0.085$. So, <19 age group is $(1/0.085)=11.76$ times as likely to be satisfied with telecom system compared to 19-25 age group considering other covariates fixed.

26-30: $B=-2.354$ and $\exp(B)=0.095$. So, <19 age group is $(1/0.095)=10.53$ times as likely to be satisfied with telecom system compared to 26-30 age group considering other covariates fixed.

31-35: $B=.557$ and $\exp(B)=1.746$. So, 31-35 age group is 1.746 times as likely to be satisfied with telecom system compared to <19 age group considering other covariates fixed.

36-40: $B=-1.261$ and $\exp(B)=.283$. So, <19 age group is $(1/.283)=3.53$ times as likely to be satisfied with telecom system compared to 36-40 age group considering other covariates fixed.

40+: $B=-1.019$ and $\exp(B)=.361$. So, <19 age group is $(1/.361)=2.77$ times as likely to be satisfied with telecom system compared 40+ age group considering other covariates fixed.

➤ Location of the respondent's family (Location):

Urban: $B=-0.314$ & $\exp(B)=.731$. So, rural people are $(1/.731)=1.37$ times as likely to be satisfied with telecom system compared to urban people considering other Covariates fixed.

➤ Occupation of the respondent (Occup):

Private Service: $B=.675$ and $\exp(B) = 1.963$. So, private service holder is 1.963 times as likely to be satisfied with telecom system compared to government service holder considering other covariates fixed.

Laborer: $B=-1.953$ and $\exp(B) = .142$. So, government service holder is $(1/.142)=7.04$ likely to be satisfied with telecom system compared to laborers considering other covariates fixed.

Business: $B=-.131$ & $\exp(B) = .878$. So, government service holder is $(1/.878)=1.14$ times as likely to be satisfied with telecom system compared to businessman considering other Covariates fixed.

Student: $B=.609$ & $\exp(B) = 1.838$. So, student is 1.838 times as likely to be satisfied with telecom system compared to government service holder considering other Covariates fixed.

Housewife: $B=.875$ & $\exp(B) = 2.398$. So, housewife is 2.398 times as likely to be satisfied with telecom system compared to government service holder considering other Covariates fixed.

Housekeeper: $B=3.490$ and $\exp(B) = 32.79$. So, housekeeper is 32.79 likely to be satisfied with telecom system compared to respondents who work at government service holder considering other covariates fixed.

Others: $B=-.086$ and $\exp(B) = .918$. So, government service holder is $(1/.918) = 1.09$ times as likely to be satisfied with telecom system compared to respondents with other occupations considering other Covariates fixed.

➤ View on the positive side of telecom system (Pos_tele):

$B=.102$ & $\exp(B) = 1.108$. So, respondent who thinks that telecom system has positive sides is 1.108 times as likely to be satisfied with telecom system compared to respondent who thinks that telecom system does not have positive sides.

➤ View on telecom system increasing crime (Incr crim):

$B=.269$ & $\exp(B) = 1.308$. So, respondent who thinks that telecom system is responsible for increasing crime is 1.108 times as likely to be satisfied with telecom system compared to respondent who thinks that telecom system is responsible for increasing crime.

➤ Satisfaction with role in development (Satisfde):

$B: =-2.676$ and $\exp(B) =0.069$. So, respondent who is satisfied with the role of telecom system in development is $(1/0.069)=14.49$ times as likely to be satisfied with telecom system compared to respondent who is not satisfied with the role of telecom system in development considering other covariates fixed.

➤ Education of the respondent (Educ):

Primary: $B=1.312$ and $\exp(B) =3.714$. So, 31-35 age group is 3.714 times as likely to be satisfied with telecom system compared to an illiterate considering other covariates fixed.

Secondary: $B=1.651$ and $\exp(B) =5.213$. So, 31-35 age group is 5.213times as likely to be satisfied with telecom system compared to an illiterate considering other covariates fixed.

Higher secondary: $B=.557$ and $\exp(B) =1.746$. So, 31-35 age group is 1.746 times as likely to be satisfied with telecom system compared to an illiterate considering other covariates fixed.

Graduate: $B=.557$ and $\exp(B) =1.746$. So, 31-35 age group is 1.746 times as likely to be satisfied with telecom system compared to an illiterate considering other covariates fixed.

Masters & above: $B=.557$ and $\exp(B) =1.746$. So, 31-35 age group is 1.746 times as likely to be satisfied with telecom system compared to an illiterate considering other covariates fixed.

5.2 OFFICE

5.2.1 Summary report

Table 2.1: summary report about the number of subscriber (in million) of an operator.

No of subscribers(in millions)	
Airtel Bangladesh Limited	5
Orasom telecom Bangladesh limited	20.05
BTCL	1
Grameenphone	36
Pacific Bangladesh Telecom LTD	1.8
Robi	11
Tele Talk Bangladesh Limited	1.14

The above table represent that Grameenphone has the maximum no of subscriber and BTCL has minimum number of subscriber all over Bangladesh. The following pie chart shows the above frequency distribution.

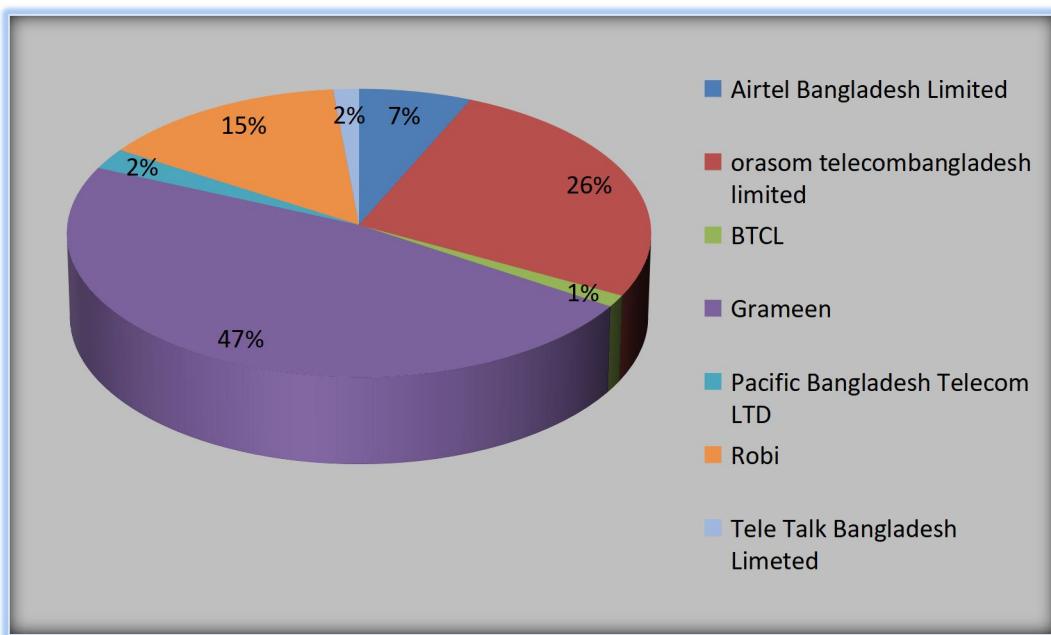


Figure 2.1: Pie chart of number of subscriber (in million) of an operator.

Table 2.2: Summary report about the number of districts and Thana's coverage of an operator by the operator.

	districts	thanas
Airtel	64	350
BTCL	65	456
GP	65	480
BL	65	387
Citycell	50	
Robi	65	480
Teletalk	64	

The above table represent that GP, BTCL, BL, ROBI cover almost 65 districts and GP& ROBI cover the highest number (480) of thanas all over Bangladesh. The following bar diagram shows the above frequency distribution

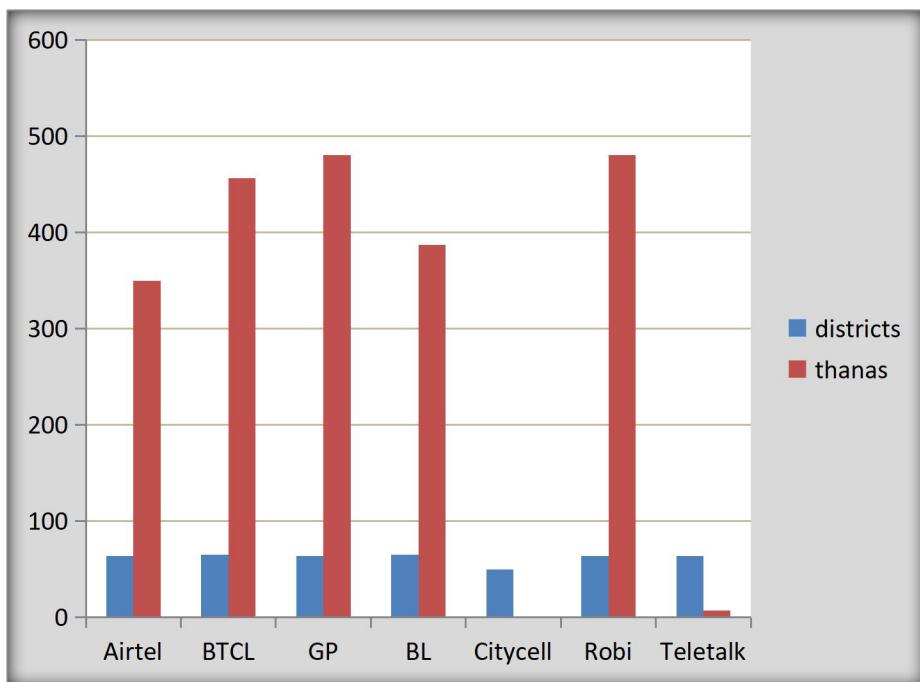


Figure 2.2: Multiple bar diagram of number of districts and Thana's coverage by the operator.

Table 2.3: Summary report on the number of country coverage (int roaming) of an operator.

	int roaming #
Airtel Bangladesh Limited	128
Orasom telecom Bangladesh Limited	100
BTCL	193
Grameen	216
Pacific Bangladesh Telecom LTD	150
Robi	215
Tele Talk Bangladesh Limited	

The above table represent that Grameen has maximum international roaming and Banglalink has minimum international roaming all over world. The following bar diagram shows the above frequency distribution

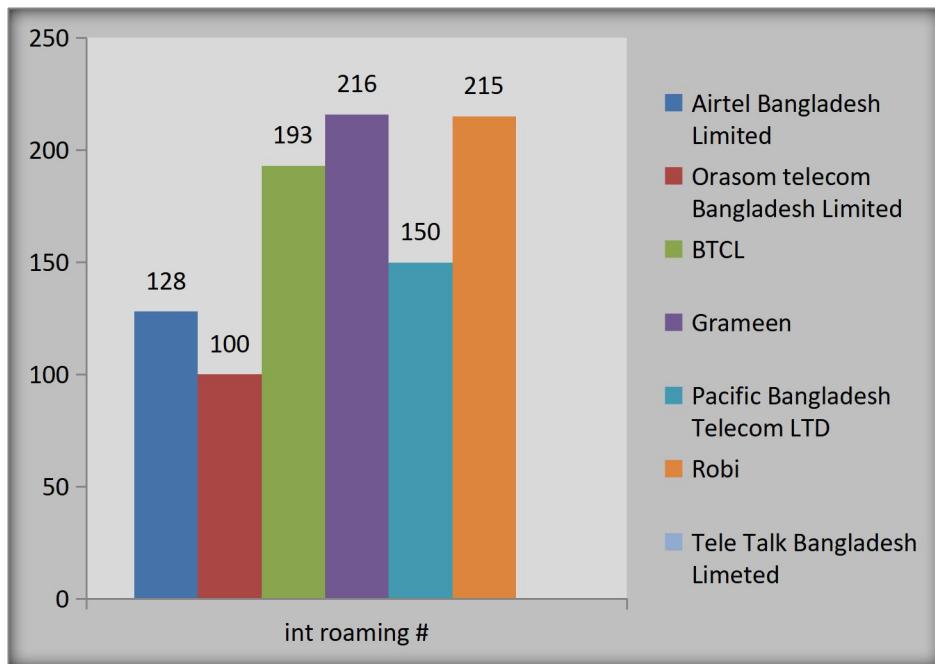


Figure 2.3: Bar diagram of number of country coverage (int roaming) of an operator.

Table 2.4: Summary report on the percentage of area coverage of an operator by the operator.

	coverage (Rural)	coverage (Urban)
Airtel	98	100
GP	100	100
BL	83	100
Robi	90	100

The above table represent that all the operator cover almost 100% urban area and GP cover the highest percentage (100%) of rural area and Airtel cover the 2nd highest percentage of rural area. BL cover only 83% of the rural area all over Bangladesh. The following bar diagram shows the above frequency distribution.

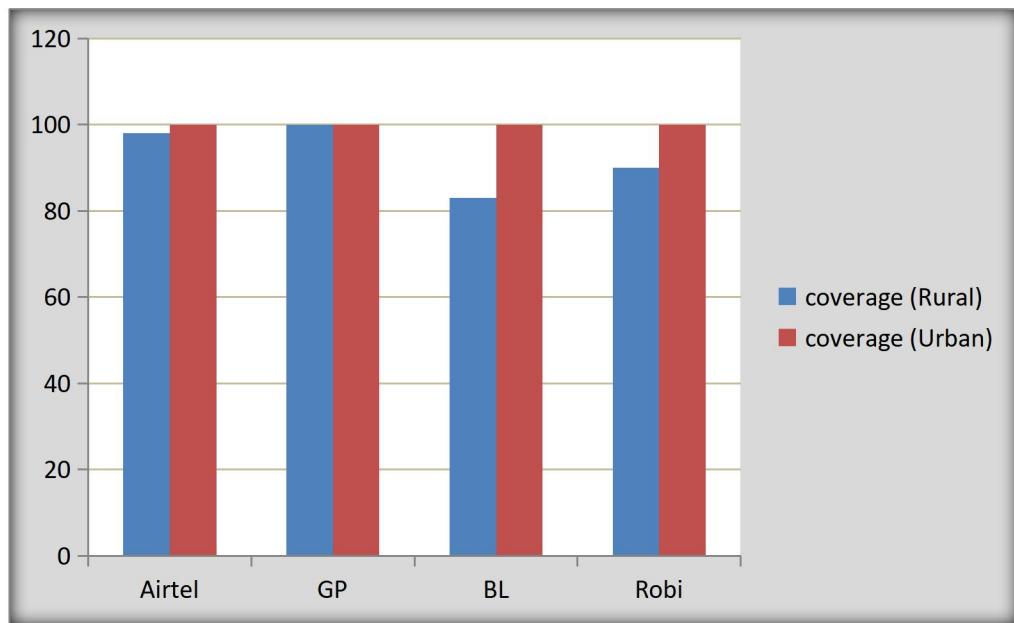


Figure 2.4: Multiple bar diagram of percentage of area (rural & urban) coverage by the operator.

Table 2.5: Summary report on the number of CCC and number of CCP of an operator by the operator.

	no of CCC	No of CCP
Airtel	6	6
GP	17	1600
BL	8	1300
Citycell	7	450
Robi	22	450
Teletalk		

The above table represent that ROBI has maximum number of CCC and GP has the 2nd highest and also Airtel has the minimum number of CCC but GP has maximum number of CCP and BL has the 2nd highest CCP all over Bangladesh. The following line diagram shows the above frequency distribution.

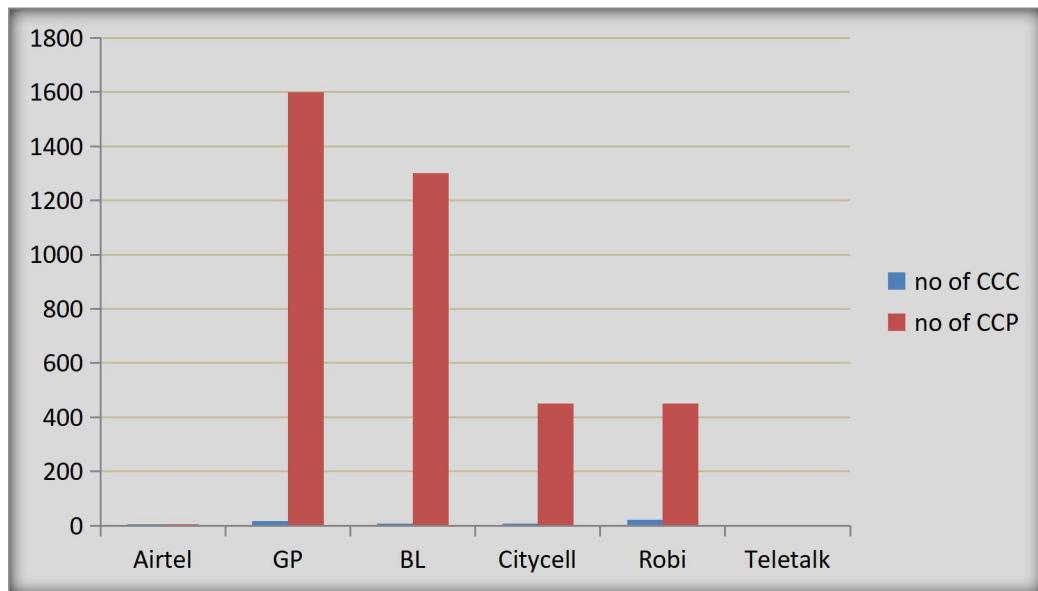


Figure 2.5: Bar diagram of number of CCC and no of CCP of an operator.

Table 2.6: Summary report on the yearly income of an operator.

income	
Airtel Bangladesh Limited	
orasomtelecombangladesh limited	9900000000
BTCL	15000000000
Grameen	18890000000
Pacific Bangladesh Telecom LTD	5000000000
Robi	
Tele Talk Bangladesh Limeted	

The above table represent that Grameen has maximum income and BTCL has 2nd highest income over all the operator. The following bar diagram shows the above frequency distribution.

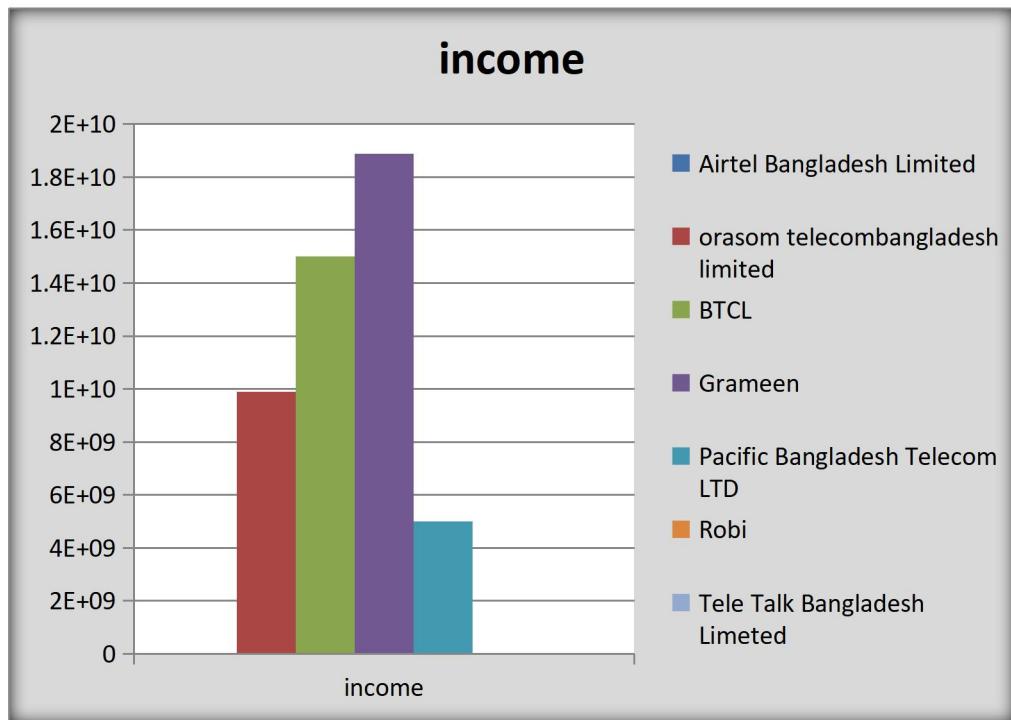
**Figure 2.6: Bar diagram of yearly income of an operator.**

Table 2.7: Summary report on the products of different telecom organizations.

		Produced product
Telecom operator	Airtel Bangladesh Limited	sim , GPRS modem
	BTCL	international gateway(telephone+internet),satelite station, infrastructure, lidge line, VPN
	Grameen	sim,modem
	orasom telecom Bangladesh limited	modem,sim,gprs internet package
	Pacific Bangladesh	
	Telecom LTD	data-zoom ultra, voice-citycell sim
	Robi	sim,mini internet packages
	Tele Talk Bangladesh Limeted	internet,sim

The above table reveals the products and services provided by different telecom organizations. We can see that sim & internet are common products for every organization.

Table 2.8: Summary report on the maximum number of FnF offered by telecom operator.

	max no of fnf
telecom operator	
Airtel Bangladesh Limited	20
orasom telecom Bangladesh limited	7
BTCL	0
Grameen	7
Pacific Bangladesh Telecom LTD	9
Robi	10
Tele Talk Bangladesh Limeted	9

The above frequency table shows the fact that Airtel provides the maximum FnF facility followed by Robi. The following doughnut chart shows the above frequency distribution.

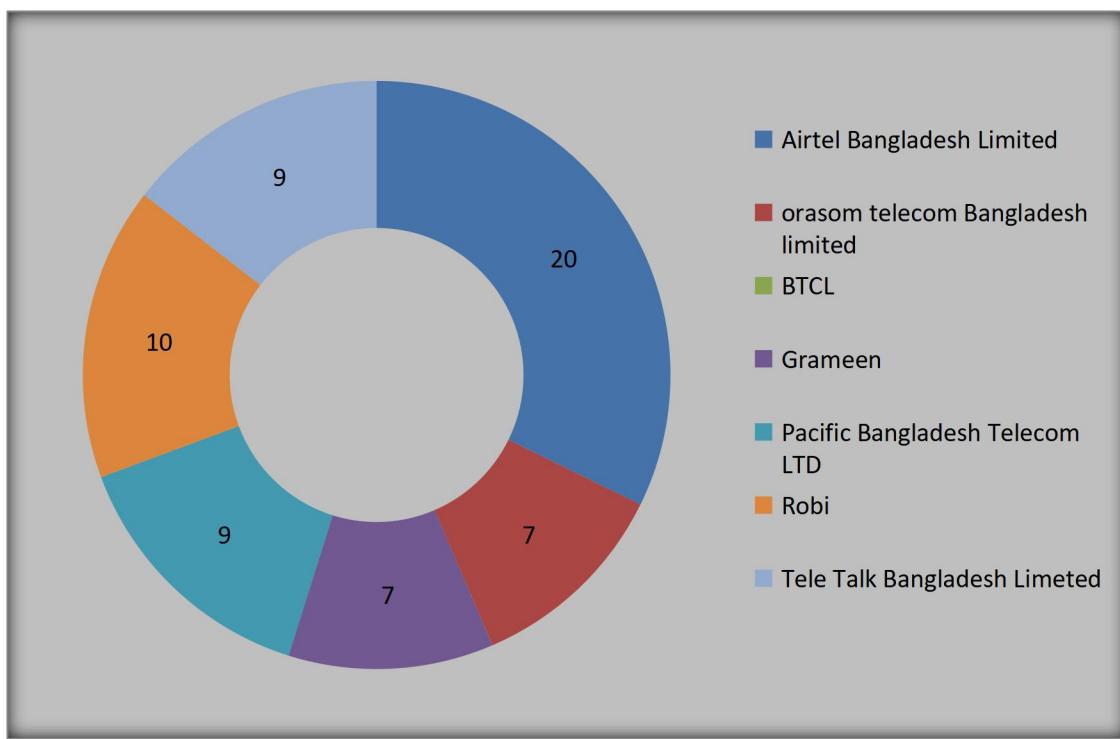


Figure 2.7: Doughnut chart of maximum number of FnF facility.

Table2.9: Summary report on the telecom operator by available facilities.

		Services provided by telecom operators		
telecom operator	availability of mobile train ticket buying facility	mobile remittance service	availability of call blocking system	
Airtel Bangladesh Limited	no	yes	yes	
Grameen	yes	yes	yes	
orasom telecombangladesh limited	yes	yes	yes	
Pacific Bangladesh Telecom LTD	no	yes	yes	
Robi	no	yes	yes	

The above table shows different facilities provided by telecom organizations. We can see that both mobile remittance and call blocking are provided by all the five telecom operators. Only Grameenphone and Banglalink provides mobile train ticket buying facility.

Table 2.10: Summary report on the employee number & amount of tax of different telecom organizations.

		no of employee of this company	amount of tax pay to government per year
name of the telecom operator	Airtel Bangladesh Limited	550	
	BTCL	8122	5000
	Grameen	5000	245170000000
	orasom telecom Bangladesh limited	5000	14098000000
	Pacific Bangladesh Telecom LTD	692	3500000000
	Robi	1500	.

The above table shows that BTCL which is a government telecom organization provide the highest number of employment followed by GP. It also gives the information that GP is the highest tax paying telecom organization followed by BL. The following charts show the above findings.

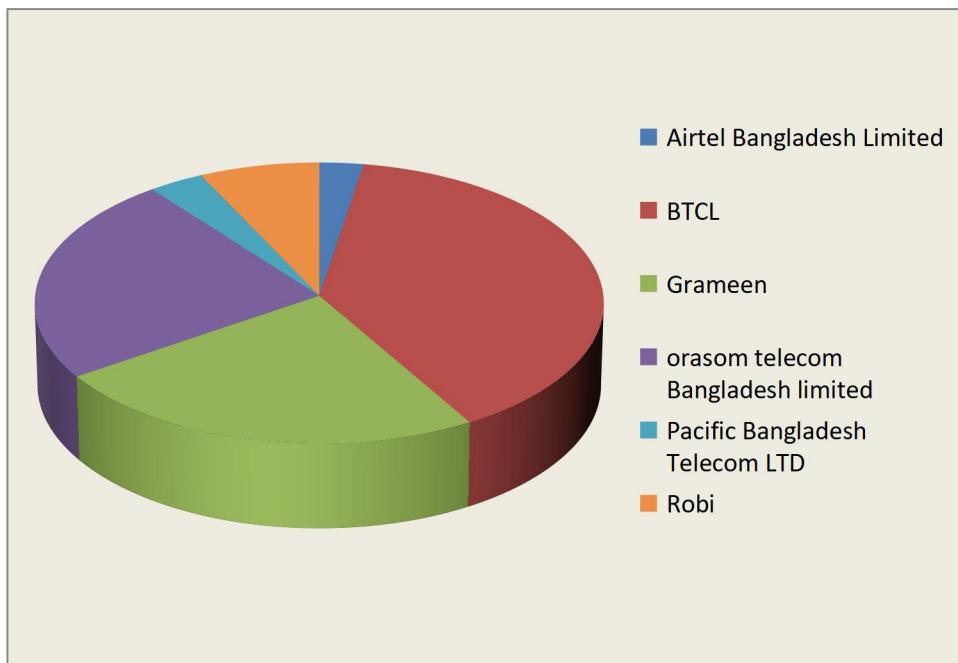


Figure 2.8: Pie chart for number of employee of different organizations.

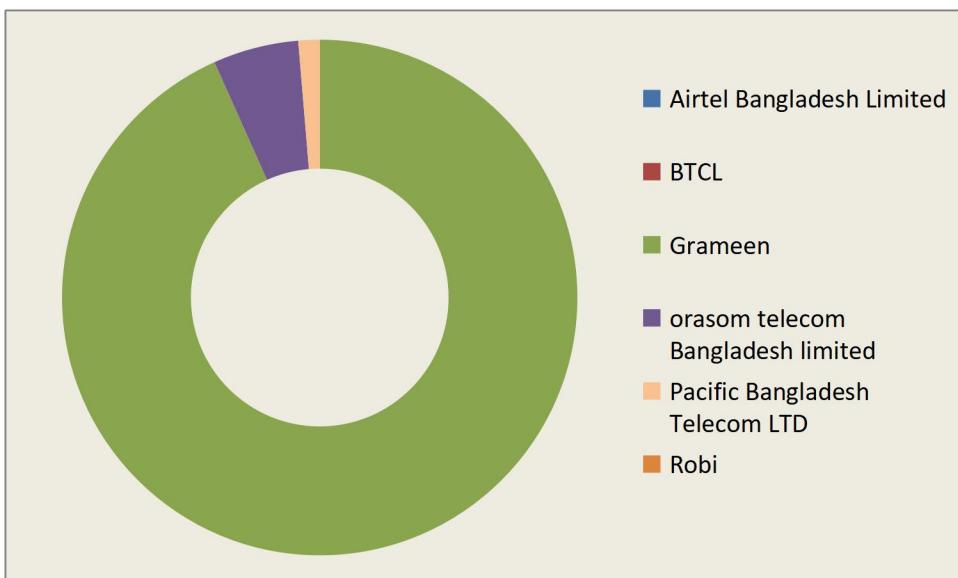


Figure 2.9: Doughnut chart for amount of tax paid by tax paid by telecom organizations.

Chapter 6

Conclusion & Recommendation

Chapter-6
Conclusion & recommendation

6.1 KEY DISCOVERIES OF THE STUDY

This section encloses the key discoveries on the issue of the present circumstance of telecom organization and consumers' view on this issue. We are now summarizing our discoveries as following:

From univariate analysis, we have seen that approximately 50% of our respondents use Grameenphone. The office report of number of subscribers gives confirmation to this fact. Only Grammenphone has 100% network coverage for rural area where all operators cover 100% urban area. Grammenphone has the highest income followed by BTCL which is the only landline operator of Bangladesh. Most of the respondents prefer one or another telecom sector because they find it to be more reasonable. We have also seen that, 82% respondents believe that mobile phone aids to increase crime. 90.7% respondents prefer mobile operator over landline as their telecom system. 25% of our respondents want better network coverage.

In bivariate analysis, we have shown some cross tables with graphs and have done chi-square tests for other cross-tables . We mainly wanted to investigate the association between some demographic characteristics and variables of our interest. We also have constructed some cross-tables to make comparison of different levels of a factor on other variables. The analysis revealed that GP is popular among all age group except to <19 aged respondents. Young generation have a tendency to use Ariel or Banglalink more than other operators. The "mid-level" and "rich" consumers mostly use GrameenPhone whereas "poor" and "very poor" consumers prefer Banglalink over GrameenPhone. We also have come to distinguish the choice of mobile operator to respondents with different occupations. Grameenphone is again preferred by classes like government & private service holder, businessman but laborer, students & housekeeper are more likely to use Banglalink than other operators. Most of the respondents' opinion on brand image, advertisement quality, value added service, complaint management and internet speed of their operator is either "good" or "average" for almost every operator. But in the case of view on overall charges the opinion "high" & "average" are the most agreed responses for

Grameenphone. For other operators we mostly have got “average” & “reasonable” responses.

From chi-square test we have discovered some associations between some demographic characteristics like age, sex, education, occupation, relationship status & economic condition of respondent and some Variables like reasons for using his/her current operator, opinion on some services provided by mobile operators. We have seen some strong associations between occupation and better network quality influencing the choice of current operator ($p=.004<.05$) and also between respondents' relationship status and other reasons influencing the choice of current operator ($p=.000<.05$). We also have found some insignificant associations.

Finally we have fitted some binary logistic models, to identify the contribution of some independent variables on the occurrence of some events of interest. The fitted logistic model for using GP currently (response variable) has shown some contribution of some levels or groups of other independent factors like sex, location, economic condition, years of using mobile, reasons of using current operator etc.

The fitted logistic model for using Citycell currently (response variable) has shown some contribution of some levels or groups of other independent factors like sex, reasons of using current operator, opinion on advertisement quality, age at first using mobile operator etc.

The fitted logistic model for having landline at resident (response variable) has shown some contribution of some levels or groups of other independent factors like age, location, income level, occupation of the respondent etc.

The fitted logistic model for overall satisfaction on telecom system (response variable) has shown some contribution of some levels or groups of other independent factors like age, location, occupation, education and view on the effect of telecom service on youth of Bangladesh, satisfaction with development activities etc.

6.2 CONCLUSION

Today, telecommunication is one of the major parts of human life. It has made a considerable effect on the means of communication. It does not only facilitate us with the easiest & fastest way of communication we could have ever imagined but also has provided a vast scope in the economy sector. A small country like Bangladesh is not deprived of the contributions provided by this industry. Bangladesh telecom industry has a lot of potential to offer considering strategically ignorable or somehow alterable threats. so our concern is to find out the preference basis, dissimilarities of different telecom segments run by government and non-government resource sectors.

Data have been collected through personal interview & telephone interview in the case of respondents. For offices we have collected data either directly from offices or from online publishes on internet. We have collected both qualitative and quantitative data to execute our objectives. Our target population is the aggregate of consumers of mobile operators. For the shortage of time we have collected data from 292 consumers. We have also collected data from all offices of telecom organizations.

After processing the data in SPSS, analyses have been carried out in univariate, bivariate analysis and model fitting. We have performed chi-square test and fitted binary logistic model.

From the univariate analysis, we have seen that approximately 50% of the respondents use Grameenphone and also from office report we see that Grameenphone has most number of consumers. There is preference for certain operators in different groups of different variables. Also consumers of different age group, sex, income group, education, occupation, different mobile operator users have different opinion on different services provided by different organizations.

From the bivariate analysis we have identified some significant association between some demographical variables and our variable of interest. We have fitted four binary logistic regression models to investigate the contributions of independent variables on response variables.

From the above analysis, we may conclude that different factors like demographic factors, services provided by telecom organizations, condition of network quality of different operators are the basis of preference of different operators. From the evaluation of offices we see that Grameenphone has the highest income at the same time is the highest tax paid mobile operator. There is definitely some deficiencies in the services or other facilities of government telecom organizations as they have very less number of consumers with low satisfaction level. The only landline company (BTCL) also has less consumers compared to its capacity. Finally we have observed the role of telecom organizations on the development of the economy of Bangladesh and consumers' view on these activities.

6.3 Recommendation

After recognizing the reasons of preference, evaluating present condition of the telecom organizations, identifying deficiencies of government organizations we recommend following suggestions:

1. It is found from the result of the research that different groups of demographic variables prefer different mobile operators. So, telecom organizations should study the desires of different group of respondents to increase their consumers.
2. We have also seen that different services provided by telecom organizations also influence the choice of mobile operator. So, organizations should effort to develop their network quality by developing their infrastructure. Respondents also want lower call rate.
3. It has also been clear from the study that the government telecom operators lack in many spheres as compared to non-government. This fact shows in our analysis. We have studied that consumers of Teletalk operator are not satisfied with the network quality & customer care service. In the case of BTCL people want more technological advancement and removal of cross connection problem. So, they need to solve these problems.
4. We have also found out that, though telecom industry facilitates in the economy of Bangladesh, respondents think that it also causes some complexities in the young

generation. So, for the betterment of the ethical contribution of telecom operators should solve the prevailing problems.

5. Most of the young respondents are yearning for 3G facility in their operator. So, operators should introduce this facility as soon as possible to attract the young generation.