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ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE

PROJECT MANAGEMENT PROGRAM

**AN ASSESSMENT OF CUSTOMERS' PERCEPTION TOWARDS
ETHIO TELECOM BROADBAND SERVICE DELIVERY PRACTICES;**

THE CASE OF ETHIO TELECOM FINANCIAL ENTERPRISE CUSTOMERS

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ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
DEPARTMENT OF PROJECT MANAGEMENT

This is to certify that the thesis prepared by Abebe Ambaw Aredo entitled “an assessment of customers’ perception towards ethio telecom broadband service delivery practices; the case of ethio telecom financial enterprise customers” which is submitted in partial fulfillment for the Degree of Master in Project Management complies with the regulation of the University and meets the accepted standard with respect to originality and quality.

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I, hereby, declare that this thesis entitled “**an assessment of customers’ perception towards ethio telecom broadband service delivery practices; the case of ethio telecom financial enterprise customers**” is original work of my own, and has not been presented by anyone for any degree in any other university. And all the sources of materials used for the thesis have been duly acknowledged.

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List of Acronyms / Abbreviations

ADSL	Asymmetric digital subscriber line
CPE	Customer premises equipment
DSL	Digital line subscriber
DSLAM	Digital Subscriber Line Access Multiplexer
E- Commerce	Electronic Commerce
E-Government	Electronic government
GDP	gross domestic product
ICT	Information Communication Technology
IoT	Internet of things
IP	Internet protocol
IT	Information Technology
LTE	Long term evolution
MSAG	Multi service access gateway
MSAN	Multi service access node
MTTF	Mean time to repair
O&M	Operation and maintenance
QoE	Quality of experience
QoS	Quality of service
ServQual	Service quality
SPSS	Statistical Package for Social Sciences
VDSL	Very asymmetric digital subscriber line

ABSTRACT

This study is aimed to assess the level of customers' perception towards ethio telecom broadband service delivery practices by focusing on financial institutions in Addis Ababa as target population. The study adapted the framework developed by Muhammad, Mahmudul & Abdul (2012) which focuses on broadband customers' perception and buying intention against existing practice of broadband providers considering different dimensions like: service quality, technical and functional qualities and experience economy. Both descriptive and explanatory methods are applied to study the level of exiting service delivery practice of ethio telecom and the level of customers' perception. The result from the descriptive analysis shows that ethio telecom has good practices in communication level, competency and courtesy of its central broadband staffs and accessibility of its broadband support at shops and contact center. The result, on the other hand shows that, there is relatively poor practices in accessibility of broadband price and technology, maintenance delay, competency of field maintenance staffs, security level of broadband service, broadband speed, performance of access modems and broadband link outage. The result from correlation study shows that there is significant correlation between some of the ethio telecom service delivery practices and customers' perception. According to the result from multinomial regression analysis, there is no association or prediction between variables representing ethio telecom service delivery practices and overall perception of broadband customers towards ethio telecom service delivery practices. This study recommended conducting competency assessment and skill development for broadband field intervention staffs and to remove old DSL models from the broadband service delivery system. Further, to adopt new technologies and service models and work on customer experience and perception improvement than network oriented operations are also recommended by the study. More improvements required in the area of broadband outage and long-lasting maintenance delays.

Keywords: *Broadband, ethio telecom, service delivery practices, Customer perception, service quality, technical quality, functional quality, experience economy.*

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Broadband internet is dynamically evolving to enable new models of communications such as video streaming, video chat, file sharing, on-line gaming, teleworking and telepresence. New applications such as E-Government, E-Commerce and interactive media as well as new ways to share and access information are being facilitated by broadband connectivity (Gilbert Barasa Mugeni, Gregory Wabuke Wanyembi, Joseph Muliaro Wafula (2012)). According to Ebraheim Alsaadi and Abdallah Tubaishat (2015); these days internet of things (IoT) and interactive computations like cloud computing are results of broadband internet and service dynamic evolutions. The tremendous changes in the broadband environment challenged the broadband operators to dynamically adapt themselves to changing user requirements. The gaps are lack of correlation between the ways users expect broadband provider behave or practice and the way broadband providers present themselves in the dynamic environment (Roberts and Manolis (2000)).

Muhammad Sabbir Rahman, Md. Mahmudul Haque & Abdul Highe Khan (2012) noted that broadband service providers are recently facing serious of challenges in the fast-changing multi-technology network environment which is the implication of need for broadband internet service providers to understand and respond promptly with the changing technology in order to satisfy customer's needs and reduce their operational expenditure. Roberts and Manolis (2000), on the other hand, argued that consumer do not act the same always in every service situation and a successful marketing strategy and assessment is required to capture the customers' intention in the ever changing broadband technology and this in turn depends on a clear understanding of the consumers' mind before, during and after service provisioning in a time. It is worthy, therefore, to understand which service quality attributes and which component of the operators experience economy can create more impact on consumer's perception towards a broadband internet service provider at any point in a time. Broadband service providers, therefore, need an empirical assessment to discover the customer's

behavioral intention or perception and adapt their selves in order to satisfy their end users in the dynamically changing broadband environment (Muhammad Sabbir Rahman, Md. Mahmudul Haque & Abdul Highe Khan (2012)).

The fact that broadband service providers need to periodically assess their practice against customer perception to continuously adjust their practice (Roberts and Manolis (2000)) is an important implication also to ethio telecom, Ethiopian sole broadband service provider; to assess the perception of its broadband customers. Ethio telecom reports show that ethio telecom is working to satisfy its customers by re-structuring it-self, deploying different state-of-the-art automation systems, trainings and developments along with implementing large scale projects (Ethio telecom (2008) annual performance report (የኢትዮ ቴሌኮም የ2008 በጀት ዓመት የሥራ አፈጻጸም ሪፖርት (2015))). Ethio telecom is also practicing high level customer satisfaction survey assessments commonly in the company which is only related to mobile networks and other aspects of the company operations. The impact of these all practices is an improvement of service quality from the service provider view of points. An end to end quality of experience (QoE) on the other hand is required which is the view of the service delivered by the service provider in the eyes of the customer.

This study, therefore, is aimed at looking in to ethio telecom various aspects of broadband service delivery practices including service quality, technical and functional qualities and experience economy to assess broadband customers' perception by using the model developed by Muhammad Sabbir Rahman, Md. Mahmudul Haque & Abdul Highe Khan (2012).

1.2 Statement of the problem

According to Roberts and Manolis (2000), consumer do not act the same always in every service situation and a successful marketing strategy and assessment is required to capture the customers' intention in the ever changing broadband technology and this in turn depends on a clear understanding of the consumers' mind before, during and after service provisioning in a time. It is worthy, therefore, to understand which service quality attributes and which component of the providers' experience economy can

create more impact on consumer's perception towards a broadband internet service provider at any point in a time. Broadband service providers, therefore, need a series of empirical studies to assess their organizational practices against the concepts of service quality, functional and technical qualities and experience economy to discover the customer's behavioral intention or perception and adapt their-self to satisfy their end users in the dynamically changing broadband environment.

Ethio telecom, an Ethiopian government owned internet and telecom service provider, is working to satisfy its customers by re-structuring it-self, deploying different state-of-the-art automation systems, trainings and developments along with implementing large scale projects (Ethio telecom (2008) annual performance report (የኢትዮ ቴሌኮም የ2008 ባጀት ዓመት የሥራ አፈጻጸም ሪፖርት (2015)). Ethio telecom has also established periodic and high level customer satisfaction survey assessments common in the company related to mobile networks and other aspects of the company operations. The impact of these all practices is an improvement of service quality from the service provider view of points. Practically, there exit gab to capture customers' perception and satisfaction in all dimensions of service quality, functional and technical qualities and experience economy as an end to end assessment is required in the view of eyes of the customer. According to Muhammad Sabbir Rahman, Md. Mahmudul Haque & Abdul Highe Khan (2012), in most developing countries like Ethiopia, an empirical study to assess customers' perception towards broadband service delivery is lacking and contributing to the need for empirical research in developing countries in the area broadband service delivery is essential. The key interest in this study is, therefore, to assess what is actually perceived in the mind of broadband consumers' in experiencing ethio telecom broadband services. In doing so, the study will emphasize on two aspects: assessing the level of existing practices of ethio telecom using the model proposed by Muhammad Sabbir Rahman, Md. Mahmudul Haque & Abdul Highe Khan (2012)and assessing the perception level of ethio telecom towards those existing practices as a broadband service provider.

1.3 Research question

In order to systematically address the problem stated above, the study raised the following general and specific research questions:

The general research question, therefore, is:

- ⇒ How do broadband customers perceive the existing service delivery practices of ethio telecom?

The specific research questions include:

- ⇒ What is the level of existing broadband service delivery practices of ethio telecom in providing broadband service to its customers?
- ⇒ What is the level of customers' perception towards existing broadband service delivery practices of ethio telecom?

1.4 Research objectives

The general research objective is:

- ⇒ To study how broadband customers perceive the existing service delivery practices of ethio telecom.

The specific research objective includes:

- ⇒ To study the level of existing broadband service delivery practices of ethio telecom in providing broadband service to its customers.
- ⇒ To study the level of customers' perception towards existing broadband service delivery practices of ethio telecom.

1.5. Significance of the study

The government of Ethiopia in general and ethio telecom in specific can use the finding from this study for further consideration in addressing customer perception and decision making during broadband project development. The study result can be considered as one step to identify the practice, gap and customer perception regarding broadband

service in the context of Ethiopia. So, further researchers can consider the result from this study as an empirical literature reference.

1.6. Scope of the study

In considering the time and resource capacity of the researcher, geographically, the study was bounded to Addis Ababa financial institutions only. Commercial bank of Ethiopia (CBE) is not considered in to the populations since it was not possible to get related background data used as reference within study time. The study didn't consider mobile broadband since the survey of customer satisfaction ethio telecom is doing is considered as a sufficient study. The study is also limited to after sales services, and it doesn't include sales and provisioning practices. Therefore, the findings did not show the overall customer perception towards ethio telecom broadband service.

1.7 Limitations of the study

The findings of the study were restricted to a small sample size of 87 respondents who were based in Addis Ababa, namely financial institutions. Therefore, caution should be taken regarding the direct generalization of the findings to other contexts. The other limitation of the study was shortage of relevant empirical studies in the case of developing countries like Ethiopia and shortage of time were among the major challenges.

1.8. Organization of the paper

The paper is organized into five chapters. The first chapter deals with introductory part consisting the background of the study, statement of the problem, research questions, objectives of the study, significance of the study, scope of the study, limitations and definition of terms. The rest of the paper is organized as: Chapter two presents theoretical and empirical review of the literature related to the concept of broadband communications, broadband service and technical issues, existing architecture of ethio telecom broadband service and conceptual framework to model the study. Chapter three provides methodology of the research; Chapter four contains data presentation, analysis and interpretation; and chapter five gives summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Closely studying the customer perception towards the broadband provider's service delivery practices is paramount in giving indications and directions to telecom operators in general and broadband providers in specific to address the gaps between expectation on customers' mind and real practice on ground in the broadband. In this chapter, therefore, the review of broadband definition and importance of broadband service, existing broadband provider's challenges that affect the practice of the broadband providers and the concepts of customer perception and factors affecting customer perception will be presented. The integrated conceptual framework that explains the existing broadband service delivery practice and the customer perception will also be presented in detail with its dimensions.

2.1 Introduction to broadband

2.1.1. Meaning and importance of broadband

2.1.1.1 Meaning of broadband

Different writers defined broadband in different ways. According to Gilbert Barasa Mugeni, Gregory Wabuke Wanyembi, Joseph Muliaro Wafula (2012), the term "broadband" originally, has been used to describe a range of information technologies that allow high speed, high bandwidth data transmission and always-on access to the internet and other real-time services. Because of the evolving nature of broadband, the actual speed and bandwidth that constitute "broadband internet or broadband service" are still under debate and most countries chose to adopt different definitions for broadband speed. The World Bank, in its 2010 report, entitled "Building broadband: Strategies and policies for the developing world", proposed that broadband be defined beyond the traditional notion of a specific type of network connectivity or minimum transmission speed. Rather, it proposes that broadband be viewed as an ecosystem that includes its networks, the services that the networks carry, the applications they deliver, and users.

The definition by Broadband for all report (2011) is adopted for this study: *Broadband should be seen as the capability to deliver data and foster innovation, rather than a specific data transfer speed, and still less a specific technology.* In other words, the definition of broadband has to be in terms of a capability that is “fit for purpose”, not just in the immediate market context, but also in a dynamic context that allows capabilities to expand in line with user needs and changes in relative prices, as well as supply-side improvements and technical innovation.

2.1.1.2 Importance of broadband services

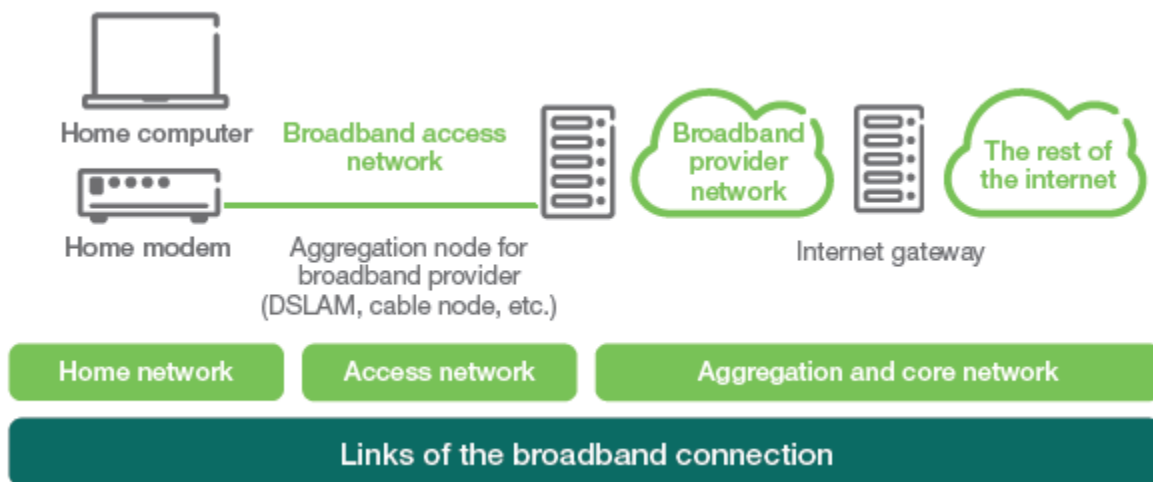
Broadband is used as a catalyst for generating new services and enhancing efficiencies in nation’s economic development activities, which have significant contribution towards national Gross Domestic Product (GDP) (growth Pusat Khidmat MakJumat Akademik Customer (2013)). According to World Bank 2010 report, for every 10 percent increase in broadband penetration in developing countries, GDP growth can increase by up to 1.38 percent. Broadband internet connectivity provides access to libraries and skilled workers which are few resources. Skilled man power tend to migrate to more affluent, industrialized areas and still crucial for social and economic development in the rural areas of the developing world (Veljk, Opejovic, David LI. Johnson, Mariya Zheleva, Elizabeth Belding, Gertjan Van Stam and Lisa Parks (2012)).

Emerging applications like: video streaming, video chat, file sharing, on-line gaming, teleworking and tele-presence, E-Government, E-Commerce, E & M Health, interactive media, internet of things (IOT) and interactive computations like cloud computing are greatly dependent up on broadband connections and services (Ebraheim Alsaadi and Abdallah Tubaishat (2015)). Peoples need to share more information to each other through broadband connections because of demographic changes and the era of globalization. The importance of information and communication technology (ICT) and broadband service as a whole in all dimensions of human need is, therefore, undeniable as it applies in various fields for the purpose of service enhancement.

2.1.2 Broadband network architecture

Broadband architecture refers to the whole structure of interconnection between broadband customer service point and the service provider broadband systems and interconnections (Arthur D. (2013)). Review of broadband architecture is important to give the reader an insight of the technological challenges and bottleneck where the broadband service providers have limited control over as the different layers or tiers in the architecture may be operated by different operators, providers and users.

Figure: 2.1: Typical Broadband network architecture (Source: Research by Ericsson, Arthur D. (2013))



According to Arthur D. (2013), broadband architecture has four major tiers or layers:

- ⇒ **Internet or the rest of the world:** which is the global internet interconnected systematically and connected to the broadband provider through the internet gateway. The internet access speed and efficiency of connection depends on the lateral agreement and capacity of the upstream internet providers.
- ⇒ **Broadband provider backbone network:** is the set of routers, switches and servers interconnected in hierarchical tier to provide high security, availability and reliability. The connection speed and efficiency of connection over the backbone network depends on the efficiency of the technology in use by the provider, capacity of the backbone connection, policy of the quality of service applied in the backbone and the security systems applied in the backbone network.

- ⇒ **Broadband access network:** is a set of edge routers, switches and aggregation devices like: MSAN, MSAG, DSLAM, which is used to connect broadband users to providers' network and aggregate user traffic to the backbone network. The connection speed and efficiency of connection over the access network depends on the efficiency of the technology in use by the provider, capacity of the access connections, policy of the quality of service applied in the backbone and the security systems applied in the backbone network.
- ⇒ **Home or enterprise network:** Is the set of personal and organizational IT systems and solutions interconnected to give last mile access to applications and services to the end users. The IT systems and solutions include: computers, application servers, printers, FAX, security systems, local area and personal area networks. The connection speed and efficiency of connection over the home or enterprise network depends on the efficiency of the technology in use by the customer, security policy applied in the customer network and the connection capacity of the enterprise or home user network.

Here the important to emphasize on overall broadband service topology and architecture in order to view technological bottlenecks affecting broadband user experience and perception. It can be seen that all the performance of the broadband tier or layer have service impact on the customer perception. If the overall layer performance, availability, accessibility and reliability of the connection at each tier are good, the customer perceives continuous service availability and reliability which in turn help the operators to capture high customer perception.

2.2 Existing telecom challenges in broadband service delivery

This section addresses challenges encountered by telecom operators as broadband providers. The existing challenges are reviewed in here to give additional background that global and operator specific challenges greatly affect the way a broadband provider practice to satisfy its customers and directly affect the customer experience and perception. The existing challenges are summarized from different literatures by the researcher. The major broadband operators' challenges are not only limited to those

listed in this review but bounded by the time factor, the researcher tried to put the top in his view.

2.2.1 Inadequacy of broadband infrastructure

There is an inadequate broadband infrastructure deployment that limits broadband providers not to provide the service in every part of the nation. This is due to the capital cost of deploying last mile access technologies. The business concerns in broadband infrastructure are very paramount and hence, network operators are investing few in broadband access especially in developing countries. As noted by Amos Nungu, Terrence Brown, and Bjorn Pehrson (2011), broadband networks require more competent users, a more complex supply chain and larger user investments. The target here is thus to a larger degree organizations rather than individuals. Therefore, there is limited broadband resources and provisioning when compared to basic voice services. According to F. Simba B.M. Mwinyiwiwa, E.M. Mjema, L. Trojer and N.H. Mvung (2011), rural areas especially those of the developing countries provide challenging environment to implement communication infrastructure for data and Internet based services. The main challenges are the high cost of network implementation and lack of customer base, as rural areas are characterized by low income, highly scattered and low population density. This situation drives network operators to establish network infrastructures in urban/city centers leaving rural areas as underserved community. This in turn introduces limited supply of broadband access technologies in most market segments. Therefore, broadband providers are limited in infrastructure and the broadband customers in turn may not have good image and satisfaction towards the provider as they couldn't get the service they expect.

2.2.2 Limitations of broadband access technologies

According to data gathered by Leonid Kazovsky (2007) most broadband access technologies implemented in current broadband infrastructure are limited in distance and bandwidth. As distance increase, the bandwidth and the quality of the delivered service will be affected significantly. In most of the broadband cases, the end user may not get the subscribed bandwidth due to the technology and distance limitations. Moreover, a study report for European Commission by SAMKNOWs (2012) indicated that there is significant variation in the performance of different broadband technologies while used in the same context. xDSL based services, for example, achieved 63.3% of the download speed, while cable, FTTx & VDSL services achieved 91.4% and 84.4% respectively. This shows great performance difference for fiber technologies and twisted wire technologies. On the other side, twisted wire modems are cheap in installation cost while fiber technologies are expensive in provisioning. Therefore, it is apparent in here that care must be taken in selecting access technologies by making trade-off between technology performance and deployment costs. As a result of the poor access technology selection, the customer experiences poor service quality which results in poor customer perception and satisfaction.

2.2.3 The digital divide

The digital divide is thought of as describing the difference in the Kinds of information and communication technologies to which people have access (Norris, 2001). As clearly stated in the report by organizations for Economic cooperation and development / OECD/ (2008); there are still substantial differences in broadband access and use among the developing countries. Prices for Internet access in some markets remain high and users may have a very limited choice of broadband providers. Furthermore, while the number of broadband connections in rural areas has increased, the qualitative aspects of these connections vary significantly than those in urban areas. Here the impact of digital divide on different segments of broadband customer will be different and as a result customer perception varies significantly in different national scenarios of developing countries in specific where the digital divide is very high.

2.2.4 Emerging business requirements & service models

According to Ebraheim Alsaadi and Abdallah Tubaishat (2015), emerging broadband technologies and services like internet of things are evolutionally changing the way broadband is consumed by the broadband customers putting large demand for internet bandwidth and access speed. The existing broadband situation is offering limited broadband features. There are various emerging services which are based on interconnection of devices and circuits or objects through internet. According to Asoke Nat, Kanij Fatema Aleya, Madhumita Santra and Supriya Maji (2016); cloud computing is another important emerging global service based on broadband connection where by one can access as many resources as needed, almost instantly, and only pay for what used. In the increasingly prevalent cloud computing, datacenters play a fundamental role as the major cloud infrastructure providers, such as Amazon, Google, and Microsoft Azure. Datacenters provide the utility computing service to software service providers who further provide the application service to end users through Internet. The impact of these emerging services and technologies which are basically dependent on the broadband connection and internet speed on broadband customer's perception and broadband operators practice is significant as they consume significantly large internet bandwidth than expected by the customers and the user experience will be very low as the access speed is limited.

2.2.5 Lack of national broadband strategies and policies

According to Gilbert Mugeni; “National Broadband Strategies and Policies (2012), national broadband strategies and policies would generally aim at the provisioning of affordable, universal access to broadband infrastructure, and also focus on the building of the information society. Therefore, national strategy and policy is vital especially for developing countries to create a uniform, integrated, homogeneous and coordinated approach on the rollout, optimal utilization, and adoption of broadband. Recent research points the funding of broadband and ICT services in general in the developing countries is both fragmented and un-coordinated with every government ministry apartment implementing their own internal plans and often with no coordination between government and other stakeholders. The issue of lacking national policies and strategies is very hot issue that needs to be addressed in all countries whether developed or developing, but it becomes more sensitive when applies to developing countries as the developing countries are under taking massive ICT developments and projects. The impact of lacking national policies and strategies on broadband service providers practice and broadband customers’ perception is paramount in that it is directly reflected on both customer and providers zone from the national scenarios.

2.2.6 Operators view of quality of experience (QoE)

Assessing the user experience is essential for many technology, products and services (Wilson & Sasse, 2004). But most network operators’ focus on network related performances and monitoring. According to Junaid Shaikh, Markus Fiedler and Denis Collange (2010), the impact of network performance on user experience is important as it determines the success or failure of a service. On the other hand, monitoring of network-level performance criteria is easier and more usual but the problem is to correlate these network-level Quality of Service (QoS) to the Quality of Experience (QoE) perceived by the users. Most network operators fail to catch user experience in providing network and IT services. Efforts have been done in the previous years to map user behavior to traffic characteristics on the network to QoS. However, being able to successfully relate these traffic characteristics to user experience is not a simple task

and still requires further researches. The concept of quality of experience in Telecom Company and in broadband internet providers specifically is a new concept and not yet exhaustively addressed in previous studies. So, network operators need to change their view of network based performance to experience based view so that they can easily capture the customer feedback and intention whereby getting good level of customer perception.

2.2.7 Unmet customer satisfaction in broadband service

Different studies have been undertaken to prove factors affecting customer satisfaction in broadband service, and there is still varying dimensions of factors affecting customer satisfaction in broadband. Common of all these factors is service quality. Miss Fateemoh Laeheem (2012), in her Thesis, investigated factors affecting broadband customers' satisfaction in Songkhla Province /Thailand and concluded that service quality or quality of experience (QoE), speed of internet connections and price of the service are influential factors for determining broadband customers satisfaction. Md. Reaz Uddin, Md. Enalul Haque Jannatul, Ferdous Bristy (2014), in their study of "Customer Satisfaction of Telecom Industry in Khulna City, Bangladesh, concluded that personal and market factors, perceived service quality, perceived service value and company image are statistically significant factors affecting customers' satisfaction in telecom industry in general. Manoj B. Vanara (2016); in his study of consumer satisfaction concluded that there are three constructs of factors that influence the customers' satisfaction level when adopting broadband services. These factors include: price, speed and stability of the broadband service. There is no single factor affecting consumer satisfaction and those potential factors need to be exhaustively considered by the broadband providers to meet the expectation of the customers and thereby meeting the required customer satisfaction.

2.2.8 Existing regulatory framework

According to Jason Whalley (2016), existing policies and regulatory frameworks require changes in order to accommodate the emerging technologies. Therefore, telecom operators in general and broadband providers in specific may have effect on customer

perception while trying to deliver new service models and optimize and maintain the existing services with an existing policies and regulatory frameworks.

2.2.9 Privacy & security

Due to very sophisticated technologies in the broadband services and technologies, cyber security and threats are highly emerging to the level of affecting developed and developing countries system and protocols. The situation of privacy and security need great care as it directly applies to the sensitivity of customer data privacy and security.

2.2.10 Competences in the area of broadband services

It is considered that technical competence involves a balance between knowledge, skill, and emotional engagement (Hansen, 2008). Similarly, Rychen and Salganik (2003) explained that a competency is something that mobilizing the existing technological resources. Even if the broadband technology is growing fast than ever, there is less proportional progress in knowledge, skill and competence of broadband service providers and broadband service consumers compared to the progress in the technological advancements. Here telecom operators in general and broadband providers in specific need to need to have regular competency assessment and skill development plan in order to keep maximum consumer perception level as the competency of the technical staffs greatly affects the customer experience with the service provider practices.

2.3 The concept of customer perception

This section addresses the concept of customer perception as it is the main target of the study is to assess broadband customers' perception towards broadband provider practices. Perception is a marketing concept that encompasses a customer's impression, awareness and / or consciousness about a company or its offerings. As Hiltunen et al (2002) explained; Perception is a taste formed as a result of interpreting long term experience with specific situation or product or service and it is observed that customer perception is larger concept than customer satisfaction. The concept of perceived value has recently gained its importance and wide popularity in the business

environment because of its effect on consumer behavior and providing strategic implications for the success of companies. Hence, perceived value is claimed to be a major tool to help the service provider to gain a better competitive position in the market (Woodruff (1997); Huber, Herrmann and Morgan (2001); Stahl, Barnes, Gardial, Parr and Woodruff 1999). In marketing, value is assessed from a consumer's perspective (Patterson and Spreng, 1997), and is the key link between the cognitive elements of perceived quality or performance, perceived monetary sacrifice and behavioral intentions (Patterson and Spreng, 1997). Perceived quality is tied to both performance and perceived sacrifice (Patterson and Spreng, 1997). Perceptions of customers are based solely on what they receive from the service encounter (Douglas & Connor, 2003). User expectations arise from experiences and information the user acquires from the world around him/her, what the user perceives in their physical and social environment and what their possible hands-on experiences are with similar or related systems. In the context broadband service in specific and telecom service in general for developing countries, customer perception is greatly affected by broadband service provider practice, advertising, reviews, public relations, social media, personal experiences and other channels (Douglas & Connor, 2003).

2.4 Existing telecom practices that affect customer perception

According to study by Tariq M. Khizindar, Abdel Fattah M. Al-Azzam and Iyad A. Khanfar (2015); price, service quality, brand image and trends are factors affecting customer loyalty in general. Here the researchers used the word "trend" to represent the collective effect of various uncoordinated individual or group actions that influence the social relations and social structure. In this study only the trend factor represent the factors affecting customer perception and the whole study was about the customer loyalty. Parasuraman et al (1985), on the other hand, identified ten determining factors used in evaluating service quality as; reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the customer, and tangibles. Most of these determinants of service quality require the consumer to have had some experience in order to evaluate their level of service quality ranging from ideal quality to completely unacceptable quality. They further linked service quality to

satisfaction by pointing out that when expected service is greater than perceived service, perceived quality is less than satisfactory and will tend towards totally unacceptable quality; when expected service equals perceived service, perceived quality is satisfactory; when expected service is less than perceived service, perceived quality is more than satisfactory and will tend towards ideal quality. In his study, Parasuraman et al (1985) addressed only the concepts of service quality and perceived service quality where perceived quality is one of the dimensions of the factors affecting customer perception. Muhammad, Mahmudul & Abdul (2012), in their study of Conceptual Study clearly identified factors affecting customer perception towards broadband service by considering different service quality performance dimensions, technical and functional quality dimensions and overall experience economy of the broadband customer towards the service provider. The researcher considered the study by Muhammad, Mahmudul & Abdul (2012) to review the existing telecom practices that affect broadband customer perception.

Though there are various factors that affect the customer perception and the broadband service providers practice, as noted in the previous part of the literature review, this study only considered some of those factors studied by scholars in relation to the concept of customer perception frameworks or models developed by Muhammad, Mahmudul & Abdul (2012) and adapted by the researcher of this study. The following section therefore, explains the factors affecting customer perception based on the Muhammad, Mahmudul & Abdul (2012) works.

2.4.1 Performance in delivering service quality

The level of customer satisfaction is a result of the customer's comparison of the service quality expected from a given service encounter (Caruana et al., 2000). This concept was the basis for the SERVQUAL model development which include service quality dimensions like: Reliability; Assurance; Tangibles; Empathy; and Responsiveness. The concept of SERVQUAL views service quality as the gap between the customer expectation and customer perceptions of the desired level of service (Parasuraman et al., 1988). This is the gap of the service providers' performance where it can't see the customer side expectation and perception. Parasuraman et al. 1985; Gupta ET. al.,

2005). Brogowicz et al. (1990) developed a study for service quality which explains if the customers are influenced by the word of mouth by other people or influenced by marketing activities like advertising or media communications, then service quality gap arise into the mind of the customers'. In addition Zhu et al.(2002) studied to explain IT related businesses which have a direct link with reliability, responsiveness and assurance dimensions. Gronroos (1984) proposed two aspects of service quality which are technical and functional qualities. In his model, Gronroos (1984) described technical quality, functional quality, and company image can play a significant role to justify the performance of service quality of a service firm. Functional quality focuses on issues such as the behavior of customer contact staff and the speed of service, whereas technical quality focuses on issues as the end result of service provision. According to Baker & Lamb (1993), Gronroos (1982, 1990), Mangold & Babakus (1991) and Richard & All away (1993), the assessment of service quality should include both technical and functional quality attributes.

According to (Kim et al. 2006), service performance in high-speed internet services consists of two dimensions which are network performance and customer service performance. According to Gronroos (1984) also, perceived service quality is the outcome of an evaluation process where the consumers compare their expectations with the service they perceives they have already received. Which means that customers always compare between certain expectations of service performance with actual experience? Santos (2003) also studied that customer satisfaction is depending on how well the level of the delivered services matches with the customer's expectations. Generally, from this review it can be seen that service quality has its root in functional quality and technical quality dimensions where in the two dimensions are also affected by existing constraints and challenges of telecom operators: like speed of service, behavior of staffs supporting customer, reliability of service delivery, variation of service performance and operators focusing only on network performance than customer expectation. Performance in service delivery is a major factor which influences customer perception.

2.4.2 Delivery of technical quality

Muhammad, Mahmudul & Abdul (2012), in their study, proposed to measure the service quality of broadband services a company should look on technical quality (like: competence, reliability, responsiveness, security) which are positively perceived by the broadband consumers. But scholars have yet to identify the determinants of technical quality which significantly affects customers' perceptions to rate the service quality of a particular service providing company (Rust & Oliver, 1994). Broadband service providers on the other hand, need proper technical quality measurement frameworks to determine their service quality for their users. Therefore, technical quality has direct influence on the customer perception. The following section gives highlight of components for technical quality.

2.4.2.1 Technical competence

It is considered that technical competence involves a balance between knowledge, skill, and emotional engagement (Hansen, 2008). Similarly, Rychen and Salganik (2003) explained that a competency is something that mobilizing the existing technological resources.

2.4.2.2 Reliability

Reliability is defined as the ability to perform a promised service consistently and precisely (Parasuraman, et al, 2005; Andaleeb & Conway, 2006). On the other hand failures to perform the services in lack of reliability cost the firms in multipurpose way like: loss of customers, negative word of mouth; loosing trustworthiness and switching behavior (Bitner, et al, 2000; McColloug, et. al., 2000; Parasuraman et al., 1994).

2.4.2.3 Responsiveness

Zeithaml et al (2006), defined responsiveness as a willingness to assists customers with providing them quick and prompt services. To improve the overall broadband service performance responsiveness is an important factor which is essential to achieve by the company itself to cope up with the customer's demand.

2.4.2.4 Security issue

Davis and Benamati (2003) argued that security is a procedure to protect hardware, software, data, and other system resources from unauthorized access or theft. Different scholars agree that majority of the consumers who are using broadband services for online payment are concerned about security, reliability, and privacy which ultimately influence the consumer's perceived quality (Gefen, 2000; Yoo & Donthu, 2001; Chellappa, 2001).

2.4.3 Delivery of functional quality

Most researchers used the concept of SERVQUAL to measure functional quality of the broadband service (Powpaka, 1996; Brady and Cronin, 2001). According, the functional quality is concerned with the process of service delivery where the interaction can be optimized between organization and the customers. In broadband industry, it might be difficult for a customer to evaluate a service provider's technical competence if they have lack of ability to assess technical quality. The following details the components of the technical quality.

2.4.3.1 Accessibility

Accessibility is related to the actions taken by the service provider to ensure no service interruption will occur (Ruyter, et al,2001). Potential service failures impact the service perceptions by the customers and affect the service quality (Bolton and Drew, 1991). Accessibility issue received considerable attention by the researchers who have found significant relationship between accessibility on service quality perception (Mostafa, 2005; Nadiri & Hussain, 2005). In other perspective accessibility is the availability of all the services that add value of the core products or service. Sidat (2008)figured out that the accessibility of services must be fast than expected by the customers.

2.4.3.2 Communication

Communication does have positive relationship with customer overall perception towards service quality which can be in terms of answering calls, keeping customers informed of the current and future services by the organization which will ultimately help the company to achieve more loyal customers through positive word of mouth (Mostafa,

2005; Nadiri & Hussain, 2005). The effectiveness of the communication may depend on both formal and informal sharing of information in a meaningful way (Sharma & Patterson, 1999).

2.4.3.3 Courtesy

Courtesy is a part of service quality which refers to a politeness in the behavior of the employees to treat customers with dignity and respect which have a positive influence over customer's perception (Munusamy & Fong., 2008; Vong, 2007; Andaleeb & Conway, 2006; Nadiri & Hussain, 2005). Carman (1990) recommends that retaining the courtesy is important of a given service setting to sustain the expected service quality.

2.4.4 Building experience economy

Davidson (1992) explore that experience economy is a process of building a sustainable competitive benefit in order to establish customer's loyalty. Instead of offering more and more; to gain the objective of experience economy firms are encourage to do what the others do not offer rather they should offer services with a global experience to their customers to be in their mind forever. O'Sullivan and Spangler (1998) refer to the experience economy as individuals or organizations whose sole purpose is to create a differentiate experience for their clients'. Hongxiang (2011) mentioned that quality of experience is the most crucial determinant for customer satisfaction. To address this issue operators are urgently needed to conduct refined flow of management practices on their broadband networks, and build a new-type business model; operation & maintenance (O&M) system with quality of experience at the center to deliver the value of quality of experience. Quan and Wang (2004) propose two types of experiences: peak and consumer experience. The consumer experience is more about consumption and spending, mainly supportive experiences.

2.4.4.1 Peak experience

A peak experience is defined as a transformational experience that exceeds the usual level of intensity, meaningfulness, and richness in delivering the services to the customers (Csikszentmihalyi 1990; Privette & Bundrick 1991). To gain the peak experience a company may requires clear focus, complete absorption, and self-

awareness, personal integration, awareness, spontaneity, freedom, and a sense of achievement capability (Csikszentmihalyi 1990).

2.4.4.2 Consumer experience

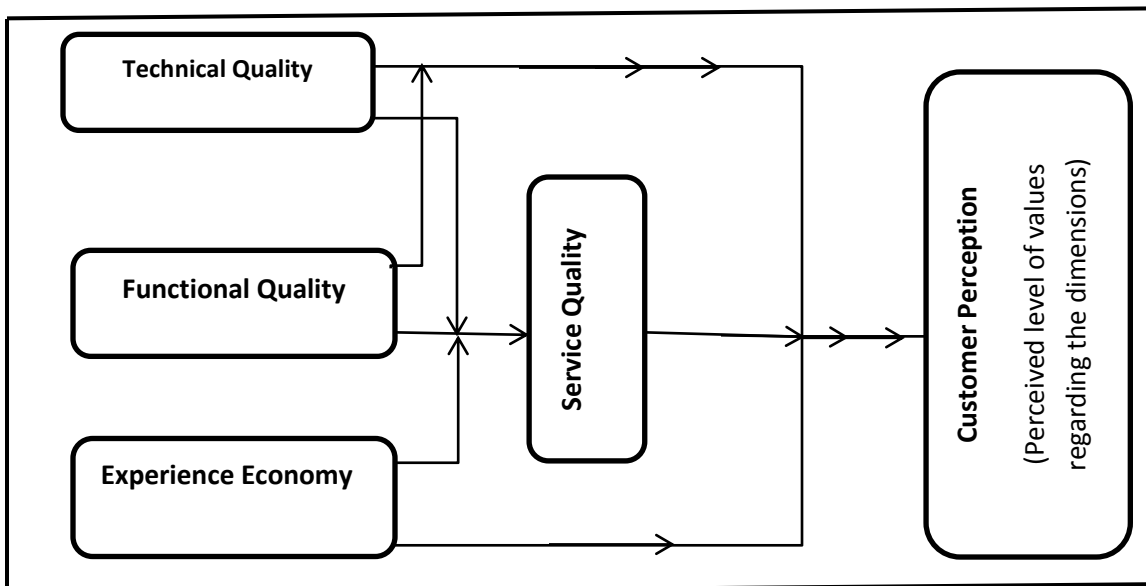
Consumption is the experience derived from the interaction between the consumer, and a product within a given context (Michela Addis, 2005). According to Van Der Wagen (1994) and Katz (1968), customers have different perceptions towards the experience from a given services by the company because of the diversity in their education, experience. To understand the nature of service quality it is important for every company to judge their consumer's experience from their service which is a useful basis for the company to evaluate the dynamic nature of service quality (Thompson, 1997; Edvardsson & Mattsson, 1993; Belk at al. 1989; Thompson et al., 1989). O'Neill & Palmer (2003) examined that while a lot of research has sought to define those factors deemed necessary or essential in a consumer's overall evaluation of the service quality construct, little, if any, work has been undertaken to understand the psychological processes. In particular, the role of experience and prior learning and their influence on consumer perceptions of service quality is important for choosing the correct broadband connection.

2.5 Conceptual framework

Along with the preliminary observations stated in problem statement and concepts explained in the literature review, the researcher believes that the customer perception towards existing practices and challenges of broadband services providers are not well studied in several nations including Ethiopia. To this end, closely studying the customer perception towards the existing broadband providers' service delivery practices will initiate decision makers to immediately address the bad experience in the domain and excel the customer perception. For that the study required conceptual framework that frames the concepts and gaps identified in the literature review and the observation. Accordingly, the following sections review the proposed conceptual frame work for this study.

The theoretical framework used in this study is adapted from the works of Muhammad, Mahmudul & Abdul (2012); which was developed to include the major concepts and relations between Qualities related to broadband service and Consumer Perception towards broadband service. There has been a lot of works to develop conceptual frameworks for different service scenarios; including internet banking, internet services, banking services and most of the works assumed customer satisfaction level is a result of the difference between projected service performance and perceived performance which affect overall business performance (Barsky, 1992; Oh & Parks, 1997;McQuitty et al, 2000, Oliver 1980; Anderson et al. 1994; Yeung et al., 2002 and Luo and Homburg, 2007;Söderlund, 1998; Kandampully & Suhartanto, 2000; Dimitriades, 2006; Olorunniwo et al., 2006; Chi & Qu,2008; Faullant et al., 2008). In this study, the student researcher considered a brief conceptual model that correlates the broadband service experience perceived by broadband customers and the service practice supposed to be exercised by the provider considering different service quality performance dimensions. From the review of different models, the researcher adopted the model proposed by the study of Muhammad, Mahmudul & Abdul (2012). The model is presented in the following section and various parts of service quality and customer perception dimensions re used to draw a conceptual framework used in this study.

Fig: 2.4 Conceptual frameworks (**Source:** Modified from Muhammad, Mahmudul & Abdul (2012) conceptual framework)



The model above is modified by removing the component that emphasize on Consumers purchase intention as both consumers purchase intention and consumers perception are derived by variables like technical quality; functional quality; experience economy, service quality. These independent variables are positively related to the customer's perception of broadband service.

According to Muhammad, Mahmudul & Abdul (2012) technical quality, functional quality and experience economy have direct relation with both service quality and customer perception. Service quality in turn has direct relation with customer perception.

CHAPTER THREE

METHODOLOGY

Closely studying the broadband customer perception towards the existing broadband practices will initiate broadband providers to immediately address, in the case bad experience, gaps in the domain and excel the customer perception. This study therefore focused on studying existing customer experience and perception towards broadband service providers practices. In this chapter, therefore, the detail plan and the techniques used to answer the research questions to arrive at findings and conclusions will be presented.

3.1. Research method

According to Mark Saunders, Philip Lewis and Adrian Thornhill (2009); the way a research question asked would result in descriptive, descriptive and explanatory, or explanatory answers. In the same way as the research question can be both descriptive and explanatory, so the research project may have more than one purpose. C.R. KOTHARI (2004) explain descriptive research as a research design that includes surveys and fact-finding enquiries of different kinds with major purpose of describing the state of affairs as it exists at present. According to Mark Saunders, Philip Lewis and Adrian Thornhill (2009), on the other hand, explanatory research are studies that establish causal relationships between variables and the emphasis here is on studying a situation or a problem in order to explain the relationships between variables. In this study, the *descriptive research design* is used to study the level of existing ethio telecom broadband service delivery practices as they are in their natural setting and *explanatory research design* is used to study the relationship between the existing ethio telecom broadband service delivery practice and the customer perception towards the exiting practice. Therefore, considering the nature of the research questions, both *descriptive and explanatory research designs* are deployed in this research.

3.2. Research approach

Several research approaches can be adopted to conduct a research study. The student researcher in his context, examined the qualitative and quantitative approaches in the context of their strengths. Qualitative researches have several strengths and applications. According to Schwandt (2000) and Dahlan (2009), Qualitative research is well suited for describing phenomena as they are situated and embedded in local contexts. Qualitative research has its own limitations that its findings are not usually generalizable due to small number of respondents, the findings are interpretive and subjective (Sekaran, 2000). Similarly quantitative research has its own strength; its main strengths are that it generates precise, numerical data from large survey sizes. Furthermore, the findings are reliable and can be generalized and replicated to many populations (Maxwell and Delaney, 2004)

A combination of qualitative and quantitative approaches can build on the strengths and minimize the weaknesses of both (Dahlan, 2009). Similarly Saunders, Lewis, & Thornhill (2009), argue that mixed methods are useful if they provide better opportunities to answer research questions and allow to evaluating the extent to which the research findings can be trusted. This research therefore used mixed approaches in a complimentary manner.

3.3. Sources of data

This study largely depends on primary data, which is collected through survey method by using standard structured questionnaires that was arranged in 5-point Likert's scale (Appendix I). In addition to primary data, variety of secondary data including library sources (books and articles) and information contained from ethio telecom website and different resources from internet (especially journal articles) were used for the study. The advantages of these were that noticeably they saved time.

3.4. Data collection methods

The survey focused on representative of financial institutions in Addis Ababa especially banking institutions with specific focus on broadband service practices exercised by ethio telecom as broadband service provider and broadband customer perception. In order to do so, the researcher prepared statements and interval settings based on the Likert - style rating scales to which the respondents respond (with the rankings signifying the degree of agreement and feeling / perception, ranging from a scale of "1" referring to "Strongly Disagree" or "worst feeling" to a scale of "5" referring to "Strongly Agree" or "very good" on a five-point rating scale). The structured questionnaires were extracted from the conceptual framework adapted from Muhammad, Mahmudul & Abdul (2012), and a total of 41 variables were constructed from six major categories: profile, technical quality, functional quality, experience economy, service quality and overall customer perception. The code for each questionnaire which is used during the coding of the data to processing software was developed along with the structured questionnaire.

3.5. Population, sampling techniques and sample size

A sampling design is the selection of an appropriate sample size to minimize the gap between the values obtained from the sample and the population (Dahlan, 2009). Sampling is essential in conducting a survey to measure the characteristics of all elements of a population. Therefore, guided by research objectives and questions, the researcher gave full attention to the target population and the sampling method for deciding on the size composition of the sample.

According to Gay & Diehi (1992), number of respondents acceptable for a study depends on type of research involved: descriptive, correlational or experimental or others; for descriptive studies, the sample should be 10% of the population. But if the population is smaller, 20% is required. The target population for this study is financial institutions or branches in Addis Ababa using broadband services from ethio telecom which are around 871 in number. In order to select sample participants, probability sampling in particular simple random sampling was adopted

and 87 sample branches are selected randomly which are rounded to ten percent of the population. Table 3.1 below shows the distribution of population and the number of sample questionnaires distributed and returned.

Table 3.1: representation of population and sampling size (Source: own data, 2017)

Population	Total population	Sample Size	Remark
Branches of the financial institutions	871	87	10 % of the population is sufficient for descriptive studies (Gay & Diehi (1992)).

3.6. Reliability test

According to Nunnally and Bernstein (1994) stated in Sixholo (2011), Cronbach's alpha is used to test the reliability of the quantitative questionnaire for internal consistence. Hinton, P. R., Brownlow, C., McMurray, I., & Cozens, B. (2004); suggest four ranges for the reliability coefficient α ; excellent reliability ($\alpha \geq 0.90$), high reliability ($0.70 < \alpha < 0.90$), moderate reliability ($0.50 < \alpha < 0.70$), and low reliability ($\alpha \leq 0.50$). In general, the higher the Cronbach's α value of a construct, the higher the reliability is of it measuring the same construct. An alpha value with a lower limit of 0.7 and upper limit of 0.9 was considered acceptable. As shown in table 3.2, the reliability test run for the questionnaire of the study showed Cronbach's alpha of 0.763, 0.716, 0.887, 0.845, 0.774: for Technical competency, Functional competency, Experience economy, Service Quality and Overall perception respectively indicating an acceptable internal consistence.

Table 3.2.Cronbach's Alpha coefficient

	Questionnaire category	Cronbach's Alpha coefficient	No. of Items
1	Technical competency	0.763	4
2	Functional competency	0.716	14
3	Experience economy	0.887	2
4	Service Quality	0.845	10
5	Overall perception	0.774	3

3.7. Method of analysis

Once the data was collected using the structured questionnaire of five scale Likert scale, sorting of all relevant qualitative responses were done coded in to Statistical Package for Social Sciences (SPSS) version 20, computed and analyzed. Appropriate descriptive and regression analyses such as frequencies; mean score, correlation and multinomial regression analysis were used in aggregate and in groups. The data were presented using tables and graphs.

3.8. Ethical considerations

In conducting the study, ethical considerations were taken into account out of which the following are the major considerations during the study.

- ⇒ Respondents were formally informed as part of the written questionnaire about the purpose, methods and uses of the research along with the level of their participation in the research entails and what risks, if any, are involved.
- ⇒ The confidentiality of information supplied and the anonymity of respondents will be respected.
- ⇒ The independence of research will be clear, and any conflicts of interest or partiality will be explicit.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Following the research questions and main research objective to assess customer perception towards ethio telecom practice to deliver broadband service to its customers, a standardized five-point Likert scale questionnaire with 41 variables organized in six category or themes were prepared and distributed to 87 respondents of financial institutions in Addis Ababa who are using ethio telecom broadband service. A total of 78 questionnaires were collected back from the respondents and analyzed in the following sections. The following sections present the overall analysis details and results including profile of the respondents, descriptive analysis and the regression analysis of the results.

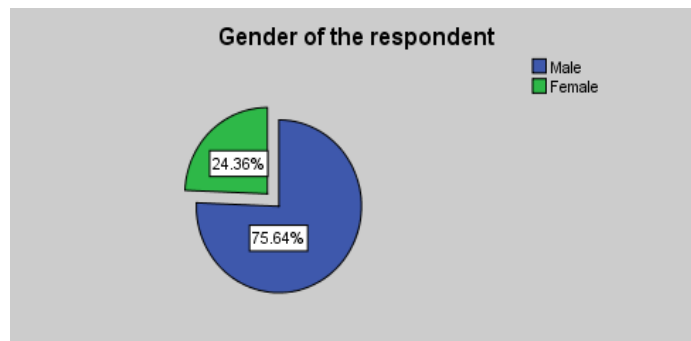
4.1. Analysis of profile of respondents

The profile of the respondents including gender, age, educational qualification and experience level in broadband service will be summarized and presented in this section.

4.1.1. Gender of respondents

According to the responses from the respondents about their gender, the respondents in the study were found to be male dominated (more than 75%), as the result showed in Figure 4.1.

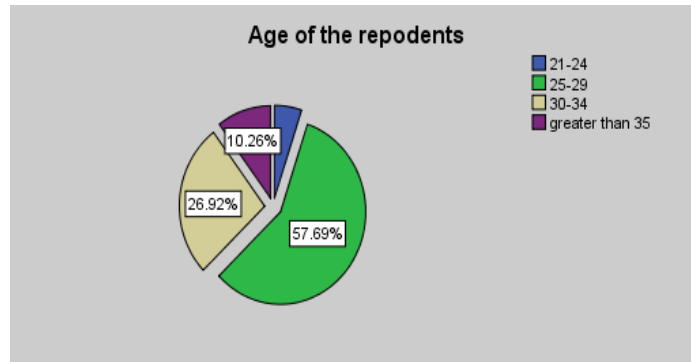
Figure 4.1 Gender proportion of the respondent (Source: Own survey data 2017)



4.1.2 Age of respondents

The respondents were similarly asked to state their age and as the result (Figure 4.2.), almost greater than 84% of the respondents age beyond 25 years out of which 57.7 % of the respondents are between 25 and 30 years. This means more than half of the respondents' were between 25 and 30 years which is young age.

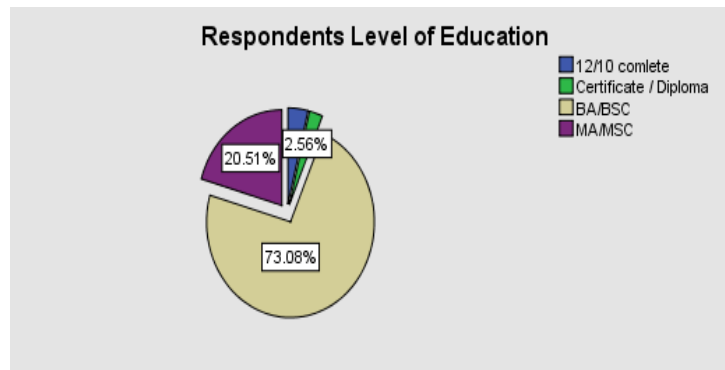
Figure 4.2 Academic qualification of respondents (Source: Own survey data 2017)



4.1.3 Educational background of respondents

As the result below shows (Figure 4.3), almost greater than 73% of the respondents have bachelor degree and more than 20% have second degree. Generally more than 93% have greater than first degree in qualification, indicating that the respondents are well qualified to understand and respond to the factors and issues under study.

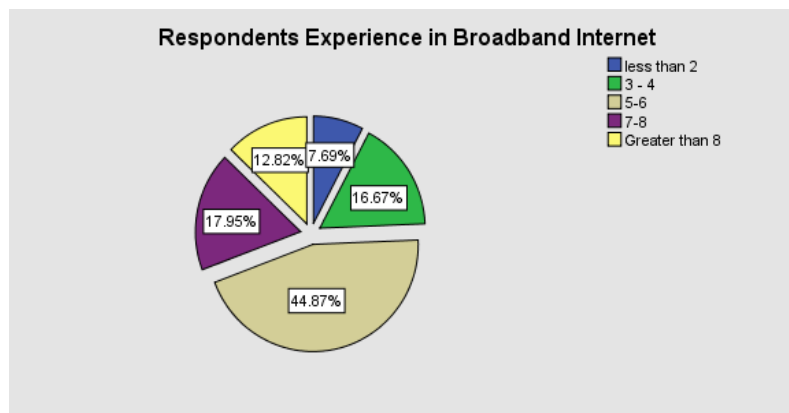
Figure 4.3 Educational level of respondents (Source: Own survey data 2017)



4.1.3 Experience of respondents in broadband internet

As the result showed (Figure 4.4), greater than 44 % of the respondents have experience between five and six years; while more than 83% of the respondents have broadband experience greater than 5 years in total. It is an evidence also that most of the respondents have good experience background in broadband so that the responses will be influenced by respondents practically skill.

Figure 4.4 Experience of Respondents in broadband internet (Source: Own survey data 2017)



4.1.4 Summary of profile of respondents

Even though the respondents are male dominated, almost all of the respondents have good educational background and experience in the required field of study, broadband technology and service. When seen from age perspective, almost all of them are young enough that they can actively understand the dynamics of the broadband service to react to the questionnaires accordingly.

4.2. Analysis of responses to existing practices of ethio telecom (Descriptive analysis)

This section focus on the analysis of the descriptive data from the respondents regarding the major variables that indicate ethio telecom existing practices. In order to answer the research questions, “what is the level of existing ethio telecom practice in providing broadband service?”, three categories (technical quality, functional quality, service quality and experience Economy) are presented in to 34 variables that represent the critical components of telecom operator practice which were taken to design the

questionnaire and to analyze the response. These variables are basically considered as broadband service providers' practice. Accordingly, frequencies, percentages and measures of central tendency (the mean score technique) were employed to investigate the variations within the variables. For each category, the researcher managed to design two to fourteen questions which are supposed to better represent the variables. After inserting the raw Likert scale data to SPSS 20, the responses were analyzed and summarized by taking the frequencies and mean score obtained under each question to arrive the stated variables. The results are explained in the following sections.

4.2.1 Analysis of the responses under technical quality

Under category of technical quality, fourteen variables are considered. Those variables range from competence and responsiveness of broadband staffs, security threat of broadband services and reliability of broadband links and network. The response of the respondents under the technical quality will be presented and analyzed in the following sections.

4.2.1.1 Analysis of the responses to competence of staffs working on broadband

⇒ Respondents' Mean analysis

According to table 4.1, all the mean values of the technical competency except the competency of the field maintenance staff is greater than the average mean value(3.2375) which shows that the competency of the customer IT staffs, competency of ethio broadband customer support staff and competency of the ethio central broadband staffs are on average good and above average. According to the mean values, the competency of ethio broadband field maintenance staffs is below the average mean (2.81).

Table 4.1: Presentation of the mean of respondents regarding competency of the broadband staffs (Source: Own survey data 2017)

Descriptive Statistics table regarding competence

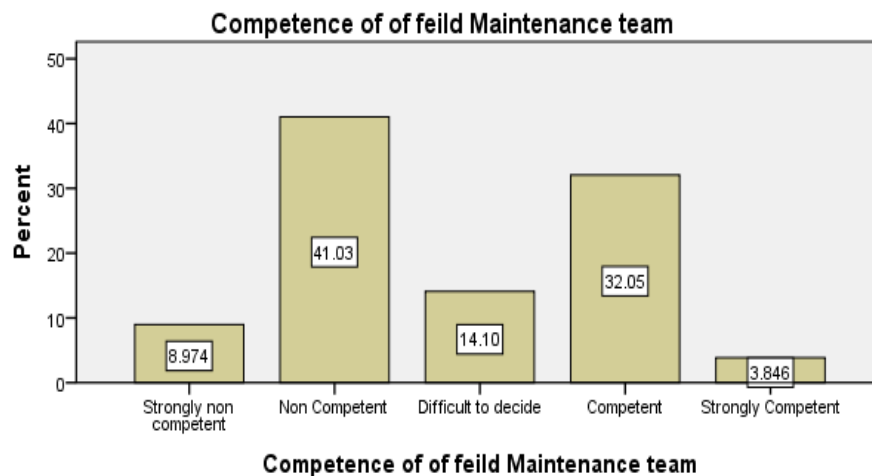
	N	Mean	Std. Deviation
Competence of Ethio Central team	78	3.50	1.029
Competence of Customer IT Technician	78	3.38	.929
Competence of Ethio Customer Service Team	78	3.26	1.122
Competence of field operation team	78	2.81	1.106
Valid N (list wise) ^a	78		

Average of the overall Mean is 3.2375

⇒ **Respondents’ frequency analysis**

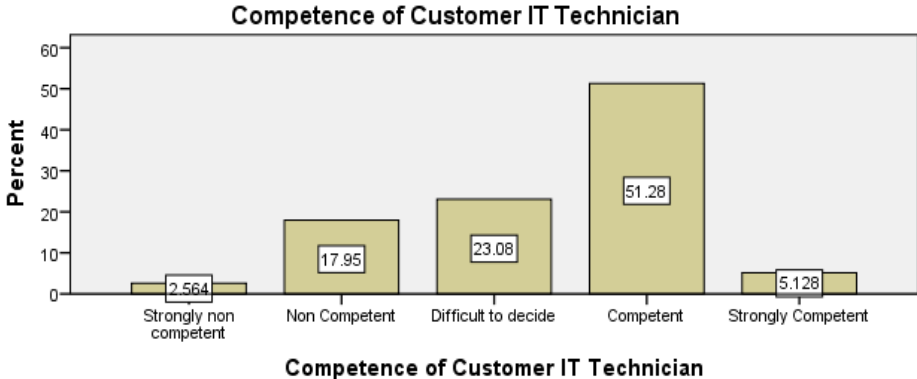
More detail can be observed from the frequency graphs (Figure 4.5 to figure 4.7.). According, the result in Fig 4.5 shows that more than 49% of the responded that ethio telecom field maintenance team is not competent out of which 8% responded the staffs are strongly not competent. Only 35% of the respondents responded that the field maintenance staffs are competent while 14% responded that it is difficult to decide.

Figure 4.5 Response for the competence of the ethio broadband field maintenance team (Source: Own survey data 2017)



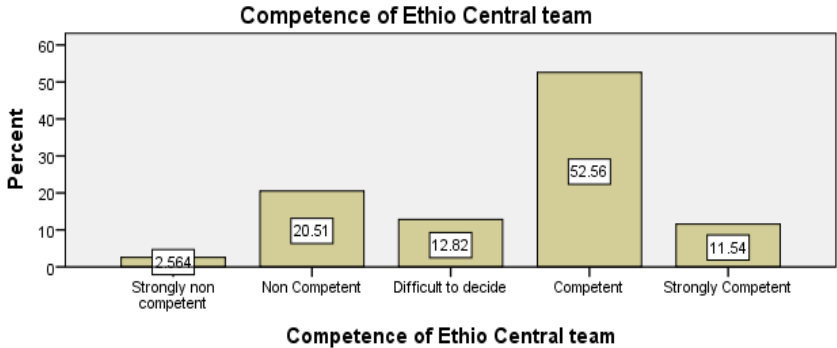
A can be seen from Fig 4.6 below, more than 56% of the respondents responded that the customer IT technicians are competent to support the customers' broadband service. Only 23% responded that it is difficult to decide and around 19% responded that the technical staffs are not competent. Generally speaking and according to the result, most customer IT technicians are competent to support the customers' broadband service at current situation.

Figure 4.6 Response for the competence of the financial institutions technical / IT/ team (Source: Own survey data 2017)



As per the results from Fig 4.7, more than 63% of the respondents responded that ethio telecom central support team is competent while around 22% responded that there are still incompetent staffs.

Figure 4.7 Response for the competence of the ethio broadband customer support team (Source: Own survey data 2017)



Referring to Fig 4.8, 57% of the respondents responded that ethio customer service support staffs are competent. Moreover, around 30% responded the customer service support team is not competent. This gives room still to see in to the gab of this staffs.

Figure 4.8 Response for the competence of the ethio central broadband or IP team (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Ethio telecom central support staffs and customer support staffs along with customers IT staffs are competent according to the analysis result.
- ⇒ Ethio telecom field maintenance staffs are relatively incompetent according to the result.
- ⇒ For the ethio telecom central support staffs and customer support staffs along with customers IT staffs there is still gap where required to see in to competencies.

4.2.1.2 Analysis of the responses to reliability of broadband connections

⇒ **Respondents’ Response Mean analysis**

According to table 4.2 below, all the mean values of the responses except the response for “broadband link outage per day” and “Speed of restoration once the broadband compliant registered” are less than the average mean value. The mean values for “broadband link outage per day” and “Speed of restoration once the broadband compliant registered” are respectively “2.91” and “3.77” which indicate that the broadband links are relatively stable and the restoration time is too long. The reliability of the broadband link respective to availability and quality is relatively poor.

Table 4.2 Presentation of the mean of respondents regarding reliability of the broadband connections (Source: Own survey data 2017).

Descriptive Statistics for the reliability of BB connection			
	N	Mean	Std. Deviation
Reliability of Ethio telecom Broadband Service in terms of availability	78	2.46	.976
Reliability of Ethio telecom Broadband Service in terms of overall Quality	78	2.54	1.065
Frequency of Customer Broadband Link outage per day	78	2.91	1.261
Speed of restoration once the BB link outage compliant is registered	78	3.77	1.348
major root cause for the frequent outage	78	2.05	1.216
Valid N (list wise) ^a	78		

Overall Average mean is: 2.746

⇒ **Respondents' response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.9 to figure 4.13. According to the graphs, greater than 50% of the respondents responded that the broadband links are not stable in terms of availability and quality. When seen from intermittency perspective, the responses to broadband links intermittency shows that 38% of the respondents responded stable and 26% of the respondents responded intermittent. When seen from restoration time perspective, greater than 76% of the respondents responded greater than 12 hours and others (which also greater than 12 hours unless specified). Most of the respondents responded to the major root causes of the outages (53%) is related to uplink devices (like: MSAG / MSAN / DSLAM) and around 29% responded the outage is related to customer premises equipment (CPE).

Figure 4.9 Response for the reliability of broadband links in terms of availability (Source: Own survey data 2017)

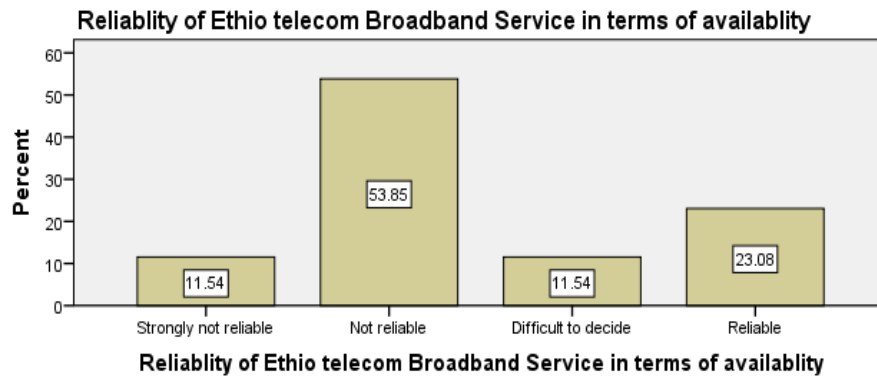


Figure 4.10 Response for the reliability of broadband links in terms of quality (Source: Own survey data 2017)

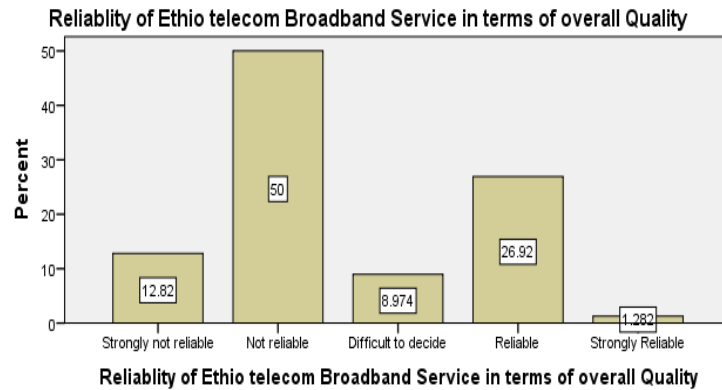


Figure 4.11 Response for the reliability of broadband links in terms of quality (Source: Own survey data 2017)

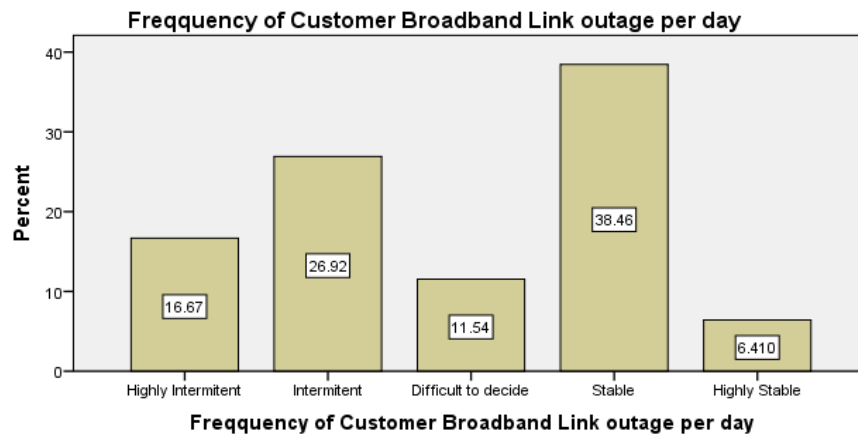


Figure 4.12 Response for the restoration of the broadband problem once the problem is registered (Source: Own survey data 2017)

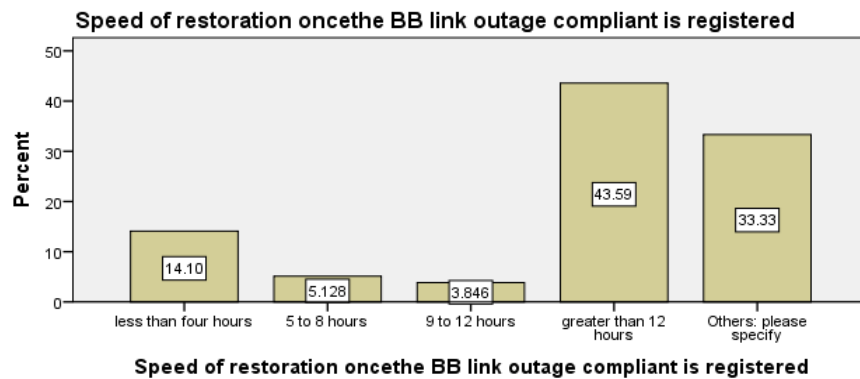
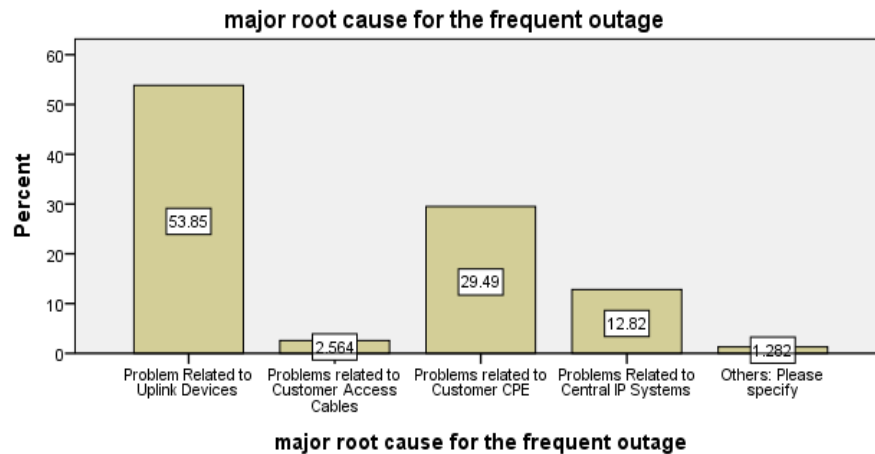


Figure 4.13 Response for major root cause of the broadband link outage (Source: Own survey data 2017)



⇒ **Summary of Respondents' overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Ethio telecom broadband service is not reliable in terms of availability and quality.
- ⇒ The broadband links are relatively good in terms of intermittency even if there is still some level of intermittency.
- ⇒ The restoration time after customer register compliant is extremely worst according to the result; almost most are greater than 12 hours.
- ⇒ The major root causes of the broadband links outages are related to uplink devices (like: MSAG / MSAN / DSLAM) and partly related to customer premises equipment (CPE).

4.2.1.3 Analysis of the responses to responsiveness of ethio broadband staffs

⇒ **Respondents’ Response Mean analysis**

According to table 4.3 below, only responses to “Responsiveness of Customer Service Support Staffs” have mean value (3.54) which is greater than the average mean all the mean values (3.38). The responses to both “Responsiveness of field Operation Staffs” and “Responsiveness of Central Support Staffs” are slightly below the mean values (3.32 & 3.29 respectively).

Table 4.3: Presentation of the mean of respondents regarding Responsiveness of broadband staffs (Source: Own survey data 2017)

Descriptive Statistics for the Responsiveness of BB Staffs			
	N	Mean	Std. Deviation
Responsiveness of Customer Service Support Staffs	78	3.54	1.077
Responsiveness of field Operation Staffs	78	3.32	1.099
Responsiveness of Central Support Staffs	78 ^a	3.29	1.152
Valid N (list wise)	78		

Overall average of the mean is: 3.38

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.14 to figure 4.16 that almost greater than 45% of the respondents responded that the all the broadband support, field maintenance and central support staffs are responsive. Respectively; greater than 60%, greater than 48% and greater than 47% responded that customer service support staffs, field maintenance staffs and central support staffs are responsive. There are significant figure also in the responses that around 24% and 21% of the respondents responded both customer service support staffs and field maintenance staffs respectively are not responsive.

Figure 4.14 Response for Responsiveness of the customer service support staff (Source: Own survey data 2017)

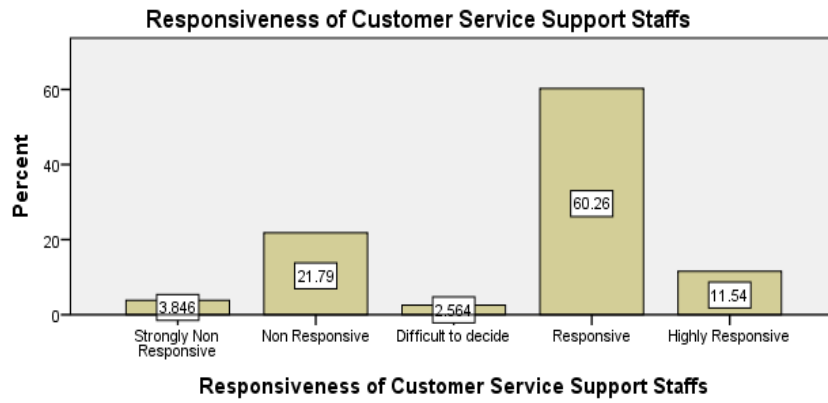


Figure 4.15 Response for Responsiveness of the Field maintenance staff (Source: Own survey data 2017)

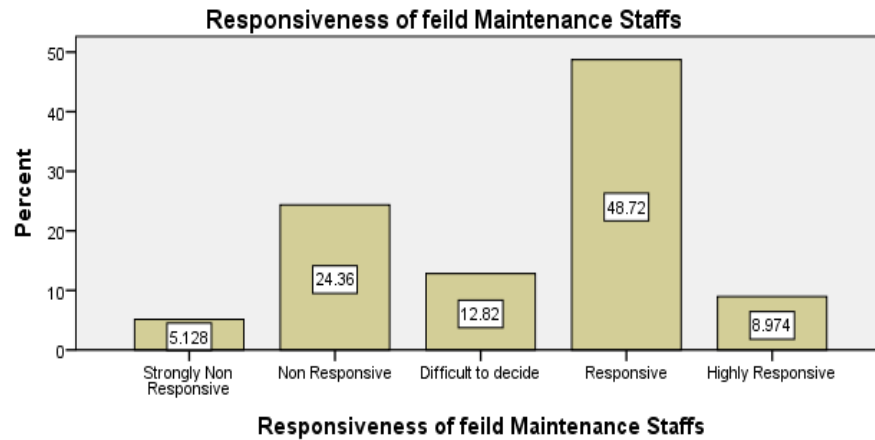
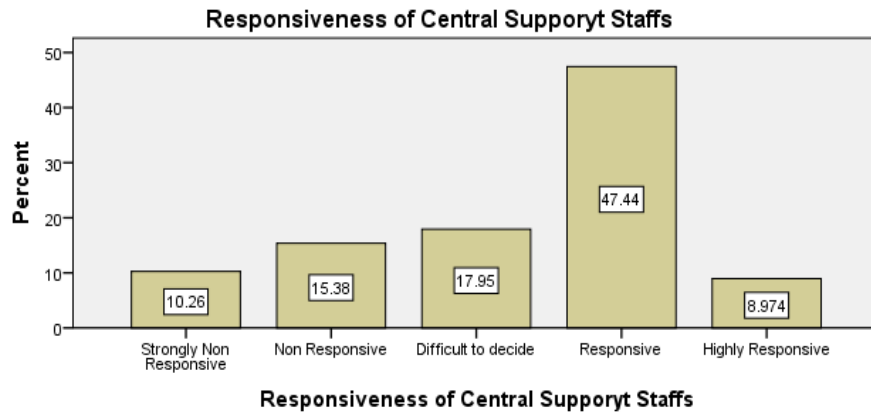


Figure 4.16 Response for Responsiveness of Ethio Central Support staffs (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Overall, the broadband customer support staffs, field maintenance staffs and central support staffs are responsive.
- ⇒ There is also significant figure which indicate also both customer service support staffs and field maintenance staffs respectively are not responsive to some extent.

4.2.1.4 Analysis of the responses to security threats of the broadband

⇒ **Respondents’ Response Mean analysis**

According to table 4.4 below, responses to “Security Threats from Customers Side” have mean value (3.03) which is greater than the average mean of all the mean values (2.95). The responses to “Security Threats from Ethio Telecom Side” are slightly below the mean values (2.87).

Table 4.4: Presentation of the mean of respondents regarding Responsiveness of broadband staffs (Source: Own survey data 2017).

Descriptive Statistics for responses to Security threats			
	N	Mean	Std. Deviation
Security Threats from Customers Side	78	3.03	1.248
Security Threats from Ethio Telecom Side	78	2.87	1.121
Valid N (list wise)	78 ^a		

Overall average mean is: 2.95

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.17 to figure 4.18 that almost greater than 37% of the respondents responded that the broadband system is secured both from ethio telecom and from broadband customer side. But still, significant figure (around 38% and 39% of the respondents) responded that there is security threat from broadband customer and ethio telecom side.

Figure 4.17 Response for Security threat from customer side (Source: Own survey data 2017)

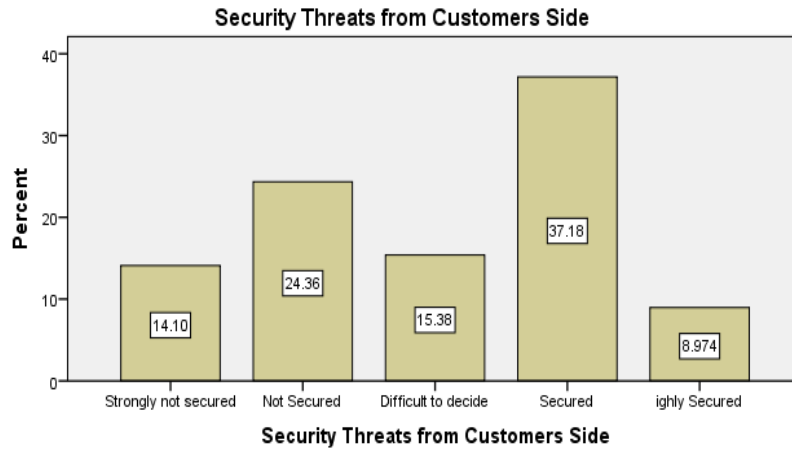
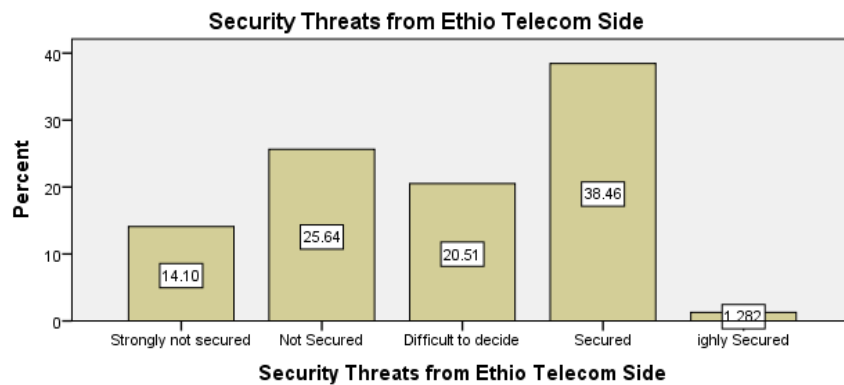


Figure 4.18 Response for Security threat from ethio telecom side (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ The broadband system is secured both from ethio telecom and from broadband customer side.
- ⇒ But still, significant figure that there is security threat from broadband customer and ethio telecom side.

4.2.2 Analysis of the responses under functional quality

Under category of functional quality, ten variables are considered. Those variables range from accessibility of broadband service to the customers, communication level of ethio telecom to its esteemed customers and courtesy of the broadband staffs towards

broadband customers. The response of the respondents under the functional quality will be presented and analyzed in the following sections.

4.2.2.1 Analysis of the responses to accessibility of broadband service to broadband customers

⇒ **Respondents’ Response Mean analysis**

According to table 4.5, all the mean values of the broadband accessibility (Demand Based Accessibility of Ethio broadband Services: 2.78; Accessibility of Ethio broadband Services in terms of Service Provisioning Costs: 2.71 and Accessibility of Ethio broadband Services in terms of wide range of Technology like CPE and Routers: 2.51) except the “accessibility of Ethio broadband Services in terms of Contact Center and Shops” (3.58) are low and below the average mean value (2.895). It shows that ethio telecom services are accessible in terms of shops and call centers.

Table 4.5 Presentation of the mean of respondents regarding accessibility of broadband service (Source: Own survey data 2017).

Descriptive Statistics of the responses to accessibility of broadband service			
	N	Mean	Std. Deviation
Demand Based Accessibility of Ethio broadband Services	78	2.78	1.191
Accessibility of Ethio broadband Services in terms of Service Provisioning Costs	78	2.71	1.021
Accessibility of Ethio broadband Services in terms of Contact Center and Shops	78	3.58 ^a	.974
Accessibility of Ethio broadband Services in terms of wide range of Technology like CPE and Routers	78	2.51	.990
Valid N (list wise)	78		

Overall average mean is: 2.895

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.19 to figure 4.22 that greater than 58% and greater than 50% of the respondents responded the broadband service is not accessible in terms of cost and technology respectively. Greater than 44% of the respondents responded that broadband service is not accessible in terms demand based and

greater than 34% of the respondents responded broadband service is accessible in terms of demand based. On the other side, greater than 55% of the respondents responded that ethio broadband service is accessible in terms of shops and call centers.

Figure 4.19 Response for demand based accessibility of ethio telecom broadband service
(Source: Own survey data 2017)

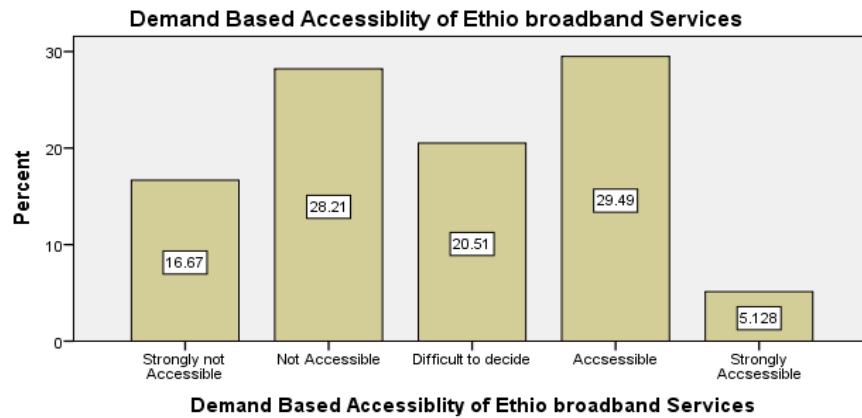


Figure 4.20 Response for accessibility of ethio telecom broadband in terms provisioning costs
(Source: Own survey data 2017)

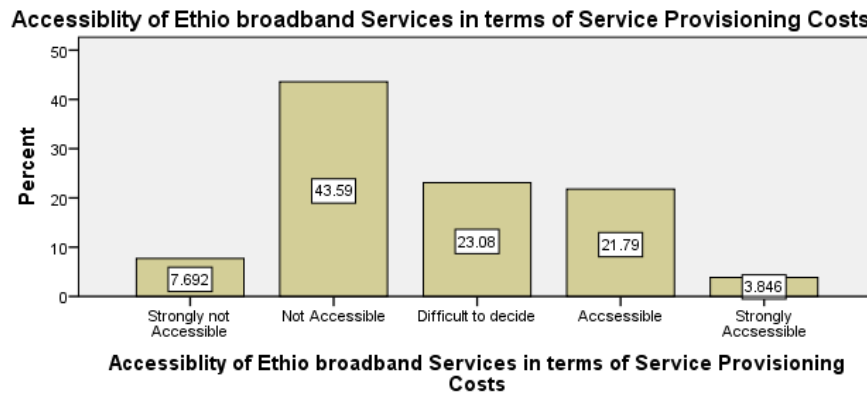


Figure 4.21 Response for accessibility of ethio telecom broadband in terms contact centers and shops (Source: Own survey data 2017)

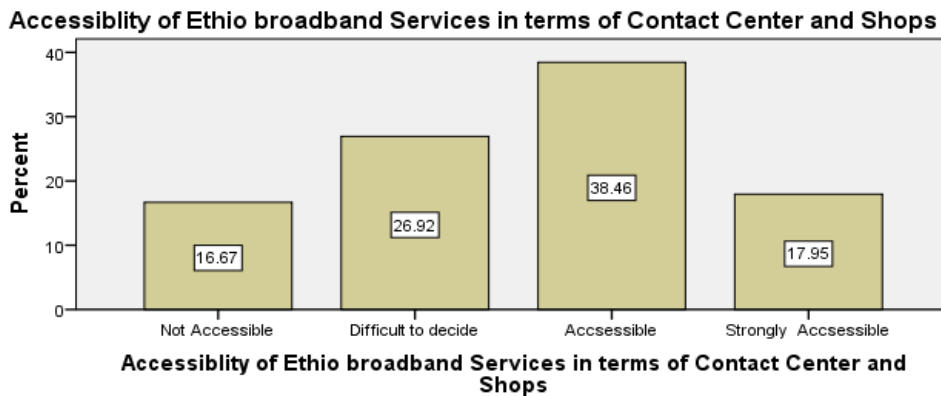
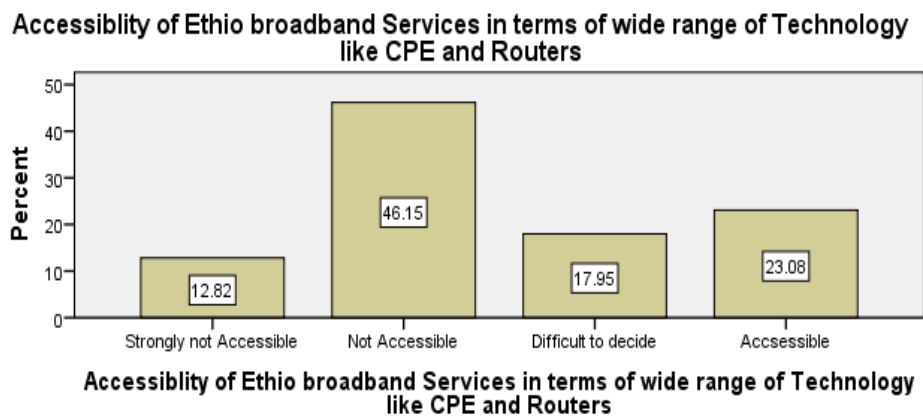


Figure 4.22 Response for accessibility of ethio telecom broadband in terms broadband technology (CPE, routers, links) (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Ethio Broadband service is highly accessible in terms of shops and call centers
- ⇒ Broadband service is not accessible in terms of cost, technology and demand based marketing.

4.2.2.2 Analysis of the Responses to communication level of ethio telecom to broadband customers

⇒ **Respondents’ Response Mean analysis**

According to table 4.6, overall mean values of the communication is good when seen from the average mean except “Ethio communication level to its broadband Customers

about Issues and Complaints Follow Ups” which is around 3.27 and less than the average mean value.

Table 4.6 Presentation of the mean of respondents regarding communication of ethio telecom (Source: Own survey data 2017)

	N	Mean	Std. Deviation
Ethio communication level to its broadband Customers about service outage due to incident, major issues	78	3.46	1.266
Ethio communication level to its broadband Customers about new products and services	78	3.47	1.256
Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups	78 ^a	3.27	1.136
Valid N (list wise)	78		

Overall average mean value is: 3.4

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.23 to figure 4.25 that greater than 64%, greater than 54% and greater than 47% of the respondents responded that there is good communication regarding “Ethio communication level to its broadband Customers about service outage due to incident, major issues”, “Ethio communication level to its broadband Customers about new products and services” and “Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups” respectively. There is still significant percent of the respondents responded that there is poor communication in all the three cases; greater than 32%, greater than 26% and greater than 32% for “Ethio communication level to its broadband Customers about service outage due to incident, major issues”, “Ethio communication level to its broadband Customers about new products and services” and “Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups” respectively.

Figure 4.23 Response for Ethio communication level to its broadband Customers about service outage due to incident, major issues (Source: Own survey data 2017)

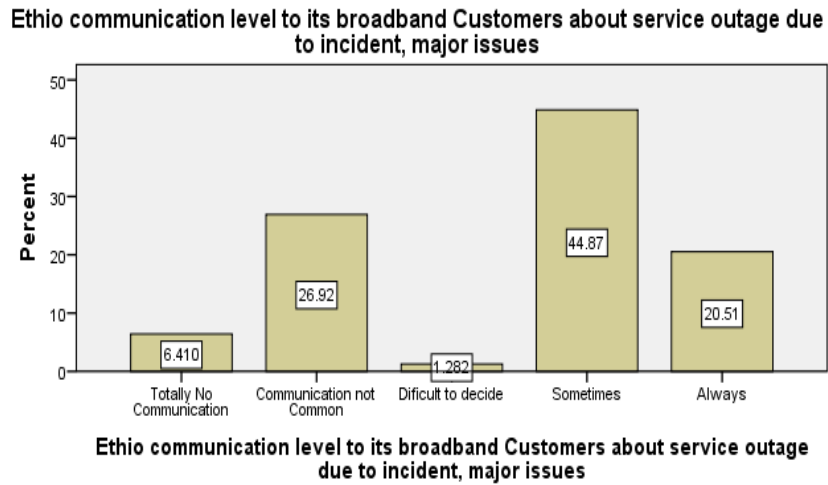


Figure 4.24 Response for Ethio communication level to its broadband Customers about new products and services (Source: Own survey data 2017)

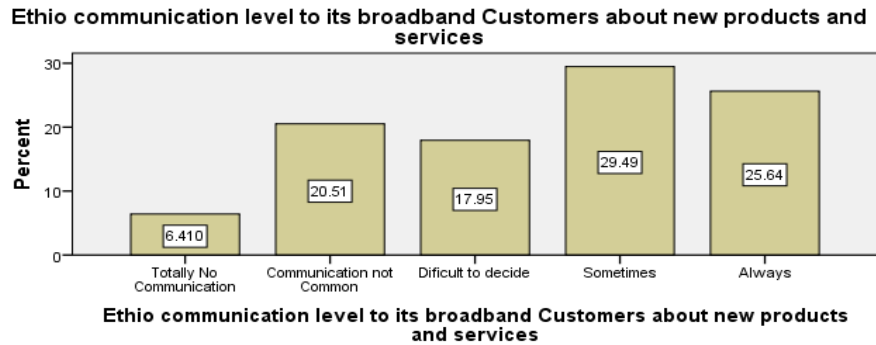
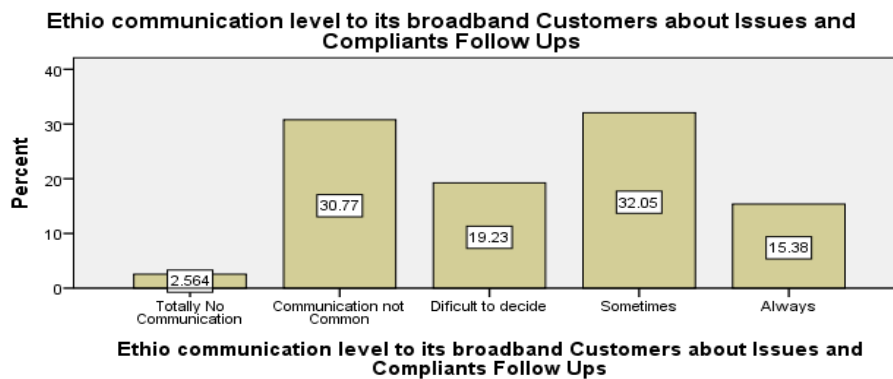


Figure 4.25 Response for Ethio communication level to its broadband Customers about Issues and Compliants Follow Ups (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Ethio telecom has slightly good communication regarding service outage due to incident, major issues, about new products and about major Issues and Complaints Follow Ups.
- ⇒ There is still significant figure indicating demand for improving the communication level in all the three dimensions; regarding service outage due to incident, major issues, about new products and about major Issues and Complaints Follow Ups.

4.2.2.3 Analysis of the responses to courtesy of ethio telecom broadband staffs to broadband customers

⇒ **Respondents’ Response Mean analysis**

According to table 4.7, mean values of the “Courtesy of Ethio Telecom Customer Service Support Staffs” (3.81) is good which is greater than the average mean value. “Courtesy of Ethio Telecom Customer Field Operation Staffs” and “Courtesy of Ethio Telecom Customer Central Support Staffs” respectively have 3.47 and 3.40 which are less mean value than the average mean value (3.56).

Table 4.7 Presentation of the mean of respondents regarding courtesy of ethio telecom broadband staffs to broadband customers (Source: Own survey data 2017)

Descriptive Statistics for Responses to courtesy of ethio telecom broadband staffs to broadband customers

	N	Mean	Std. Deviation
Courtesy of Ethio Telecom Customer Service Support Staffs	78	3.81	1.007
Courtesy of Ethio Telecom Customer Field Operation Staffs	78	3.47	1.003
Courtesy of Ethio Telecom Customer Central Support Staffs	78	3.40 ^a	1.073
Valid N (list wise)	78		

Overall average mean is: 3.56

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.26 to figure 4.28 that greater than 77%, greater than 67% and greater than 67% of the respondents responded that there is good courtesy regarding “Courtesy of Ethio Telecom Customer Service Support Staffs”,

“Courtesy of Ethio Telecom Customer Field Operation Staffs” and “Courtesy of Ethio Telecom Customer Central Support Staffs” respectively. There is still lesser percent of the respondents responded that there is poor courtesy in all the three cases; greater than 13%, greater than 22% and greater than 22% for “Courtesy of Ethio Telecom Customer Service Support Staffs”, “Courtesy of Ethio Telecom Customer Field Operation Staffs” and “Courtesy of Ethio Telecom Customer Central Support Staffs” respectively.

Figure 4.26 Response for Courtesy of Ethio Telecom Customer Service Support Staffs (Source: Own survey data 2017)

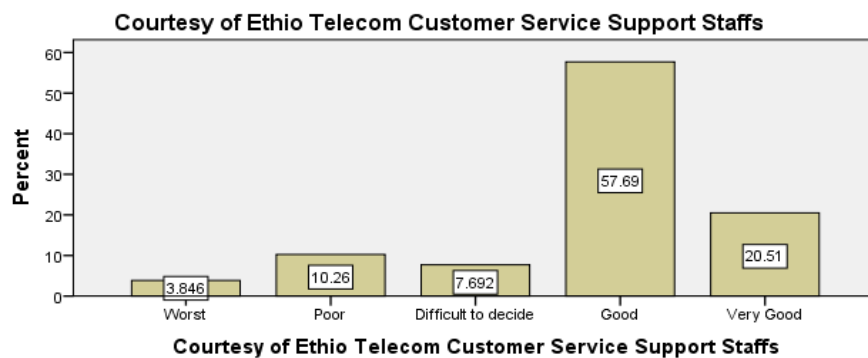


Figure 4.27 Response for Courtesy of Ethio Telecom field maintenance Staffs (Source: Own survey data 2017)

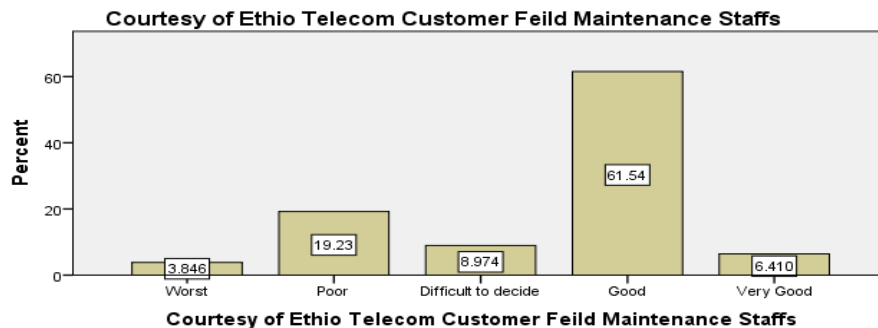
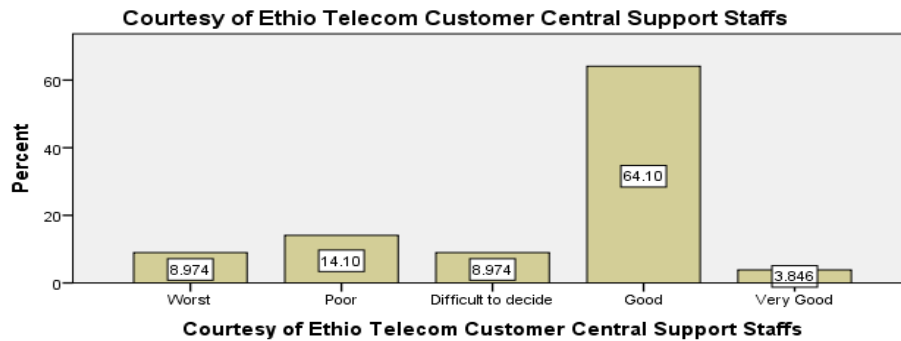


Figure 4.28 Response for Courtesy of Ethio Telecom Central Support Staffs (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ There is good courtesy regarding Ethio Telecom Customer Service Support Staffs, Ethio Telecom Customer Field Operation Staffs and Ethio Telecom Customer Central Support Staffs.
- ⇒ There is still slightly less figure indicating room for poor courtesy in all the three team dimensions.

4.2.3 Analysis of the responses under experience economy

Under category of experience Economy, there are only two variables which range from peak experience of technical staffs and customer experience regarding the peak experience of the technical staffs. The response of the respondents under the experience Economy will be presented and analyzed in the following sections.

4.2.3.1 Analysis of the responses to experience economy

⇒ **Respondents’ Response Mean analysis**

According to table 4.8, overall mean value of the two variables are low while the “Experience Maturity of ethio telecom staffs” is less than the average of the mean value.

Table 4.8 Presentation of the mean of respondents regarding Experience Economy (Source: Own survey data 2017)

	N	Mean	Std. Deviation
Experience Maturity of ethio telecom staffs	78	2.65	.991
Experience of ethio BB Customer in terms of Ethio Staffs practice	78	2.76	.942
Valid N (list wise)	78		

Overall average mean is: 2.705

⇒ **Respondents’ response frequency analysis**

More detail can be observed from the frequency graphs under Figure 4.29 to figure 4.30 that greater than 56% of the respondents responded there is no maturity of experience in ethio telecom. Only 29% of the respondents responded “experienced” for “Experience of ethio BB Customer in terms of Ethio Staffs practice”.

Figure 4.29 Response for Experience Maturity of ethio telecom staffs (Source: Own survey data 2017)

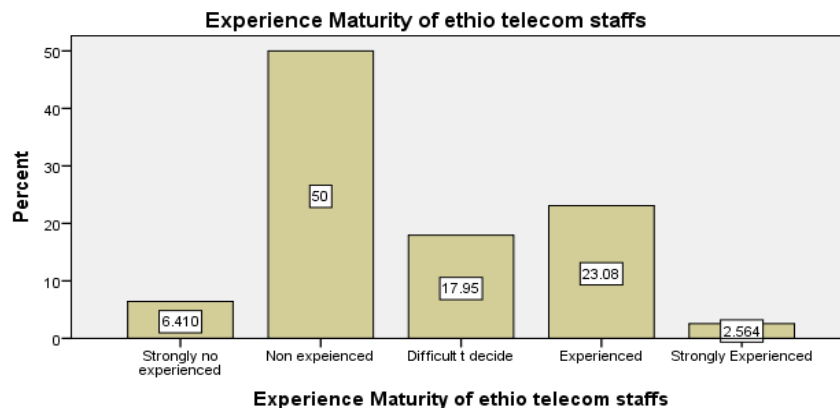
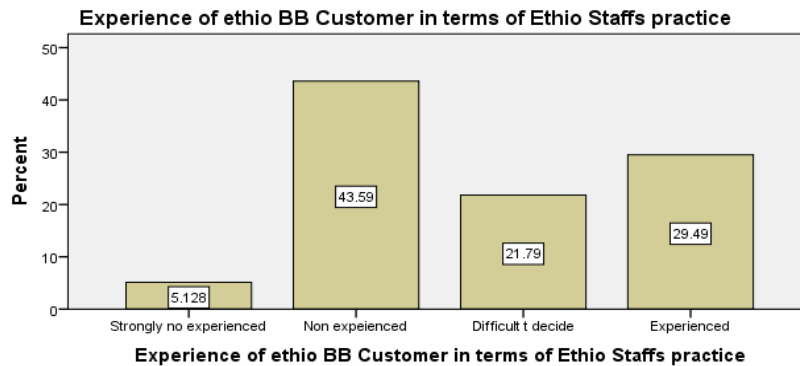


Figure 4.30 Response for Experience of ethio BB Customer in terms of Ethio Staffs practice
(Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ The overall maturity of experience of ethio telecom broadband service maintenance and practice is not good.
- ⇒ There is significant figure to slightly consider good experience of the broadband customers in ethio telecom broadband maintenance and practice.

4.2.4 Analysis of the responses under service quality

Under category of service quality, there are eight variables which range from broadband speed subscribed, type of access technology, type of customer premises equipment (CPE), number of computers connected to the CPE, for what purpose the customer uses the broadband services, impact of the CPE on the broadband speed, which type of CPE mostly used have high impact and experience of the customer in broadband speed. The response of the respondents under the service quality will be presented and analyzed in the following sections.

4.2.4.1 Analysis of the responses to service quality

⇒ **Respondents’ Response Mean analysis**

According to table 4.8, only three variables have mean value less than the average mean; “Type of Access technology of Broadband Customer Links”, “For what purpose does the customers use broadband Services” and “Overall experience of broadband Speed by the customer” which have mean values: 2.13, 2.13 and 2.59 respectively. The rest of the variables; “Speed Subscribed by The Broadband Customer”, “Type of

Customer Premises Equipment”, “Number of Computers connected to the customer CPE”, “Impact of Customer Premises Equipment on Broadband speed” and “Which Customer CPE Has high Impact on Broadband Speed” have mean values greater than the average mean; 3.14, 3.12, 3.54, 3.04 and 3.79 respectively.

Table 4.9 Presentation of the mean of respondents regarding Service Quality (Source: Own survey data 2017)

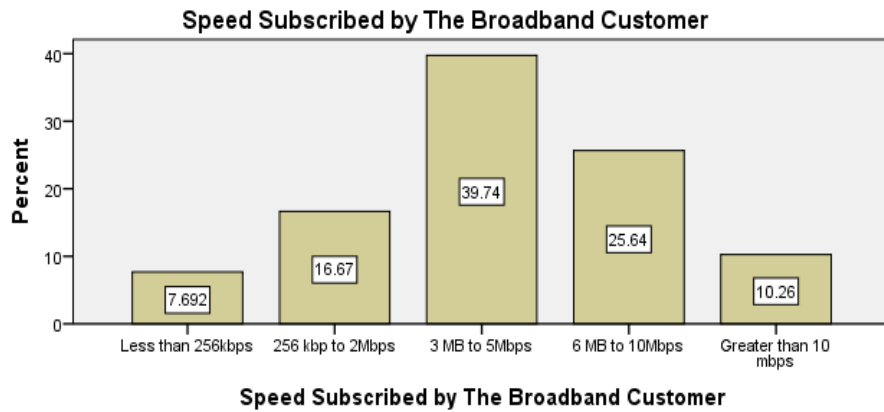
Descriptive Statistics of service quality			
	N	Mean	Std. Deviation
Speed Subscribed by The Broadband Customer	78	3.14	1.066
Type of Access technology of Broadband Customer Links	78	2.13	1.361
Type of Customer Premises Equipment	78	3.12	1.032
Number of Computers connected to the customer CPE	78	3.54	1.065
For what purpose does the customers use broadband Services	78	2.13	1.121
Overall experience of Broadband Speed by the customer	78 ^a	2.59	.959
Impact of Customer Premises Equipment on Broadband speed	78	3.04	1.086
Which Customer CPE Has high Impact on Broadband Speed	78	3.79	1.097
Valid N (list wise)	78		

Overall mean average is: 2.935

⇒ **Respondents’ response frequency analysis**

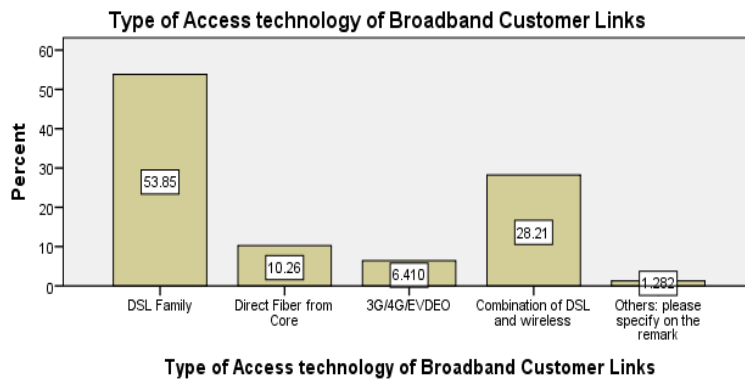
More detail can be observed from the frequency graphs under Figure 4.31 to figure 4.38 is explained in the next section. From Fig 4.31, it can be seen that almost greater than 74% of the respondents subscribed for speed greater than 3MB out of which 39% subscribed for speed range from 3MB to 5MB and 25% subscribed for speed range from 5MB to 10MB.

Figure 4.31 Response for Speed subscribed by the broadband subscriber (Source: Own survey data 2017)



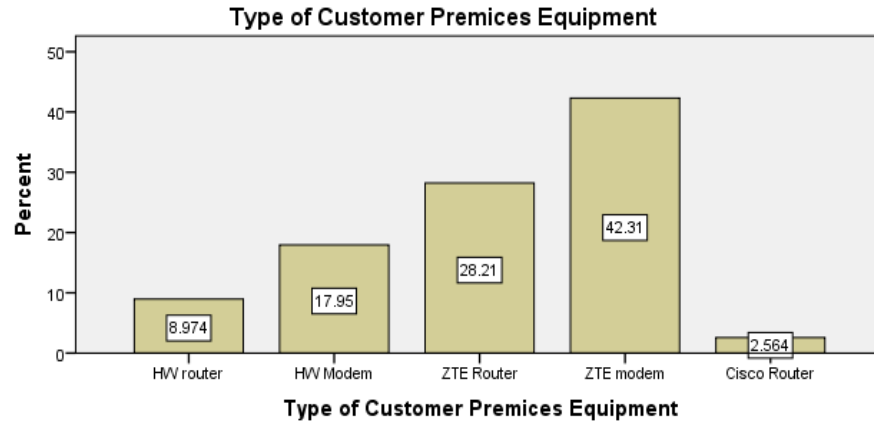
From Fig 4.32 it can also be seen that, almost more than half (around 53%) of the respondents use digital subscriber line family (DSL, and xDSL) while around 28% use combination of digital subscriber line and wireless connections.

Figure 4.32 Response for Type of access technology (Source: Own survey data 2017)



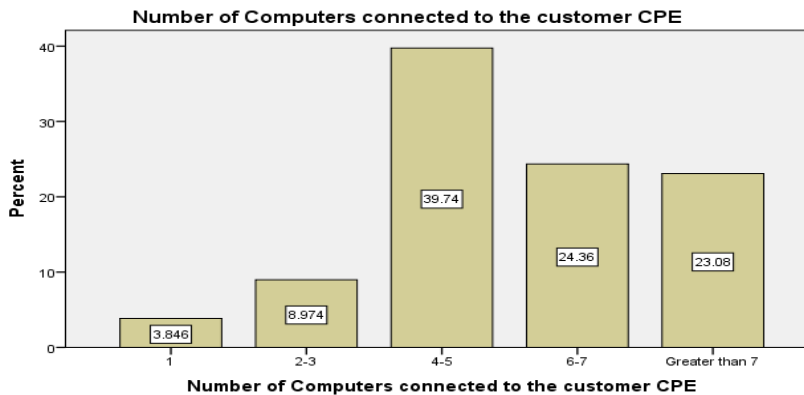
From Fig. 4.33 it can be seen that most of the respondents (Around 42%) use ZTE DSL modem while 28% and 17% respectively use ZTE routers and Huawei DSL modems.

Figure 4.33 Response for Type of customer CPE (Source: Own survey data 2017)



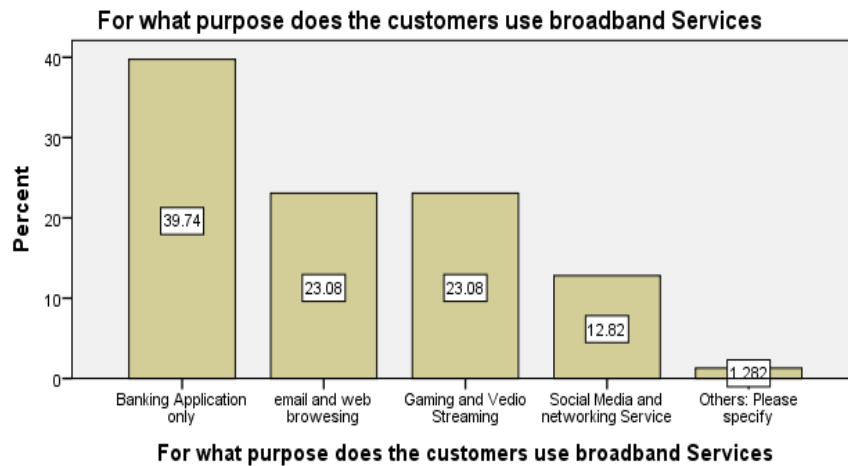
From Fig. 4.3 it can be seen that most of the respondents (around 86%) have more than four computers connected to their CPE out of which 39%, 24% and 23% respectively have four to five, six to seven and greater than seven computers connected to their CPE.

Figure 4.34 Response for number of computers connected to CPE (Source: Own survey data 2017)



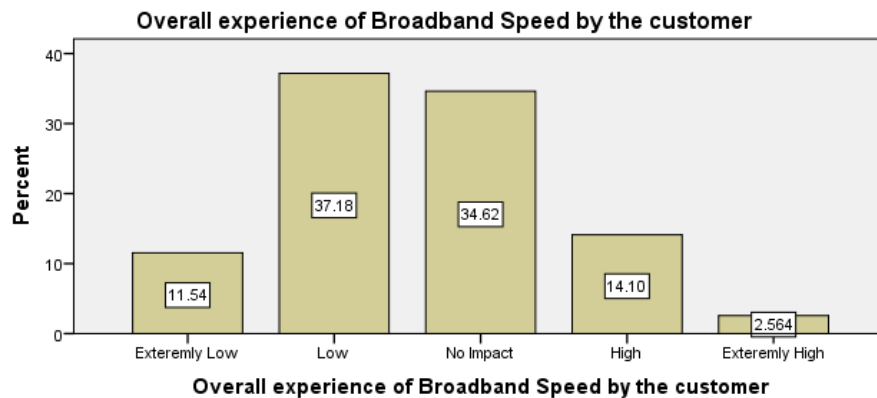
From Fig. 4.35 it can be seen that most of the respondents (around 39%) use the broadband connection for banking purpose only while 23% of the respondents use the broadband connection for the purpose of email & browsing and online gaming and video streaming. Very limited percent (Around 12%) use the connection for social networking and services.

Figure 4.35 Response for what purpose the customer use the broadband service (Source: Own survey data 2017)



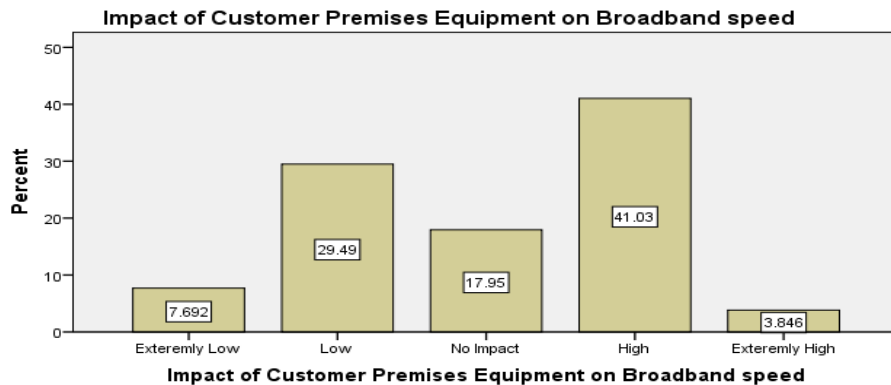
From Fig. 4.36 it can be seen that more than 48% of the respondents responded that they have very low and low speed experience. 34% of the respondents responded that they think it has no impact. Around 14% of the respondents have high speed experience.

Figure 4.36 Response for overall experience of broadband speed by the customer (Source: Own survey data 2017)



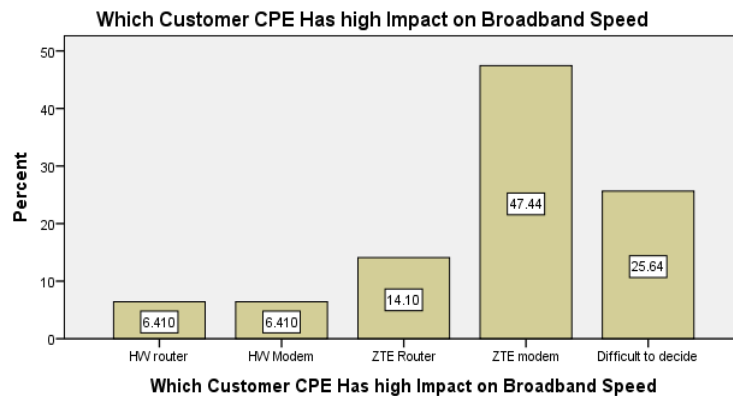
From Fig. 4.37 it can be seen that around 41% of the respondents responded that customer premises equipment (CPE) have high impact on the broadband speed. Around 29% responded that CPE has low impact on the broadband speed while 17% responded that the CPE have no impact on broadband speed.

Figure 4.37.Response for impact of CPE on broadband speed (Source: Own survey data 2017)



From Fig. 4.38 it can be seen that around 47% of the respondents responded that ZTE DSL modem has high performance impact on the broadband speed. Around 14% responded that they use ZTE router and around 25% responded that it is difficult to decide the impact.

Figure 4.38 Response for which CPE has high impact on broadband speed (Source: Own survey data 2017)



⇒ **Summary of Respondents’ overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Most subscribers have broadband speed subscribed for speed from 3MB to 7MB.
- ⇒ There are also significant figure indicating broadband speed subscription greater than 10MB.

- ⇒ Most subscribers use digital subscriber line family as broadband connection (DSL, and xDSL) and there are some users using combination of digital subscriber line and wireless connections.
- ⇒ Most users have four computers and above connected to their CPE.
- ⇒ Most broadband users use the broadband connection for the purpose of banking purpose while significant users also use the connection for the purpose of email & browsing and online gaming and video streaming. There are Very limited users using the broadband connection for social networking and services
- ⇒ Most broadband users have very low and low experience of broadband connection speed experience.
- ⇒ Customer premises equipment (CPE) have slightly high impact on the broadband speed.
- ⇒ ZTE DSL modem has slightly high performance impact on the broadband speed. There is also slight impact of ZTE router that has performance impact on broadband speed.

4.2.4 Analysis of the responses under overall customer perception

Under category of overall broadband customer experience towards ethio telecom practice, there are three variables which include: “overall rate of broadband maintenance and practice”, “overall rate of customer loyalty to ethio telecom” and “overall recommendation of ethio telecom broadband service to friends”. The response of the respondents under the overall broadband customer perception towards ethio telecom practice will be presented and analyzed in the following sections.

⇒ Respondents’ Response Mean analysis

According to table 4.9, two of the variables: “Overall rate of broadband maintenance and practice” and “Overall recommend ethio telecom Broadband Service to friends” (have mean value greater than the average mean value (2.4166)). “Overall rate of Customer loyalty to ethio telecom” have a mean value (2.17) less than the average mean value (2.4166).

Table 4.10 Presentation of the mean of respondents regarding overall broadband customer experience towards ethio telecom practice (Source: Own survey data 2017).

Descriptive Statistics overall broadband customer experience towards ethio telecom practice

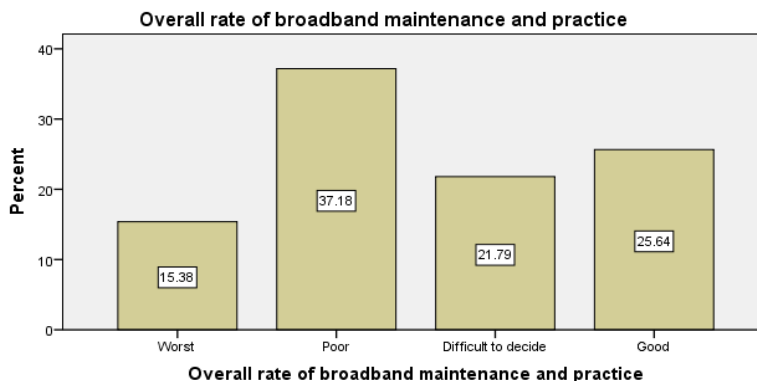
	N	Mean	Std. Deviation
Overall rate of broadband maintenance and practice	78	2.58	1.038
Overall rate of Customer loyalty to ethio telecom	78	2.17 ^a	.918
Overall recommend ethio telecom Broadband Service to friends	78	2.50	1.102
Valid N (list wise)	78		

Overall average mean value: 2.4166

⇒ **Respondents' response frequency analysis**

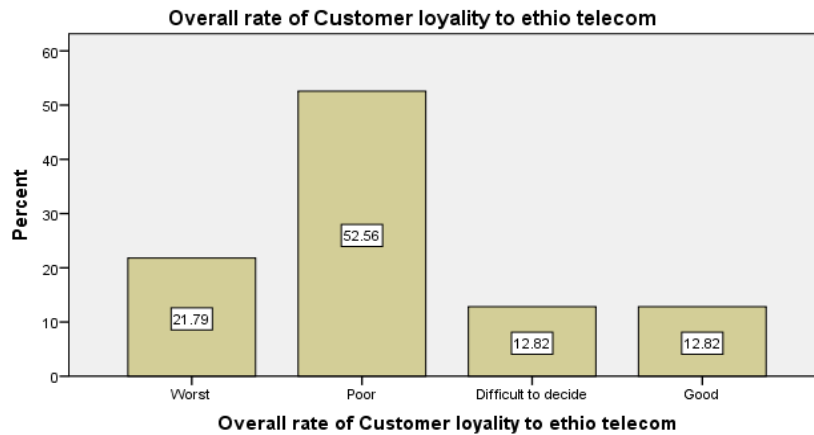
More detail of the analysis can be observed from the frequency graphs under Figure 4.39 and figure 4.40. From Fig 4.39, it can be seen that almost greater than 52% of the respondents responded that they feel overall ethio telecom practice in broadband service is poor or worst; out of which 15% feel the practice of ethio telecom in providing broadband service is worst. Only 25% of the respondents feel that the broadband practice is good while 21% have the feeling that it is difficult to decide.

Figure 4.39 Response for overall rate of broadband maintenance and practice (Source: Own survey data 2017)



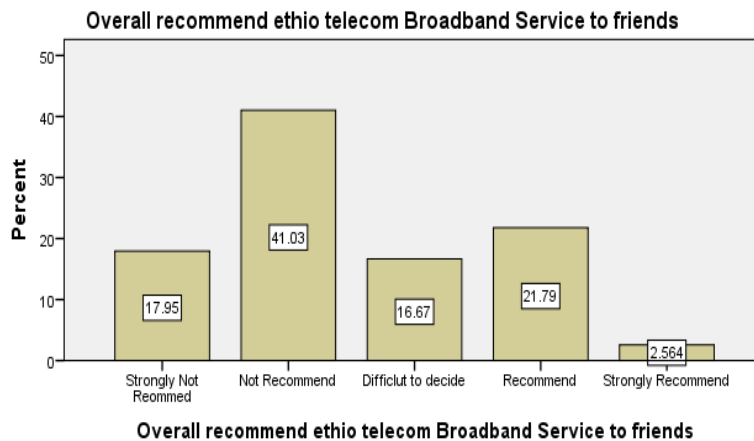
From Fig. 4.40, it can be seen that around more than 73% of the respondents responded that there is poor customer loyalty to ethio telecom. Only 12% of the respondents responded there is good customer loyalty to ethio telecom; another 12% have response difficult to decide.

Figure 4.40 Response for overall rate of customer loyalty to ethio telecom (Source: Own survey data 2017)



From Fig. 4.41, it can be seen that around 58% of the respondents responded that they don't recommend ethio telecom broadband service to their friends out of which 17% strongly don't recommend the service to their friends. Around 23% responded they recommend the service out of which 2% strongly recommend the service. 16% of the respondents responded difficult to decide.

Figure 4.41 Response for overall recommendation of ethio telecom broadband service to friends (Source: Own survey data 2017)



⇒ **Summary of Respondents' overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Overall ethio telecom maintenance and practice in broadband service is poor or worst even if there are slightly few figures indicating that there is an encouraging effort in the practice.
- ⇒ Most users feel that there is poor customer loyalty to ethio telecom if there is option of switching to other operators.
- ⇒ Most users don't recommend ethio telecom broadband service to their friends and even few of the broadband users strongly don't recommend the service to their friends. There is still encouraging fact that there are slightly few users who recommend ethio telecom broadband service to their friends.

4.3. Multinomial and Correlation analysis

This section presents analysis result of Multinomial regression and Correlation between responses to level of existing ethio telecom practices and overall customer perception towards ethio telecom existing practices. In order to answer the research questions, "What is the level of customers' perception towards existing broadband service delivery practices of ethio telecom?" Since the variables used in this study are categorical variables, only multinomial regression and Chi-square tests are used to test the association between the variables used to represent ethio telecom practices and the customer perception towards those practices. Accordingly, the following sections, present the detail of the results from multinomial regression and Chi-square tests.

4.3.1 Chi-square test

4.3.1.1 Competence of field operation team vs. Overall perception rate of broadband maintenance and practice

Table 4.11 Presentation of the Competence of field operation team vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.103 ^a	12	.086
Likelihood Ratio	20.028	12	.067
Linear-by-Linear Association	9.872	1	.002
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Competence of field operation team and Overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.2 Competence of Customer IT Technician vs. Overall perception rate of broadband maintenance and practice

Table 4.12 Presentation of the Competence of Customer IT Technician vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.028 ^a	12	.000
Likelihood Ratio	39.942	12	.000
Linear-by-Linear Association	7.185	1	.007
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Competence of Customer IT Technician and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.3 Competence of Ethio Central team vs. Overall perception rate of broadband maintenance and practice

Table 4.13 Presentation of the Competence of Ethio Central team vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.728 ^a	12	.095
Likelihood Ratio	21.078	12	.049
Linear-by-Linear Association	2.392	1	.122
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Competence of Ethio Central team and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.4 Competence of Ethio Customer Service Team vs. Overall perception rate of broadband maintenance and practice

Table 4.14 Presentation of the Competence of Ethio Customer Service Team vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.229 ^a	12	.109
Likelihood Ratio	22.801	12	.029
Linear-by-Linear Association	8.882	1	.003
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .77.

⇒ Competence of Ethio Customer Service Team and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.5 Reliability of Ethio telecom Broadband Service in terms of availability vs. Overall perception rate of broadband maintenance and practice

Table 4.15 Presentation of the Reliability of Ethio telecom Broadband Service in terms of availability vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.274 ^a	9	.006
Likelihood Ratio	24.911	9	.003
Linear-by-Linear Association	2.931	1	.087
N of Valid Cases	78		

a. 11 cells (68.8%) have expected count less than 5. The minimum expected count is 1.38.

⇒ Reliability of Ethio telecom Broadband Service in terms of availability and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.6 Reliability of Ethio telecom Broadband Service in terms of overall Quality vs. Overall perception rate of broadband maintenance and practice

Table 4.16 Presentation of the Reliability of Ethio telecom Broadband Service in terms of overall Quality vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.283 ^a	12	.349
Likelihood Ratio	13.234	12	.352
Linear-by-Linear Association	.816	1	.366
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .15.

⇒ Reliability of Ethio telecom Broadband Service in terms of overall Quality and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.7 Frequency of Customer Broadband Link per day vs. Overall perception rate of broadband maintenance and practice

Table 4.17 Presentation of the Frequency of Customer Broadband Link per day vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.289 ^a	12	.000
Likelihood Ratio	45.086	12	.000
Linear-by-Linear Association	9.842	1	.002
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .77.

⇒ Frequency of Customer Broadband Link per day and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.8 Speed of restoration once the BB link outage compliant is registered vs. Overall perception rate of broadband maintenance and practice

Table 4.18 Presentation of the Speed of restoration once the BB link outage compliant is registered vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.408 ^a	12	.000
Likelihood Ratio	47.289	12	.000
Linear-by-Linear Association	6.215	1	.013
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Speed of restoration once the BB link outage compliant is registered and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.9 Major Root cause for the frequent outage vs. Overall perception rate of broadband maintenance and practice

Table 4.19 Presentation of the Major Root cause for the frequent outage vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.133 ^a	12	.359
Likelihood Ratio	14.695	12	.259
Linear-by-Linear Association	.365	1	.546
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .15.

⇒ Major Root cause for the frequent outage and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.10 Responsiveness of Customer Service Support Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.20 Presentation of the Responsiveness of Customer Service Support Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.638 ^a	12	.262
Likelihood Ratio	17.676	12	.126
Linear-by-Linear Association	2.263	1	.133
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Responsiveness of Customer Service Support Staffs and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.11 Responsiveness of field Operation Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.21 Presentation of the Responsiveness of field Operation Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.101 ^a	12	.000
Likelihood Ratio	36.019	12	.000
Linear-by-Linear Association	6.023	1	.014
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .62.

⇒ Responsiveness of field Operation Staffs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.12 Responsiveness of Central Support Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.22 Presentation of the Responsiveness of Central Support Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.537 ^a	12	.001
Likelihood Ratio	37.962	12	.000
Linear-by-Linear Association	3.183	1	.074
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is 1.08.

⇒ Responsiveness of Central Support Staffs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.13 Security Threats from Customers Side vs. Overall perception rate of broadband maintenance and practice

Table 4.23 Presentation of the Security Threats from Customers Side vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.300 ^a	12	.002
Likelihood Ratio	33.682	12	.001
Linear-by-Linear Association	2.746	1	.098
N of Valid Cases	78		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is 1.08.

⇒ Security Threats from Customers Side and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.14 Security Threats from Ethio Telecom Side vs. Overall perception rate of broadband maintenance and practice

Table 4.24 Presentation of the Security Threats from Ethio Telecom Side vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.186 ^a	12	.003
Likelihood Ratio	39.286	12	.000
Linear-by-Linear Association	4.136	1	.042
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .15.

⇒ Security Threats from Ethio Telecom Side and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.15 Demand Based Accessibility of Ethio broadband Services vs. Overall perception rate of broadband maintenance and practice

Table 4.25 Presentation of the Demand Based Accessibility of Ethio broadband Services vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.918 ^a	12	.001
Likelihood Ratio	30.869	12	.002
Linear-by-Linear Association	9.132	1	.003
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .62.

⇒ Demand Based Accessibility of Ethio broadband Services and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.16 Accessibility of Ethio broadband Services in terms of Service Provisioning Costs vs. Overall perception rate of broadband maintenance and practice

Table 4.26 Presentation of the Accessibility of Ethio broadband Services in terms of Service Provisioning Costs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.634 ^a	12	.000
Likelihood Ratio	44.451	12	.000
Linear-by-Linear Association	13.575	1	.000
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Accessibility of Ethio broadband Services in terms of Service Provisioning Costs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.18 Accessibility of Ethio broadband Services in terms of Contact Center and Shops vs. Overall perception rate of broadband maintenance and practice

Table 4.27 Presentation of the Accessibility of Ethio broadband Services in terms of Contact Center and Shops vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.310 ^a	9	.255
Likelihood Ratio	13.493	9	.142
Linear-by-Linear Association	.629	1	.428
N of Valid Cases	78		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is 2.00.

⇒ Accessibility of Ethio broadband Services in terms of Contact Center and Shops and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.18 Accessibility of Ethio broadband Services in terms of wide range of Technology like CPE and Routers vs. Overall perception rate of broadband maintenance and practice

Table 4.28 Presentation of the Accessibility of Ethio broadband Services in terms of wide range of Technology like CPE and Routers vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.719 ^a	9	.000
Likelihood Ratio	38.287	9	.000
Linear-by-Linear Association	10.999	1	.001
N of Valid Cases	78		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is 1.54.

⇒ Accessibility of Ethio broadband Services in terms of wide range of Technology like CPE and Routers and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.19 Ethio communication level to its broadband Customers about service outage due to incident, major issues vs. Overall perception rate of broadband maintenance and practice

Table 4.29 Presentation of the Ethio communication level to its broadband Customers about service outage due to incident, major issues vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.458 ^a	12	.013
Likelihood Ratio	31.415	12	.002
Linear-by-Linear Association	8.806	1	.003
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .15.

⇒ Ethio communication level to its broadband Customers about service outage due to incident, major issues * Overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.20 Ethio communication level to its broadband Customers about new products and services vs. Overall perception rate of broadband maintenance and practice

Table 4.30 Presentation of the Ethio communication level to its broadband Customers about new products and services vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.899 ^a	12	.000
Likelihood Ratio	42.555	12	.000
Linear-by-Linear Association	6.269	1	.012
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .77.

⇒ Ethio communication level to its broadband Customers about new products and services and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.21 Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups vs. Overall perception rate of broadband maintenance and practice

Table 4.31 Presentation of the Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.593 ^a	12	.023
Likelihood Ratio	24.073	12	.020
Linear-by-Linear Association	1.106	1	.293
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Ethio communication level to its broadband Customers about Issues and Complaints Follow Ups and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.22 Courtesy of Ethio Telecom Customer Service Support Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.32 Presentation of the Courtesy of Ethio Telecom Customer Service Support Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.001 ^a	12	.002
Likelihood Ratio	34.569	12	.001
Linear-by-Linear Association	6.642	1	.010
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Courtesy of Ethio Telecom Customer Service Support Staffs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.23 Courtesy of Ethio Telecom Customer Field Operation Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.33 Presentation of the Courtesy of Ethio Telecom Customer Field Operation Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.210 ^a	12	.019
Likelihood Ratio	28.541	12	.005
Linear-by-Linear Association	8.506	1	.004
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Courtesy of Ethio Telecom Customer Field Operation Staffs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.24 Courtesy of Ethio Telecom Customer Central Support Staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.34 Presentation of the Courtesy of Ethio Telecom Customer Central Support Staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.733 ^a	12	.000
Likelihood Ratio	46.157	12	.000
Linear-by-Linear Association	12.894	1	.000
N of Valid Cases	78		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Courtesy of Ethio Telecom Customer Central Support Staffs and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.25 Experience Maturity of ethio telecom staffs vs. Overall perception rate of broadband maintenance and practice

Table 4.35 Presentation of the Experience Maturity of ethio telecom staffs vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.324 ^a	12	.000
Likelihood Ratio	31.644	12	.002
Linear-by-Linear Association	13.008	1	.000
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Experience Maturity of ethio telecom staffs * Overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.26 Experience of ethio BB Customer in terms of Ethio Staffs practice * Overall perception rate of broadband maintenance and practice

Table 4.36 Presentation of the Experience of ethio BB Customer in terms of Ethio Staffs practice vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42.238 ^a	9	.000
Likelihood Ratio	45.995	9	.000
Linear-by-Linear Association	13.001	1	.000
N of Valid Cases	78		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .62.

⇒ Experience of ethio BB Customer in terms of Ethio Staffs practice and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.27 Speed Subscribed by The Broadband Customer vs. Overall perception rate of broadband maintenance and practice

Table 4.37 Presentation of the Speed Subscribed by The Broadband Customer vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.847 ^a	12	.001
Likelihood Ratio	38.250	12	.000
Linear-by-Linear Association	1.440	1	.230
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .92.

⇒ Speed Subscribed by The Broadband Customer and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.28 Type of Access technology of Broadband Customer Links vs. Overall perception rate of broadband maintenance and practice

Table 4.38 Presentation of the Type of Access technology of Broadband Customer Links vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.460 ^a	12	.217
Likelihood Ratio	13.429	12	.339
Linear-by-Linear Association	.050	1	.823
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .15.

⇒ Type of Access technology of Broadband Customer Links and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.29 Type of Customer Premises Equipment vs. Overall perception rate of broadband maintenance and practice

Table 4.39 Presentation of the Type of Customer Premises Equipment vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.557 ^a	12	.655
Likelihood Ratio	10.059	12	.611
Linear-by-Linear Association	.878	1	.349
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Type of Customer Premises Equipment and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

4.3.1.30 Number of Computers connected to the customer CPE vs. Overall perception rate of broadband maintenance and practice

Table 4.40 Presentation of the Number of Computers connected to the customer CPE vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.404 ^a	12	.000
Likelihood Ratio	40.561	12	.000
Linear-by-Linear Association	2.984	1	.084
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Number of Computers connected to the customer CPE and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.31 for what purpose do the customers use broadband Services vs. Overall perception rate of broadband maintenance and practice

Table 4.41 Presentation of the purpose do the customers use broadband Services vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.517 ^a	12	.013
Likelihood Ratio	28.280	12	.005
Linear-by-Linear Association	3.187	1	.074
N of Valid Cases	78		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .15.

⇒ For what purpose do the customers use broadband Services and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.32 Overall experience of Broadband Speed by the customer vs. Overall perception rate of broadband maintenance and practice

Table 4.42 Presentation of the Overall experience of Broadband Speed by the customer vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.517 ^a	12	.002
Likelihood Ratio	27.785	12	.006
Linear-by-Linear Association	1.432	1	.231
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .31.

⇒ Overall experience of Broadband Speed by the customer and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.33 Impact of Customer Premises Equipment on Broadband speed vs. Overall perception rate of broadband maintenance and practice

Table 4.43 Presentation of the Impact of Customer Premises Equipment on Broadband speed vs. Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.597 ^a	12	.001
Likelihood Ratio	30.244	12	.003
Linear-by-Linear Association	3.788	1	.052
N of Valid Cases	78		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .46.

⇒ Impact of Customer Premises Equipment on Broadband speed and overall perception rate of broadband maintenance and practice are **significantly** correlated.

4.3.1.34 Which Customer CPE Has high Impact on Broadband Speed * Overall perception rate of broadband maintenance and practice

Table 4.44 Presentation of the Which Customer CPE Has high Impact on Broadband Speed * Overall perception rate of broadband maintenance and practice (Source: Own survey data 2017).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.652 ^a	12	.163
Likelihood Ratio	20.780	12	.054
Linear-by-Linear Association	.213	1	.644
N of Valid Cases	78		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .77.

⇒ Which Customer CPE Has high Impact on Broadband Speed and overall perception rate of broadband maintenance and practice are **not significantly** correlated.

⇒ **Summary of correlation of overall result**

In general, the following summary can be extracted from the above analysis:

- ⇒ Overall broadband customers' perception, from the analysis is significantly correlated to the following ethio telecom practices:
 - Frequency of customer broadband link outage
 - Speed of maintenance once compliant is registered
 - Responsiveness of field operation and central support staffs
 - Security of broadband service from ethio telecom side
 - Accessibility of broadband service in terms of product cost, modem technology, and demand based supply of broadband service.
 - Communication of ethio telecom regarding products and services and service outage by incidents
 - Courtesy of all level staffs including: field operation, central support staff and customer support staffs
 - Experience maturity of the ethio telecom technical staffs
 - Speed of broadband service subscribed for
 - Experience with low broadband speed
 - Purpose for which the customer is using the broadband service
 - Impact of customer premises equipment on the broadband speed.

4.3.2 Multinomial Logistic Regression

Multinomial logistic regression was used to explain the determinants of broadband customers towards service delivery practice. The reference cluster was “overall customer perception towards ethio telecom practices is poor”. The model result indicates that all the Sig. value is greater than 0.05 and all the Exp (B) values are greater than 1.00. At this condition and according to multinomial regression analysis, there is no association or prediction between variables representing ethio telecom service delivery practices and overall perception of broadband customers towards ethio telecom service delivery practices. The overall result of the table is found in the appendix II (for reference) since the size of the table is large.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

In this chapter, the results and findings of the study are systematically summarized, to draw relevant conclusions from the findings and to forward relevant recommendations.

5.1. SUMMARY OF FINDING FROM THE RESULTS OF THE ANALYSIS

As the main purpose of this study is to assess the customer perception towards ethio telecom practices in broadband service; Standardized questionnaire with 41 questions organized in five themes of five-point Likert scale were prepared and distributed to 87 respondents of financial institutions using ethio telecom broadband in Addis Ababa. A total of 78 questionnaires were collected back from the respondents and analyzed in the previous sections. In this section therefore, the summarized result and findings from the analysis will be presented.

Following are summary of the findings from the descriptive analysis result for the level of ethio telecom existing service delivery practices:

- ⇒ According to analysis result from competency category, ethio telecom central broadband support staffs, customer service support staffs and broadband customers IT staffs are competent in giving broadband service support and maintenance practice; according to the analysis result. Ethio telecom field maintenance staffs are relatively incompetent in giving broadband service support and field maintenance.
- ⇒ According to the result from reliability category, ethio telecom broadband service is not reliable in terms of availability and quality. The broadband links are relatively good in terms of intermittency even if there is still some level of intermittency. The restoration time after customer register complaint is extremely worst according to the result, almost greater than 12 hours. The major cause of the broadband links outages is related to uplink devices problem (like: MSAG / MSAN / DSLAM) and partly related to customer premises equipment (CPE).
- ⇒ From the result of responsiveness of broadband staffs; the broadband customer support staffs, field maintenance staffs and central broadband service support

staffs are responsive during broadband service support and maintenance practices.

- ⇒ From the result of the security of broadband services; the broadband service is secured both from ethio telecom and from broadband customer side. However, significant figure show that there slight security threat from both broadband customer and ethio telecom side.
- ⇒ From the result of the accessibility category, ethio telecom broadband is highly accessible in terms of shops and call centers. Ethio telecom broadband is not accessible in terms of initial cost, broadband technology like variety of CPE and demand based marketing.
- ⇒ According to result from responses for communication category; ethio telecom has significantly good communication to its broadband customers regarding launch of new products and services; while there is slightly good communication regarding service outage due to incident & major issues and follow up of customer issues. Therefore, there is still demand for improving the communication level in all the three dimensions above; service outage due to incident, major issues, launch of new products and major customer issues and Complaints follow ups.
- ⇒ Regarding the courtesy of staffs; there is good courtesy of Ethio Telecom customer Service support staffs, Ethio Telecom broadband field maintenance staffs and ethio telecom customer support staffs.
- ⇒ Regarding the results for the overall experience maturity; ethio telecom broadband service maintenance and practice is not good enough to achieve significant perception of broadband customers. There is slightly poor experience or perception by the broadband customers towards ethio telecom broadband maintenance and practice.
- ⇒ For the service quality category, most broadband subscribers suffer from slow speed even if subscribed to broadband speed greater than or equal to 3MB and above. The major reasons are due to: bad quality of broadband modems, shared bandwidth between multiple computers on a single CPE and others. Most broadband users have four and above computers connected to their CPE. Most subscribers use digital subscriber line family as broadband connection (DSL, and

xDSL) and there are some users using combination of digital subscriber line and wireless connections. The broadband customers also believe that DSL modems have slight impact on speed of their broadband connection; especially ZTE modems. Most broadband users use the broadband connection for the purpose of banking purpose while significant users also use the connection for the purpose of email & browsing and online gaming and video streaming. There are Very limited users using the broadband connection for social networking and services. This shows emerging requirement for some of users to experience new services like video streaming and on-line gaming.

Following are summary of the findings from the correlation analysis result of ethio telecom existing service delivery practice and overall level of customer perception:

- ⇒ Overall broadband customers' perception, is significantly correlated to the following ethio telecom practices:
- Frequency of customer broadband link outage
 - Speed of maintenance once compliant is registered
 - Responsiveness of field operation and central support staffs
 - Security of broadband service from ethio telecom side
 - Accessibility of broadband service in terms of product cost, modem technology, and demand based supply of broadband service.
 - Communication of ethio telecom regarding products and services and service outage by incidents
 - Courtesy of all level staffs including: field operation, central support staff and customer support staffs
 - Experience maturity of the ethio telecom technical staffs
 - Speed of broadband service subscribed for
 - Experience with low broadband speed
 - Purpose for which the customer is using the broadband service

The multinomial regression model result indicates that there is no association or prediction between variables representing ethio telecom service delivery practices and overall perception of broadband customers towards ethio telecom service delivery practices.

The overall customers' perception towards ethio telecom service delivery practice, according to descriptive result is:

- ⇒ Regarding the overall perception towards ethio telecom broadband service maintenance and practice, the perception is poor even if there are slightly few figures indicating that there is an encouraging effort in the practice. Most respondents feel poor perception that there is less customer loyalty to ethio telecom if there is option of switching to other operators.
- ⇒ Most broadband respondents don't recommend ethio telecom broadband service to their friends and even few of the broadband users strongly don't recommend the service to their friends. There are slightly few respondents who recommend ethio telecom broadband service to their friends.

5.2 CONCLUSION, RECOMMENDATIONS AND FUTURE WORKS

5.2.1 CONCLUSIONS

The result from the study is summarized in two categories based on the research questions; "level of existing ethio telecom practices to deliver broadband service to its customer" and "level of customers' perception towards the existing practice of ethio telecom". Accordingly, the following is the summary of relatively good and relatively weak side of ethio telecom existing practices from the analysis result.

- ⇒ Ethio telecom has good communication level with the customers especially with regard to new products and offer; central broadband support team and customer support team have good competency to support broadband; staffs have good courtesy while making communications and support with broadband customers and accessibility of ethio telecom broadband support is good at shops and contact center level.
- ⇒ On the other hand, ethio telecom has weak practices as responded by the respondents; which include: slow speed and low bandwidth, low performance modems, low competence of field maintenance staffs, low accessibility of modems by technology and cost, highly intermittent broadband links and long lasting maintenance delays.

The summary of the overall ethio telecom perception shows that ethio telecom is perceived slightly bad when seen overall perception result from the study. Ethio telecom also has good perception dimensions where the customer judge its strength. The summary of the perception can be considered as good side (strength) and weak side of ethio telecom. Following are some of the major results under the customer perception:

- ⇒ Ethio telecom is perceived bad in accessibility of broadband service in terms of price and variety of technology, long-lasting maintenance delay, competency of field maintenance staffs, security level of broadband service, very slow broadband speed, bad DSL modems used in the network and problems related to broadband link outage. Overall perception of the broadband customers' is not good but encouraging if ethio telecom sustains those good practices and improve those bad practices with adoption of new practices in the industry standards

5.2.2 RECOMMENDATIONS

The following section is details few of the recommendations proposed by the study.

- ⇒ **Recommendation 1:** It is important to device strategy to remove those poor quality and old DSL modems in the network which degrades the service quality due to their limited performance. ZTE DSL modem is one of the raised modem type that affected the service quality.
- ⇒ **Recommendation 2:** It is also important to strategically conduct training and workshop with broadband customers on broadband service purpose, broadband technology selection and enterprise network adoption to improve overall customer perception and service quality.
- ⇒ **Recommendation 3:** It is also important to make inclusive service quality and perception survey regularly regarding broadband at detail service level than global company level.
- ⇒ **Recommendation 4:** It is recommended to conduct company level competency assessment and capacity development for all broadband field maintenance team.
- ⇒ **Recommendation 5:** It is important to deploy latest industry state-of-art technologies in the broadband backbone and access network infrastructure of

ethio telecom as world class operator including the changing old IP network infrastructure which is suffering from performance limitation.

- ⇒ **Recommendation 6:** It is important to provide long-lasting solution for the broadband link outage by securing power systems and long-standing maintenance delays to keep the customer perception and satisfaction.
- ⇒ **Recommendation 7:** It is also important to improve provisioning of broadband service by availing variety of broadband modems and compromising related costs.
- ⇒ **Recommendation 8:** It is recommended to re-check the security lists applied to the broadband and internet services in order to keep customers' perception.
- ⇒ **Recommendation 9:** It is also important to sustain and develop more of the existing communication and courtesy of the broadband technical staffs giving broadband support.
- ⇒ **Recommendation 10:** It is recommended to develop company and nation level broadband strategies and policies to roadmap issues raised in this study as challenge and poor practices.
- ⇒ **Recommendation 11:** It is recommended to cross check the developing countries broadband product and services price and offer to substantially provide broadband speed to broadband customers at comparable price.

5.2.3 FUTURE WORKS

As this study is limited in time, framework and geography; the researcher recommends future works that address the areas where not addressed by this study. Accordingly, the following are areas recommended by the researcher for further studies.

- ⇒ Assessment of customer perception toward ethio telecom practice in all service categories of ethio telecom and in all geographical coverage.
- ⇒ Additional and suitable conceptual frame works to study customer perception in countries like Ethiopia; developing countries.
- ⇒ Assessment of opportunities and challenges in deploying emerging broadband technologies in Ethiopia.

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APPENDIX – I

QUESTIONNAIRE

Addis Ababa University; School of Commerce

A Study for the partial fulfillment of Master of Arts (in project management)

Dear Sir/Madam,

This survey is conducted as part of a study of a project which shall be submitted in partial fulfillment of the master’s degree in project management at Addis Ababa University; school of commerce. The purpose of this study is to assess customers’ perception towards ethio telecom broadband service delivery practices considering financial institutions located in Addis as target group.

I am kindly inviting you to participate in filling up this piece of questionnaire and contribute your personal and valued opinion to my study. I thank you in advance for your precious time and opinion. If you have any feedback or clarity issue, please do not hesitate to contact me at any time through the following address.

General Directions:

- ⇒ Please put “X” in the box corresponding to your level of opinion
- ⇒ Please carefully refer the representations in the table to choose your responses.

GENERAL BACKGROUND OF THE RESPONDENT							
S/N	Description	1	2				
1	Your gender?						
Representation: 1 → Male; 2 → Female							
2	Description	1	2	3	4	5	
	Your age?						
Representation: 1 → Less than 20 years; 2 → 20 to 24 years; 3 → 25 to 29 years; 4 → 30 to 34 years; 5 → above 35 years							
3	Description	1	2	3	4	5	Put remarks if any
	Your level of education?						
Representation: 1 → 12 / 10 complete; 2 → Certificate / Diploma; 3 → BSC / BA degree; 4 → MSC / MA degree; 5 → PHD							
	Description	1	2	3	4	5	Put remarks if any

4	Your experience in broadband service?						
Representation: 1 → less than 2 years; 2 → 3 to 4 years; 3 → 5 to 6 years; 4 → 7 to 8 years; 5 → above 8 years							
5	Description	1	2	3	4	5	6
	Your operational zone (accordingly to ethio telecom)						
Representation: 1 → WAAZ; 2 → NAAZ; 3 → CAAZ; 4 → EAAZ; 5 → SAAZ; 6 → SWAAZ							
6	Description	1	2	3	4	5	6
	Your functional area (accordingly to ethio telecom)						
Representation: 1 → CSD (back /TT office); 2 → CSD VIP Support; 3 → IP Advanced Support; 4 → IP Engineering IP Core; 5 → IP TMC; 6 → ENG access strategy							

QUESTIONS REGARDING TECHNICAL QUALITY

1	Description	1	2	3	4	5	Remarks if any
	How often do you rate the competence of broadband technologies field operation team (O&M and FAN)?						
	Representation: 1 → Strongly non competent; 2 → No Competent; 3 → Neutral; 4 → Competent; 5 → Strongly Competent						
2	Description	1	2	3	4	5	Remarks if any
	How often do you rate the competence of broadband customers' technical staff (IT Admin)?						
	Representation: 1 → Strongly non competent; 2 → Non Competent; 3 → Neutral; 4 → Competent; 5 → Strongly Competent						
3	Description	1	2	3	4	5	Remarks if any
	How often do you rate the competence of ethio telecom central Support staffs (SMC / NOC / ENG –IP (core and access))?						
	Representation: 1 → Strongly non competent; 2 → No Competent; 3 → Neutral; 4 → Competent; 5 → Strongly Competent						
4	Description	1	2	3	4	5	Remarks if any
	How often do you rate the competence of ethio telecom customer service Support staffs (back / TT office)?						
	Representation: 1 → Strongly non competent; 2 → No Competent; 3 → Neutral; 4 → Competent; 5 → Strongly Competent						
5	Description	1	2	3	4	5	Remarks if any
	How do you rate the reliability of ethio telecom broadband services in terms of service availability time?						
	Representation: 1 → Strongly not reliable; 2 → not reliable; 3 → Neutral; 4 → reliable; 5 → Strongly reliable						
6	Description	1	2	3	4	5	Remarks if any
	How do you rate the reliability of ethio telecom						

	broadband services in terms of overall quality and service functionality?						
	Representation: 1 → Strongly not reliable; 2 → not reliable; 3 → Neutral; 4 → reliable; 5 → Strongly reliable						
7	Description	1	2	3	4	5	Remarks if any
	How do you rate the outage rate of customer side broadband link per day?						
	Representation: 1 → highly intermittent; 2 → Intermittent; 3 → Neutral; 4 → stable; 5 → highly stable						
8	Description	1	2	3	4	5	Remarks if any
	How fast is the restoration time once customer registered compliant for the service / link problem?						
	Representation: 1 → less than 4 hours; 2 → 5 to 8 hours; 3 → 9 to 12 hours; 4 → greater than 12 hours; 5 → others: please specify						
9	Description	1	2	3	4	5	Remarks if any
	What do you think are the major causes of the frequent problems / outages of the customer broadband service?						
	Representation: 1 → problems (power, transmission and hardware) related to uplink / access devices like: MSAG/MSAN/DSLAM; 2 → Problems (loss, cut, damage, quality..) related to customer broadband links / cables; 3 → Problems related to customer CPE (capacity, configuration, internal network..); 4 → Problems related to central systems like configuration; 5 → others: please specify in the remark						
10	Description	1	2	3	4	5	Remarks if any
	How often do you rate the responsiveness of the customer Service support staffs (back / TT office)?						
	Representation: 1 → Strongly non responsive; 2 → Non responsive; 3 → Neutral; 4 → responsive; 5 → Strongly responsive						
11	Description	1	2	3	4	5	Remarks if any
	How often do you rate the responsiveness of the field operation staffs / FAN and O&M/ maintaining cables, IP devices and CPE?						
	Representation: 1 → Strongly non responsive; 2 → Non responsive; 3 → Neutral; 4 → responsive; 5 → Strongly responsive						
12	Description	1	2	3	4	5	Remarks if any
	How do you rate the responsiveness of the central support staffs (SMC – IP, NOC /IP-TMC and ENG –IP (core and access))?						
	Representation: 1 → Strongly non responsive; 2 → Non responsive; 3 → Neutral; 4 → responsive; 5 → Strongly responsive						
13	Description	1	2	3	4	5	Remarks if any
	How do you feel the security threats from ethio telecom side (is there security threats on customer data and systems)?						
	Representation: 1 → Strongly not secured; 2 → Not Secured; 3 → Neutral; 4 → Secured; 5 → highly secured						

14	Description	1	2	3	4	5	Remarks if any
	How do you feel the security threat from Customer side (Is there security threats on ethio telecom service and systems)?						
	Representation: 1 → Strongly not secured; 2 → Non Secured; 3 → Neutral; 4 → Secured; 5 → Strongly secured						

QUESTIONS REGARDING FUNCTIONAL QUALITY

1	Description	1	2	3	4	5	Remarks if any
	How do you rate the accessibility of ethio telecom broadband service in terms of demand based marketing?						
	Representation: 1 → Strongly not accessible; 2 → not accessible; 3 → Neutral; 4 → accessible; 5 → highly accessible						

2	Description	1	2	3	4	5	Remarks if any
	How do you rate the accessibility of ethio telecom broadband service in terms of cost and broadband offers to the customers?						
	Representation: 1 → Strongly not accessible; 2 → not accessible; 3 → Neutral; 4 → accessible; 5 → highly accessible						

3	Description	1	2	3	4	5	Remarks if any
	How do you rate the accessibility of ethio telecom broadband service in terms of contact centers and sales shops to the customers?						
	Representation: 1 → Strongly not accessible; 2 → not accessible; 3 → Neutral; 4 → accessible; 5 → highly accessible						

4	Description	1	2	3	4	5	Remarks if any
	How do you rate the accessibility of ethio telecom broadband service in terms of technology (wide range of access technology and CPE) to the customers?						
	Representation: 1 → Strongly not accessible; 2 → not accessible; 3 → Neutral; 4 → accessible; 5 → highly accessible						

5	Description	1	2	3	4	5	Remarks if any
	How do you rate the communication of ethio telecom of informing major maintenance issues, major outages and service interruptions, issues follow up and updates, events and planned changes to its customers?						
	Representation: 1 → totally no communication; 2 → not common; 3 → Neutral; 4 → sometimes; 5 → regularly						

6	Description	1	2	3	4	5	Remarks if any
	How do you rate the communication of ethio telecom regarding new products, new offer, regular news and updates to its esteemed customers?						

	Representation: 1 → totally no communication; 2 → not common; 3 → Neutral; 4 → sometimes; 5 → regularly						
7	Description	1	2	3	4	5	Remarks if any
	How do you rate the communication of ethio telecom regarding complaints and issues follow up which are registered by the customer?						
	Representation: 1 → totally no communication; 2 → not common; 3 → Neutral; 4 → sometimes; 5 → regularly						
8	Description	1	2	3	4	5	Remarks if any
	How do you rate the courtesy (courtesy refers to politeness) of the customer Service support staffs (back-office / Call center) during communication / feedback?						
	Representation: 1 → Worst; 2 → Poor; 3 → Neutral; 4 → Good; 5 → Very good						
9	Description	1	2	3	4	5	Remarks if any
	How do you rate the courtesy (courtesy refers to politeness) of the field operation staffs / Technical staffs on the field / during communication / feedback?						
	Representation: 1 → Worst; 2 → Poor; 3 → Neutral; 4 → Good; 5 → Very good						
10	Description	1	2	3	4	5	Remarks if any
	How do you rate the courtesy (courtesy refers to politeness) of the central support staffs / NOC, SMC and ENG/ during communication / feedback?						
	Representation: 1 → Worst; 2 → Poor; 3 → Neutral; 4 → Good; 5 → Very good						

QUESTIONS REGARDING EXPERIENCE ECONOMY

1	Description	1	2	3	4	5	Remarks if any
	How do you rate the experience maturity of ethio telecom staffs to solve customer problems, complaints and issues end to end?						
	Representation: 1 → Strongly non-experienced; 2 → non-experienced; 3 → Neutral; 4 → experienced; 5 → Strongly experienced						
2	Description	1	2	3	4	5	Remarks if any
	How do you rate the experience of the broadband customers with regard to practice of end to end broadband problem resolution by ethio telecom technical team?						
	Representation: 1 → Worst; 2 → Poor; 3 → Neutral; 4 → Good; 5 → Very good						

QUESTIONS REGARDING SERVICE QUALITY

1	Description	1	2	3	4	5	Remarks if any
	How much speed did you subscribe?						

	Representation: 1 → Less than 256kbps; 2 → 256 to 2Mbps; 3 → 3Mbps to 5 Mbps; 4 → 6 to 10 Mbps → Greater than 10 Mbps.						
2	Description	1	2	3	4	5	Remarks if any
	What is the access technology you are using currently?						
	Representation: 1 → ADSL (xDSL); 2 → direct fiber; 3 → 3G / 4G/ EVDO; 4 → Combination of xDSL and 3G / 4G/ EVDO; 5 → others (please put on the remark)						
3	Description	1	2	3	4	5	Remarks if any
	What is the type of CPE you are using?						
	Representation: 1 → HW router; 2 → HW DSL modem; 3 → ZTE router; 4 → ZTE DSL modem; 5 → Cisco router; 6 → please put in the remark if the CPE is different from above.						
4	Description	1	2	3	4	5	Remarks if any
	How much computers are connected to your CPE?						
	Representation: 1 → only one; 2 → 2 to 3; 3 → 4 to 5; 4 → 5 to 6 → Greater than 6						
5	Description	1	2	3	4	5	Remarks if any
	For what purpose you usually use the broadband service?						
	Representation: 1 → banking application only; 2 → email and web browsing ; 3 → online gaming and video streaming; 4 → social medias and social networking services → Others: please specify in the remark						
6	Description	1	2	3	4	5	Remarks if any
	How do you rate the experience of broadband speed you subscribed for?						
	Representation: 1 → Extremely slow; 2 → very slow; 3 → Slow speed; 4 → high speed; 5 → extremely high speed						
7	Description	1	2	3	4	5	Remarks if any
	How do you rate the impact of the existing customer premises equipment (CPE: DSL Modem and routers) and customer internal network performance affect the quality of broadband service?						
	Representation: 1 → extremely low ; 2 → low; 3 → neutral; 4 → high → extremely high						
8	Description	1	2	3	4	5	Remarks if any
	Which customer premises equipment (CPE) do you think has poor performance which affects the broadband customer experience?						
	Representation: 1 → HW router; 2 → HW DSL modem; 3 → ZTE router; 4 → ZTE DSL modem; 5 → Cisco router; 6 → please put in the remark if the CPE is different from the above.						

QUESTIONS REGARDING OVERALL EXPERIENCE OF BROADBANND SERVICE

S/N	Description	1	2	3	3	5	Put remarks if any
1	How do you rate overall broadband service and maintenance practice by ethio telecom; in terms of customer perception?						

Representation: 1 → Worst; 2 → Poor; 3 → Neutral; 4 → Good; 5 → Very good							
2	Description	1	2	3	4	5	Put remarks if any
	Do you agree that broadband customers remain loyal to ethio telecom with the current service and maintenance practice in a competitive environment?						
Representation: 1 → Strongly Disagree; 2 → Disagree; 3 → Neutral; 4 → Agree; 5 → Strongly Agree							
3	Description	1	2	3	4	5	Put remarks if any
	Do you recommend ethio telecom broadband service to your friends in a competitive environment?						
Representation: 1 → Strongly don't recommend; 2 → don't recommend; 3 → Neutral; 4 → recommend; 5 → Strongly recommend							

Thank you again for your precious time and valued opinion

Multinomial regression analysis result

Overall perception rate of broadband maintenance and practice		B	Std. Error	Wald	df	Sig.	Exp (B)
Worst	Intercept	600.649	1360306.880	.000	1	1.000	
	[Compet_Field_Team=1]	437.169	1006008.561	.000	1	1.000	7.249
	[Compet_Field_Team=2]	311.903	874911.022	.000	1	1.000	2.869
	[Compet_Field_Team=3]	170.774	635989.309	.000	1	1.000	1.466
	[Compet_Field_Team=4]	311.903	875951.993	.000	1	1.000	2.869
	[Compet_Field_Team=5]	0 ^c	.	.	0	.	.
	[Comp_Cust_IT_Tech=1]	153.717	104577.333	.000	1	.999	5.734
	[Comp_Cust_IT_Tech=2]	-40.664	204074.963	.000	1	1.000	2.188
	[Comp_Cust_IT_Tech=3]	31.726	51890.439	.000	1	1.000	6003775
	[Comp_Cust_IT_Tech=4]	56.527	113251.398	.000	1	1.000	3541866
	[Comp_Cust_IT_Tech=5]	0 ^c	.	.	0	.	.
	[Compt_Centr_Supp=1]	-268.339	975385.333	.000	1	1.000	2.897
	[Compt_Centr_Supp=2]	-86.615	190477.837	.000	1	1.000	2.419
	[Compt_Centr_Supp=3]	-546.948	2131395.295	.000	1	1.000	2.909
	[Compt_Centr_Supp=4]	-14.225	50020.135	.000	1	1.000	6.637
	[Compt_Centr_Supp=5]	0 ^c	.	.	0	.	.
	[Comp_Cust_Serv=1]	-326.947	1005923.384	.000	1	1.000	1.020
	[Comp_Cust_Serv=2]	56.527	216975.797	.000	1	1.000	354186626
	[Comp_Cust_Serv=3]	153.342	184994.119	.000	1	.999	3.942
	[Comp_Cust_Serv=4]	51.239	146005.633	.000	1	1.000	17898971
	[Comp_Cust_Serv=5]	0 ^c	.	.	0	.	.
	[BB_Reliab_Avail=1]	312.722	901734.313	.000	1	1.000	6.507
	[BB_Reliab_Avail=2]	.000	33560.288	.000	1	1.000	1.000
	[BB_Reliab_Avail=3]	-28.451	161897.496	.000	1	1.000	4.406
	[BB_Reliab_Avail=4]	0 ^c	.	.	0	.	.
	[BB_Reliab_Qual=1]	-593.787	1016645.691	.000	1	1.000	1.323
	[BB_Reliab_Qual=2]	-394.493	827338.634	.000	1	1.000	4.718
	[BB_Reliab_Qual=3]	-479.096	1228754.734	.000	1	1.000	8.537
	[BB_Reliab_Qual=4]	-394.493	836682.825	.000	1	1.000	4.718
	[BB_Reliab_Qual=5]	0 ^c	.	.	0	.	.
	[Freq_Link_Out=1]	39.026	124659.006	.000	1	1.000	8888065
	[Freq_Link_Out=2]	58.539	190601.331	.000	1	1.000	2649786

[Freq_Link_Out=3]	58.539	49394.056	.000	1	.999	2649786
[Freq_Link_Out=4]	58.539	191675.491	.000	1	1.000	2649786
[Freq_Link_Out=5]	0 ^c	.	.	0	.	.
[Speed_Restoration=1]	-101.659	297599.527	.000	1	1.000	7.079
[Speed_Restoration=2]	617.325	1714551.188	.000	1	1.000	1.261
[Speed_Restoration=3]	97.634	244854.136	.000	1	1.000	2.524
[Speed_Restoration=4]	.000	101275.423	.000	1	1.000	1.000
[Speed_Restoration=5]	0 ^c	.	.	0	.	.
[Major_RCA_Out=1]	-332.679	1325040.565	.000	1	1.000	3.307
[Major_RCA_Out=2]	-353.830	1332542.495	.000	1	1.000	2.157
[Major_RCA_Out=3]	-353.830	1301248.777	.000	1	1.000	2.157
[Major_RCA_Out=4]	-469.339	1356358.370	.000	1	1.000	1.474
[Major_RCA_Out=5]	0 ^c	.	.	0	.	.
[Responsiveness_CSD_St aff=1]	125.197	1090244.164	.000	1	1.000	2.357
[Responsiveness_CSD_St aff=2]	4.469	212470.245	.000	1	1.000	87.256
[Responsiveness_CSD_St aff=3]	204.887	1638348.418	.000	1	1.000	9.577
[Responsiveness_CSD_St aff=4]	-133.385	271024.044	.000	1	1.000	1.179
[Responsiveness_CSD_St aff=5]	0 ^c	.	.	0	.	.
[Responsiveness_Feild_O per=1]	-267.215	685796.677	.000	1	1.000	8.917
[Responsiveness_Feild_O per=2]	-215.531	396835.250	.000	1	1.000	2.488
[Responsiveness_Feild_O per=3]	-67.102	304807.367	.000	1	1.000	7.210
[Responsiveness_Feild_O per=4]	-190.731	267110.248	.000	1	.999	1.468
[Responsiveness_Feild_O per=5]	0 ^c	.	.	0	.	.
[Responsiveness_Central_ Supp=1]	137.854	709736.221	.000	1	1.000	7.401
[Responsiveness_Central_ Supp=2]	218.807	777295.575	.000	1	1.000	1.063

[Responsiveness_Central_Supp=3]	168.386	611947.989	.000	1	1.000	1.347
[Responsiveness_Central_Supp=4]	0 ^c	.	.	0	.	.
[Responsiveness_Central_Supp=5]	0 ^c	.	.	0	.	.
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[Security_Threat_ET=1]	0 ^c	.	.	0	.	.
[Security_Threat_ET=2]	0 ^c	.	.	0	.	.
[Security_Threat_ET=3]	0 ^c	.	.	0	.	.
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[Security_Threat_ET=5]	0 ^c	.	.	0	.	.
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[BB_Accessibility_Demand=4]	-3.650	39487.918	.000	1	1.000	.026
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[BB_Accessibility_Cost=1]	0 ^c	.	.	0	.	.
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[BB_Accessiblity_Tech_CPE=3]	.000	44739.799	.000	1	1.000	1.000
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[ET_Communications_Follow=5]	0 ^c	.	.	0	.	.
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[Courtesy_CSD_Staff=4]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=5]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=1]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=2]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=3]	0 ^c	.	.	0	.	.
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[Exper_Maturity_ET=2]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=3]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=4]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=5]	0 ^c	.	.	0	.	.
[Exper_BB_Customer_ET_Practice=1]	0 ^c	.	.	0	.	.
[Exper_BB_Customer_ET_Practice=2]	0 ^c	.000	31586.576	.000	1	1.000
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[Speed_Subscribed=3]	0 ^c	.	.	0	.	.
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[Speed_Subscribed=5]	0 ^c	.	.	0	.	.
[Access_Technology_Typ=1]	.000	11952.018	.000	1	1.000	1.000
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[Access_Technology_Typ=3]	.000	16586.909	.000	1	1.000	1.000
[Access_Technology_Typ=4]	0 ^c	.	.	0	.	.
[Access_Technology_Typ=5]	0 ^c	.	.	0	.	.
[Type_CPE=1]	.000	4273.954	.000	1	1.000	1.000
[Type_CPE=2]	0 ^c	.	.	0	.	.
[Type_CPE=3]	0 ^c	.	.	0	.	.
[Type_CPE=4]	0 ^c	.	.	0	.	.
[Type_CPE=5]	0 ^c	.	.	0	.	.
[No_Of_Computer=1]	0 ^c	.	.	0	.	.
[No_Of_Computer=2]	0 ^c	.	.	0	.	.
[No_Of_Computer=3]	0 ^c	.	.	0	.	.
[No_Of_Computer=4]	0 ^c	.	.	0	.	.
[No_Of_Computer=5]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=1]	.000	20767.449	.000	1	1.000	1.000
[Purpose_BB_Service=2]	.000	21704.665	.000	1	1.000	1.000
[Purpose_BB_Service=3]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=4]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=5]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=1]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=2]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=3]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=4]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=5]	0 ^c	.	.	0	.	.
[Impact_CPE=1]	0 ^c	.	.	0	.	.
[Impact_CPE=2]	0 ^c	.	.	0	.	.
[Impact_CPE=3]	0 ^c	.	.	0	.	.

	[Impact_CPE=4]	0 ^c	.	.	0	.	.
	[Impact_CPE=5]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=1]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=2]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=3]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=4]	.000	4327.495	.000	1	1.000	1.000
	[High_Impact_CPE=5]	0 ^c	.	.	0	.	.
	Intercept	646.461	1902070.027	.000	1	1.000	
	[Compet_Field_Team=1]	370.225	1421423.966	.000	1	1.000	6.116
	[Compet_Field_Team=2]	246.826	1243417.523	.000	1	1.000	1.568
	[Compet_Field_Team=3]	125.210	909246.200	.000	1	1.000	2.387
	[Compet_Field_Team=4]	246.826	1244009.861	.000	1	1.000	1.568
	[Compet_Field_Team=5]	0 ^c	.	.	0	.	.
	[Comp_Cust_IT_Tech=1]	95.178	.000	.	1	.	2.164
	[Comp_Cust_IT_Tech=2]	-21.151	237395.015	.000	1	1.000	6.522
	[Comp_Cust_IT_Tech=3]	31.726	72781.960	.000	1	1.000	600377
	[Comp_Cust_IT_Tech=4]	37.014	168251.354	.000	1	1.000	118803
	[Comp_Cust_IT_Tech=5]	0 ^c	.	.	0	.	.
	[Compt_Centr_Supp=1]	-36.984	1298497.604	.000	1	1.000	8.668
	[Compt_Centr_Supp=2]	-47.589	238567.334	.000	1	1.000	2.150
	[Compt_Centr_Supp=3]	-349.015	2752998.554	.000	1	1.000	2.658
	[Compt_Centr_Supp=4]	5.288	60394.671	.000	1	1.000	197.881
Difficult to	[Compt_Centr_Supp=5]	0 ^c	.	.	0	.	.
decide	[Comp_Cust_Serv=1]	-208.001	1373289.431	.000	1	1.000	4.638
	[Comp_Cust_Serv=2]	37.014	260210.089	.000	1	1.000	118803
	[Comp_Cust_Serv=3]	153.342	273081.011	.000	1	1.000	3.942
	[Comp_Cust_Serv=4]	31.726	189094.192	.000	1	1.000	600377
	[Comp_Cust_Serv=5]	0 ^c	.	.	0	.	.
	[BB_Reliable_Avail=1]	213.289	1220332.277	.000	1	1.000	4.267
	[BB_Reliable_Avail=2]	.000	45977.514	.000	1	1.000	1.000
	[BB_Reliable_Avail=3]	-7.070	92903.530	.000	1	1.000	.001
	[BB_Reliable_Avail=4]	0 ^c	.	.	0	.	.
	[BB_Reliable_Qual=1]	-583.513	1475032.858	.000	1	1.000	3.832
	[BB_Reliable_Qual=2]	-386.088	1176691.257	.000	1	1.000	2.110
	[BB_Reliable_Qual=3]	-453.045	1617043.305	.000	1	1.000	1.758
	[BB_Reliable_Qual=4]	-386.088	1196066.385	.000	1	1.000	2.110
	[BB_Reliable_Qual=5]	0 ^c	.	.	0	.	.
	[Freq_Link_Out=1]	.000	166925.041	.000	1	1.000	1.000
	[Freq_Link_Out=2]	.000	257199.301	.000	1	1.000	1.000

[Freq_Link_Out=3]	.000	65590.847	.000	1	1.000	1.000
[Freq_Link_Out=4]	.000	256866.900	.000	1	1.000	1.000
[Freq_Link_Out=5]	0 ^c	.	.	0	.	.
[Speed_Restoration=1]	-61.699	417591.705	.000	1	1.000	1.601
[Speed_Restoration=2]	403.615	2265066.133	.000	1	1.000	1.941
[Speed_Restoration=3]	153.372	331984.969	.000	1	1.000	4.059
[Speed_Restoration=4]	.000	123907.036	.000	1	1.000	1.000
[Speed_Restoration=5]	0 ^c	.	.	0	.	.
[Major_RCA_Out=1]	-308.496	1731954.013	.000	1	1.000	1.052
[Major_RCA_Out=2]	-329.647	1744601.152	.000	1	1.000	6.85944
[Major_RCA_Out=3]	-329.647	1701318.125	.000	1	1.000	6.859
[Major_RCA_Out=4]	-444.223	1799595.850	.000	1	1.000	1.19393
[Major_RCA_Out=5]	0 ^c	.	.	0	.	.
[Responsiveness_CSD_St aff=1]	-47.618	1332730.126	.000	1	1.000	2.088
[Responsiveness_CSD_St aff=2]	-14.110	215702.148	.000	1	1.000	7.448
[Responsiveness_CSD_St aff=3]	-8.823	2025387.688	.000	1	1.000	.000
[Responsiveness_CSD_St aff=4]	-93.425	390747.910	.000	1	1.000	2.667
[Responsiveness_CSD_St aff=5]	0 ^c	.	.	0	.	.
[Responsiveness_Feild_O per=1]	-299.703	929205.347	.000	1	1.000	6.930
[Responsiveness_Feild_O per=2]	-172.770	597025.555	.000	1	1.000	9.272
[Responsiveness_Feild_O per=3]	-82.879	217228.529	.000	1	1.000	1.014
[Responsiveness_Feild_O per=4]	-167.482	379536.921	.000	1	1.000	1.835
[Responsiveness_Feild_O per=5]	0 ^c	.	.	0	.	.
[Responsiveness_Central_ Supp=1]	79.315	927987.220	.000	1	1.000	279293
[Responsiveness_Central_ Supp=2]	197.426	1034017.222	.000	1	1.000	5.507
[Responsiveness_Central_ Supp=3]	185.098	775180.544	.000	1	1.000	2.437

[Responsiveness_Central_Supp=4]	0 ^c	.	.	0	.	.
[Responsiveness_Central_Supp=5]	0 ^c	.	.	0	.	.
[Security_Threat_Cus=1]	-28.220	43969.096	.000	1	.999	5.547
[Security_Threat_Cus=2]	-225.646	945798.810	.000	1	1.000	1.007
[Security_Threat_Cus=3]	0 ^c	.	.	0	.	.
[Security_Threat_Cus=4]	-7.070	51723.776	.000	1	1.000	.001
[Security_Threat_Cus=5]	0 ^c	.	.	0	.	.
[Security_Threat_ET=1]	0 ^c	.	.	0	.	.
[Security_Threat_ET=2]	0 ^c	.	.	0	.	.
[Security_Threat_ET=3]	0 ^c	.	.	0	.	.
[Security_Threat_ET=4]	0 ^c	.	.	0	.	.
[Security_Threat_ET=5]	0 ^c	.	.	0	.	.
[BB_Accessibility_Demand=1]	31.726	253175.604	.000	1	1.000	600376
[BB_Accessibility_Demand=2]	15.863	40390.296	.000	1	1.000	77484
[BB_Accessibility_Demand=3]	0 ^c	.	.	0	.	.
[BB_Accessibility_Demand=4]	15.863	40568.977	.000	1	1.000	77484
[BB_Accessibility_Demand=5]	0 ^c	.	.	0	.	.
[BB_Accessibility_Cost=1]	0 ^c	.	.	0	.	.
[BB_Accessibility_Cost=2]	15.863	9447.412	.000	1	.999	77484
[BB_Accessibility_Cost=3]	0 ^c	.	.	0	.	.
[BB_Accessibility_Cost=4]	0 ^c	.	.	0	.	.
[BB_Accessibility_Cost=5]	0 ^c	.	.	0	.	.
[BB_Accessibility_CC_Shop=2]	.000	19731.197	.000	1	1.000	1.000
[BB_Accessibility_CC_Shop=3]	.000	91110.819	.000	1	1.000	1.000
[BB_Accessibility_CC_Shop=4]	.000	5125.662	.000	1	1.000	1.000
[BB_Accessibility_CC_Shop=5]	0 ^c	.	.	0	.	.
[BB_Accessibility_Tech_CPE=1]	0 ^c	.	.	0	.	.

[BB_Accessibility_Tech_CPE=2]	.000	90569.645	.000	1	1.000	1.000
[BB_Accessibility_Tech_CPE=3]	.000	66528.436	.000	1	1.000	1.000
[BB_Accessibility_Tech_CPE=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=1]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=2]	.000	119634.291	.000	1	1.000	1.000
[ET_Community_for_Service_Outage=3]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=5]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=1]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=2]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=3]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=4]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=5]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=1]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=2]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=3]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=5]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=1]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=2]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=3]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=4]	0 ^c	.	.	0	.	.

[Courtesy_CSD_Staff=5]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=1]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=2]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=3]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=4]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=5]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=1]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=2]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=3]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=4]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=5]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=1]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=2]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=3]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=4]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=5]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =1]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =2]	0 ^c	.000	44709.846	.000	1	1.000
[Exper_BB_Cust_ET_Pract =3]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =4]	0 ^c	.	.	0	.	.
[Speed_Subscribed=1]	0 ^c	.	.	0	.	.
[Speed_Subscribed=2]	0 ^c	.	.	0	.	.
[Speed_Subscribed=3]	0 ^c	.	.	0	.	.
[Speed_Subscribed=4]	0 ^c	.	.	0	.	.
[Speed_Subscribed=5]	0 ^c	.	.	0	.	.
[Access_Technology_Typ= 1]	0 ^c	.000	6483.612	.000	1	1.000
[Access_Technology_Typ= 2]	0 ^c	.	.	0	.	.
[Access_Technology_Typ= 3]	0 ^c	.000	8912.952	.000	1	1.000

	[Access_Technology_Typ=4]	0 ^c	.	.	0	.	.
	[Access_Technology_Typ=5]	0 ^c	.	.	0	.	.
	[Type_CPE=1]	.000	3271.394	.000	1	1.000	1.000
	[Type_CPE=2]	0 ^c	.	.	0	.	.
	[Type_CPE=3]	0 ^c	.	.	0	.	.
	[Type_CPE=4]	0 ^c	.	.	0	.	.
	[Type_CPE=5]	0 ^c	.	.	0	.	.
	[No_Of_Computer=1]	0 ^c	.	.	0	.	.
	[No_Of_Computer=2]	0 ^c	.	.	0	.	.
	[No_Of_Computer=3]	0 ^c	.	.	0	.	.
	[No_Of_Computer=4]	0 ^c	.	.	0	.	.
	[No_Of_Computer=5]	0 ^c	.	.	0	.	.
	[Purpose_BB_Service=1]	.000	22336.297	.000	1	1.000	1.000
	[Purpose_BB_Service=2]	.000	23763.271	.000	1	1.000	1.000
	[Purpose_BB_Service=3]	0 ^c	.	.	0	.	.
	[Purpose_BB_Service=4]	0 ^c	.	.	0	.	.
	[Purpose_BB_Service=5]	0 ^c	.	.	0	.	.
	[Exper_BB_Speed=1]	0 ^c	.	.	0	.	.
	[Exper_BB_Speed=2]	0 ^c	.	.	0	.	.
	[Exper_BB_Speed=3]	0 ^c	.	.	0	.	.
	[Exper_BB_Speed=4]	0 ^c	.	.	0	.	.
	[Exper_BB_Speed=5]	0 ^c	.	.	0	.	.
	[Impact_CPE=1]	0 ^c	.	.	0	.	.
	[Impact_CPE=2]	0 ^c	.	.	0	.	.
	[Impact_CPE=3]	0 ^c	.	.	0	.	.
	[Impact_CPE=4]	0 ^c	.	.	0	.	.
	[Impact_CPE=5]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=1]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=2]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=3]	0 ^c	.	.	0	.	.
	[High_Impact_CPE=4]	.000	2719.325	.000	1	1.000	1.000
	[High_Impact_CPE=5]	0 ^c	.	.	0	.	.
	Intercept	913.892	1901959.959	.000	1	1.000	
	[Compet_Field_Team=1]	398.429	1428749.729	.000	1	1.000	1.085
Good	[Compet_Field_Team=2]	213.386	1252414.400	.000	1	1.000	4.703
	[Compet_Field_Team=3]	-21.501	913002.944	.000	1	1.000	4.593
	[Compet_Field_Team=4]	213.386	1252850.904	.000	1	1.000	4.703

[Compet_Field_Team=5]	0 ^c	.	.	0	.	.
[Comp_Cust_IT_Tech=1]	146.150	117254.318	.000	1	.999	2.966
[Comp_Cust_IT_Tech=2]	-26.814	259961.452	.000	1	1.000	2.263
[Comp_Cust_IT_Tech=3]	65.707	70204.960	.000	1	.999	343801
[Comp_Cust_IT_Tech=4]	59.668	165421.211	.000	1	1.000	819252
[Comp_Cust_IT_Tech=5]	0 ^c	.	.	0	.	.
[Compt_Centr_Supp=1]	21.501	1351016.537	.000	1	1.000	217701
[Compt_Centr_Supp=2]	-64.580	251793.437	.000	1	1.000	8.983
[Compt_Centr_Supp=3]	-447.146	2915385.349	.000	1	1.000	6.414
[Compt_Centr_Supp=4]	27.942	66806.089	.000	1	1.000	136456
[Compt_Centr_Supp=5]	0 ^c	.	.	0	.	.
[Comp_Cust_Serv=1]	-258.319	1404708.251	.000	1	1.000	6.512
[Comp_Cust_Serv=2]	59.668	276578.479	.000	1	1.000	819252
[Comp_Cust_Serv=3]	317.585	261065.629	.000	1	.999	8.423
[Comp_Cust_Serv=4]	48.717	194004.615	.000	1	1.000	143670
[Comp_Cust_Serv=5]	0 ^c	.	.	0	.	.
[BB_Reliab_Avail=1]	286.260	1250351.245	.000	1	1.000	2.096
[BB_Reliab_Avail=2]	.000	46181.858	.000	1	1.000	1.000
[BB_Reliab_Avail=3]	72.874	148983.121	.000	1	1.000	445582
[BB_Reliab_Avail=4]	0 ^c	.	.	0	.	.
[BB_Reliab_Qual=1]	-820.615	1450924.128	.000	1	1.000	.000
[BB_Reliab_Qual=2]	-482.255	1169081.455	.000	1	1.000	3.627
[BB_Reliab_Qual=3]	-674.465	1669086.826	.000	1	1.000	1.213
[BB_Reliab_Qual=4]	-482.255	1184858.690	.000	1	1.000	3.627
[BB_Reliab_Qual=5]	0 ^c	.	.	0	.	.
[Freq_Link_Out=1]	-33.981	175681.075	.000	1	1.000	1.746
[Freq_Link_Out=2]	-50.972	272937.042	.000	1	1.000	7.298
[Freq_Link_Out=3]	-50.972	66889.810	.000	1	.999	7.298
[Freq_Link_Out=4]	-50.972	273358.696	.000	1	1.000	7.298
[Freq_Link_Out=5]	0 ^c	.	.	0	.	.
[Speed_Restoration=1]	-58.540	429679.608	.000	1	1.000	3.770
[Speed_Restoration=2]	684.288	2338801.618	.000	1	1.000	1.523
[Speed_Restoration=3]	262.829	326282.484	.000	1	.999	1.397
[Speed_Restoration=4]	.000	132269.235	.000	1	1.000	1.000
[Speed_Restoration=5]	0 ^c	.	.	0	.	.
[Major_RCA_Out=1]	-445.617	1792241.501	.000	1	1.000	2.959

[Major_RCA_Out=2]	-489.422	1802643.827	.000	1	1.000	2.798
[Major_RCA_Out=3]	-489.422	1758587.344	.000	1	1.000	2.798
[Major_RCA_Out=4]	-691.455	1842112.376	.000	1	1.000	5.067
[Major_RCA_Out=5]	0 ^c	.	.	0	.	.
[Responsiveness_CSD_St aff=1]	-145.749	1449940.605	.000	1	1.000	5.037
[Responsiveness_CSD_St aff=2]	-10.951	248715.008	.000	1	1.000	1.754
[Responsiveness_CSD_St aff=3]	-169.906	2204813.932	.000	1	1.000	1.624
[Responsiveness_CSD_St aff=4]	-124.247	391847.361	.000	1	1.000	1.096
[Responsiveness_CSD_St aff=5]	0 ^c	.	.	0	.	.
[Responsiveness_Feild_O per=1]	-407.851	948621.614	.000	1	1.000	7.454
[Responsiveness_Feild_O per=2]	-182.788	577426.326	.000	1	1.000	4.133
[Responsiveness_Feild_O per=3]	-47.589	296921.620	.000	1	1.000	2.150
[Responsiveness_Feild_O per=4]	-188.827	364535.193	.000	1	1.000	9.850
[Responsiveness_Feild_O per=5]	0 ^c	.	.	0	.	.
[Responsiveness_Central_ Supp=1]	113.296	973247.926	.000	1	1.000	1.599
[Responsiveness_Central_ Supp=2]	321.369	1058179.137	.000	1	1.000	3.706
[Responsiveness_Central_ Supp=3]	294.555	830902.818	.000	1	1.000	8.388
[Responsiveness_Central_ Supp=4]	0 ^c	.	.	0	.	.
[Responsiveness_Central_ Supp=5]	0 ^c	.	.	0	.	.
[Security_Threat_Cus=1]	-21.902	47245.605	.000	1	1.000	3.075
[Security_Threat_Cus=2]	-343.272	969805.379	.000	1	1.000	8.298
[Security_Threat_Cus=3]	0 ^c	.	.	0	.	.

[Security_Threat_Cus=4]	21.902	50935.585	.000	1	1.000	32516
[Security_Threat_Cus=5]	0 ^c	.	.	0	.	.
[Security_Threat_ET=1]	0 ^c	.	.	0	.	.
[Security_Threat_ET=2]	0 ^c	.	.	0	.	.
[Security_Threat_ET=3]	0 ^c	.	.	0	.	.
[Security_Threat_ET=4]	0 ^c	.	.	0	.	.
[Security_Threat_ET=5]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Demand =1]	116.679	273577.442	.000	1	1.000	4.711
[BB_Accessiblity_Demand =2]	49.844	54068.380	.000	1	.999	443706
[BB_Accessiblity_Demand =3]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Demand =4]	49.844	53441.357	.000	1	.999	443706
[BB_Accessiblity_Demand =5]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Cost=1]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Cost=2]	32.854	7591.788	.000	1	.997	185418
[BB_Accessiblity_Cost=3]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Cost=4]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Cost=5]	0 ^c	.	.	0	.	.
[BB_Accessiblity_CC_Sho p=2]	.000	24153.320	.000	1	1.000	1.000
[BB_Accessiblity_CC_Sho p=3]	-16.991	95263.367	.000	1	1.000	4.179
[BB_Accessiblity_CC_Sho p=4]	.000	4740.293	.000	1	1.000	1.000
[BB_Accessiblity_CC_Sho p=5]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Tech_CP E=1]	0 ^c	.	.	0	.	.
[BB_Accessiblity_Tech_CP E=2]	-16.991	95917.202	.000	1	1.000	4.179
[BB_Accessiblity_Tech_CP E=3]	.000	63260.942	.000	1	1.000	1.000

[BB_Accessibility_Tech_CPE=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=1]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=2]	16.991	119601.947	.000	1	1.000	23929
[ET_Community_for_Service_Outage=3]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Service_Outage=5]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=1]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=2]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=3]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=4]	0 ^c	.	.	0	.	.
[ET_Community_for_New_Product=5]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=1]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=2]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=3]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=4]	0 ^c	.	.	0	.	.
[ET_Community_for_Issue_Follow=5]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=1]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=2]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=3]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=4]	0 ^c	.	.	0	.	.
[Courtesy_CSD_Staff=5]	0 ^c	.	.	0	.	.

[Courtesy_Feild_Staff=1]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=2]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=3]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=4]	0 ^c	.	.	0	.	.
[Courtesy_Feild_Staff=5]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=1]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=2]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=3]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=4]	0 ^c	.	.	0	.	.
[Courtesy_Central_Supp=5]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=1]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=2]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=3]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=4]	0 ^c	.	.	0	.	.
[Exper_Maturity_ET=5]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =1]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =2]	0 ^c	.000	44219.025	.000	1	1.000 1.000
[Exper_BB_Cust_ET_Pract =3]	0 ^c	.	.	0	.	.
[Exper_BB_Cust_ET_Pract =4]	0 ^c	.	.	0	.	.
[Speed_Subscribed=1]	0 ^c	.	.	0	.	.
[Speed_Subscribed=2]	0 ^c	.	.	0	.	.
[Speed_Subscribed=3]	0 ^c	.	.	0	.	.
[Speed_Subscribed=4]	0 ^c	.	.	0	.	.
[Speed_Subscribed=5]	0 ^c	.	.	0	.	.
[Access_Technology_Typ= 1]	0 ^c	.000	10090.848	.000	1	1.000 1.000
[Access_Technology_Typ= 2]	0 ^c	.	.	0	.	.

[Access_Technology_Typ=3]	.000	14030.382	.000	1	1.000	1.000
[Access_Technology_Typ=4]	0 ^c	.	.	0	.	.
[Access_Technology_Typ=5]	0 ^c	.	.	0	.	.
[Type_CPE=1]	.000	2746.351	.000	1	1.000	1.000
[Type_CPE=2]	0 ^c	.	.	0	.	.
[Type_CPE=3]	0 ^c	.	.	0	.	.
[Type_CPE=4]	0 ^c	.	.	0	.	.
[Type_CPE=5]	0 ^c	.	.	0	.	.
[No_Of_Computer=1]	0 ^c	.	.	0	.	.
[No_Of_Computer=2]	0 ^c	.	.	0	.	.
[No_Of_Computer=3]	0 ^c	.	.	0	.	.
[No_Of_Computer=4]	0 ^c	.	.	0	.	.
[No_Of_Computer=5]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=1]	.000	26795.410	.000	1	1.000	1.000
[Purpose_BB_Service=2]	.000	27257.087	.000	1	1.000	1.000
[Purpose_BB_Service=3]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=4]	0 ^c	.	.	0	.	.
[Purpose_BB_Service=5]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=1]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=2]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=3]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=4]	0 ^c	.	.	0	.	.
[Exper_BB_Speed=5]	0 ^c	.	.	0	.	.
[Impact_CPE=1]	0 ^c	.	.	0	.	.
[Impact_CPE=2]	0 ^c	.	.	0	.	.
[Impact_CPE=3]	0 ^c	.	.	0	.	.
[Impact_CPE=4]	0 ^c	.	.	0	.	.
[Impact_CPE=5]	0 ^c	.	.	0	.	.
[High_Impact_CPE=1]	0 ^c	.	.	0	.	.
[High_Impact_CPE=2]	0 ^c	.	.	0	.	.
[High_Impact_CPE=3]	0 ^c	.	.	0	.	.
[High_Impact_CPE=4]	.000	3344.718	.000	1	1.000	1.000
[High_Impact_CPE=5]	0 ^c	.	.	0	.	.

