Quality of Service Perception in Telecom Business in Tanzania

Eliamani Sedoyeka2
Faculty of Mathematics, Computing and Information Systems
The Institute of Finance Management

Abstract

This paper analyses factors influencing Quality of Service (QoS) perception from users' perspective. It looks into QoS experienced by customers using internet connectivity. It analyses the experiences of service users whilst investigating whether users experiences and satisfaction is influenced by technical matrices or non-technical side of service offered. The study presented in this paper used qualitative and quantitative approaches to collect data. Using a small but fast growing internet service providing company located in Dar es Salaam – Tanzania, questionnaire led phone interviews were conducted with customers who stopped using company's internet service. Face to face interviews were conducted with executives and engineers of the company.

It has been found that most customers are unaware of the QoS there were supposed to experience. Many users are concerned with speed, availability of service and after sale support instead of link speed or other technical matrices such as link stability or error rate. Many customers had left the ISP simply because they could not get help when they had a technical difficulty. It has also been found out that service cost was considered acceptable by most users. It has been observed that for an ISP to be successful, an emphasis should be paid on non technical side of business the same has been for the technical side. This is because customer's perception about the service or business is influenced more by the non-technical side of the business.

This paper however only addresses quality of service in telecom industry especially internet providing companies. It will be interesting in the future to establish the actual loss of business resulting from having unreliable after sale services and a competent helpline unit. ISP must train and equip their technical team with soft and people skills which include phone skills. This paper is relevant to ISP operator as well as scholars and professionals interested in quality of service studies.

General terms: Tanzania, QoS, Telecom, User Perceptions

IJCIR Reference Format:

Eliamani Sedoyeka. Quality of Service Perception In Telecom Business in Tanzania, Vol. 9, Issue.2 pp 9-20. http://ijcir.mak.ac.ug/volume9-issue2/article2.pdf

2 Author's Address: Eliamani Sedoyeka. Eliamani Sedoyeka, Faculty of Mathematics, Computing and Information Systems
The Institute of Finance Management

International Journal of Computing and ICT Research, ISSN 1818-1139 (Print), ISSN 1996-1065 (Online), Vol.9, Issue 2, pp. 9-19, December 2015.

1. INTRODUCTION

In all service sectors, a consumer expects a certain value for the money paid (Grzech et.al, 2010). There is a 'contract' between service provider and service consumer. Most of these contracts however, are not written, they are assumed. For example, when someone walks into a hotel and order food, the assumption is they will get an acceptable quality food, enough to fulfill the stomach desire. When a service provider accepts money for the food, they accept the contract to service food of an acceptable quality and amount. There are other many angles that are not normally covered in these assumed contracts, for example, how long will it take, how it will be served, what about the add-ons, etc. All these issues will have an impact on the perception of the service one gets after eating the ordered food.

In telecom industry the service in question is the connection a customer gets for communication purpose. This can be a phone line, video conference or an internet connection, which is the service discussed in this paper. When a consumer order an internet service from an internet service provider (ISP) there are assumptions they have about the service ordered. These are the qualities expected. For corporate, many organization prefers to have service level agreement (SLA) between ISP and the customer (Marilly et.al, 2002). For individual customer however, many simply accept the service based on the price and assumed or promised quality from the ISP.

Most customers don't know or have the expertise to understand the acceptable levels of quality of an internet connection. Each customer has their own criteria or levels of quality that they consider acceptable and when these levels are not met, they perceive the service as not good enough or unacceptable. These criteria differ from customer to customer basing on their background, usage, location etc. For example, some customers are more concerned with the availability of services while others are concerned with after sales support. It is not known however which factors influence the most customers' perception of quality of service offered.

This paper presents findings of the study that set off to find out the QoS factors that influences customers' perception. The study which was conducted in an ISP company in Dar es Salaam Tanzania, initially wanted to find out the reasons for customers stopping using the service. The researcher wanted to establish how those customers perceived the service they were receiving and how those perceptions influenced their decisions to leave.

The Case

Executives of one of the fast growing internet providing companies noticed that the number of customer stopping using their services is rising. They approached the author of this paper and asked for study to be carried out to determine the causes. After the initial pilot study researchers found out that customer' perceptions of the service experienced and company's expectations were different. It was then decided to conduct a full study to establish scientific reasons for the situation which goes together with understanding users perceptions of the service received. In the competitive telecom environment, the findings will assist ISP into creating plans for customer retention.

After introduction, this paper will present the related literature regarding QoS followed by methodology used to conduct the study. Analysis will follow thereafter presenting findings and discussions about the study. This paper will conclude by presenting key findings at the end.

Methodology

The study presented in this paper used a qualitative and quantitative approach to collect data. Questionnaires with closed and open ended questions were created and used as a guide to interviews. In the beginning of the task, the company provided the researchers with a list of the customers who were believed to have stopped using the data services. A questionnaire was designed and created focusing on technical issues such as speed and link stability as well as non-technical issues such as helpdesk. Type of questions varied. Some of the questions were direct while some used Likert scales (eg. very bad, bad, normal, good, and very good) and some questions asked customers to give comments or opinions. For some questions,

participants were asked to provide more information to present their feelings and views of the service they had received. Per each customer, a separate questionnaire was printed.

Since most participants had already stopped using the service, reaching physically would be a challenge hence phone interviews were used in which a researcher would call a customer and ask them if they were willing to participate in the study. For those who agreed, the researcher would then follow the questionnaire and ask the questions whilst filling the questionnaire with the answers provided by the customer.

The research team sampled a total of 200 customers from 7 main categories each based on number of months the customer was using the services (1 – 7). The pilot study was conducted where only 10 customers were called. From there, it was clear that the Swahili questionnaire would not be necessary as most customers were seemed to be comfortable with English. The research then continued to 30 customers and a simple analysis was conducted, looking into the main issues that pushed customers away. The main aim was to see whether it will be necessary to call all 200 customers. The decision was made that the data collection exercise should continue to 60 customers and data were to be compared between then first 30 and the last 30. At the end it was established that there are no any new data coming. The research team felt that enough data were collected for the assigned task. The exercise took 3 weeks.

Researcher also interviewed engineers and companies executive. Data were then entered in a simple Microsoft Access database for quick analysis. Microsoft Excel was also used for analysis and presentation of data.

I. Literature Review

Quality of Service (QoS) is defined from two different perspectives. From ISP perspectives, QoS are the technical issues that directly affect the end to end service delivery to customer while from customer's perspective, QoS is the experienced levels of service judged from availability of issues that are considered essential in the service offered (Ordan et. al., 1997, Jha and Mahabub, 2002). In Tanzania like in any other part of the world, most users do not have the expertise to know exactly what they require or whether what they have been experiencing was good, average or bad. For example, user might point out a requirement in terms of speed based on their previous speed experience believing that the increase in speed will be sufficient to support their current need. This might not only be miscalculation but might also not support future needs (Buccafurri et al., 2008).

Tanzania like of the developing world has witnessed a significant rise on the number of internet users (ITU, 2014). This increase has been caused by among other things, new type of users, using new type of technologies to access new types of information. Transforming from its traditional ways, internet has moved from being the tool for of professionals, business people and academics to the tool for everyone, accessing information from all corners of the world. In developing word, most of new users access Internet from mobile devises, accessing and sharing information for general use mostly news and social networks (Al-khateeb, 2007, Meeker and Wu, 2013).

The change on the number and type of users has gone hand in hand with the change in the ways and technologies these users adopt in the process of accessing and sharing information on the internet (ITU, 2014). On one side, telecom companies have invested in new technologies in effort to deliver better services to users. These changes have been hugely influenced by the arrival of new technologies rather than the actual demands on the ground. It should also be acknowledged that telecom companies are business establishments focusing on cutting cost and maximizing profits. The fact that new technologies and installations result into cost implication in one or the other, telecom companies often tend to upgrade some of the network with the guidance of business return on investments. Cutting cost and maximizing profit can have a huge impact on QoS delivered (Sedoyeka et.al, 2009); hence ISP should ensure a certain minimum levels of QoS are attained.

Users on the other hand have turned into mobile devises mostly mobile phones to use Internet (Gupta et.al., 2013, Meeker and Wu, 2013). The mobility nature of these devices and users means internet is being

accessed from all parts of the country. In Dar es Salaam for example, users regardless of the background often use more than way of accessing information. Some use office computers during work hours and mobile devices after work hours. This means the need for internet connection with good QoS is a fundamental need for Tanzanians.

Many ISP often focus on technical side of the service by ensuring that the key matrices are taken care, these are link stability, error rate, speed latency (Anderson, 2001). Users on the other hand focus on whether the link provides service that is perceived as acceptable, mostly judged by speed. To improve services, ISP ensures the QoS delivered is constantly improving. This approach however tends to forget what are the issues users really want improved. To understand what users really want improved, one must study user QoS requirements based on their experiences, current uses and near future uses (Sedoyeka et.al, 2009).

There are a number of studies that have addressed QoS from different perspectives. Liu et.al, (2009) proposed a web based services QoS model that that takes into consideration the advancement of service oriented architecture and the role of various players on end-to-end QoS. Tong et.al, (2009) looked into QoS in web services by proposing a fuzzy evaluation approach for service selection based on extended QoS. Their work wrote about provisioning of services and its impact on resources allocation and pricing mechanism. With arrival of cloud computing, some researchers looked into the cloud workflow and proposed generic QoS framework for cloud based systems (Liu et.al., 2011).

Another study by Yong et.al., (2012) proposed a two-phase approach for QoS focusing on history QoS to predict the fluctuations of QoS in the future. In 2006, Chung et.al., recommended a QoS negotiable service framework for multimedia services connected through subscriber networks while Ito and Tasaka (2006) looked into user level QoS assessment of a multipoint-to-multipoint television conferencing allocation over IP network. Furthermore, Zai-jian et.al., (2013) developed an analytical model of QoS that maps hybrid QoS domains by making use of calculus theory in order to support end-to-end QoS of multimedia services over heterogeneous wireless networks. As it can be noted, most research work has focused on technical side of QoS, looking into ways to best deliver the services rather than the experiences of the users.

Researchers studying consumer behavior have pointed out that there are indirect effects of service quality impact on consumer behavior and future intentions (Cronin Jr. et.al, 200). Also noted by Hennig-Thurau and Klee (1997) relationship between customer satisfaction and customer retention is weak or even nonexistent. They argued that retaining a customer is more than satisfying them. Andreassen and Lindestad (1998) also concluded that for complex services, corporate image and customer satisfaction are not equally contributes to customer loyalty. Corporate image impacts customer loyalty directly whereas customer satisfaction does not. These studies show that although customer satisfaction might appear as a vital aspect of customer retention, corporate image is the actual aspect that influences customer loyalty. This means even if technical QoS experienced is good (internet link), this alone is not enough to retain the customer. ISP must improve their corporate images in order to influence future behaviors including retaining the customer.

II. FINDINGS AND ANALYSIS

The study established that the company was utilizing mesh topology and point-to-point technologies to deliver services. Using microwave links, hotspots were established on top of buildings. These hotspots used wi-fi technology to deliver services whilst forming a mesh network that scale according to the expansion plans of the company.

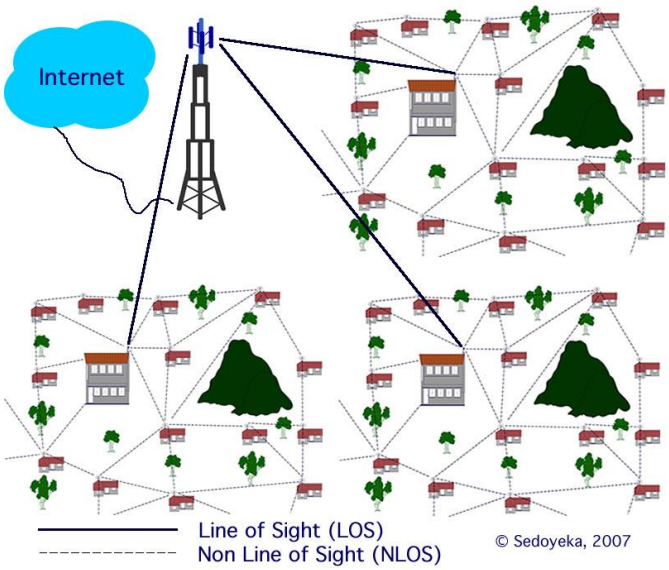
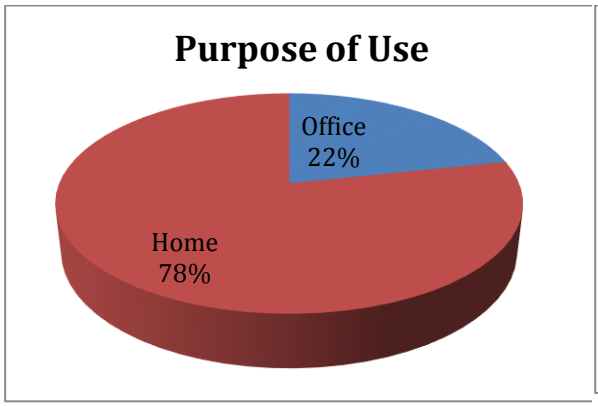


Figure 1 - Mesh Network

The research began by establishing the type of users. Many users appears to be using the service for home use (78%) compare to for office use (22%) (fig 2). Of the surveyed customers, most of them access the Internet at daily (82%) and few access once a week or more (fig 3). Of the surveyed customers, 33% were still using the service.



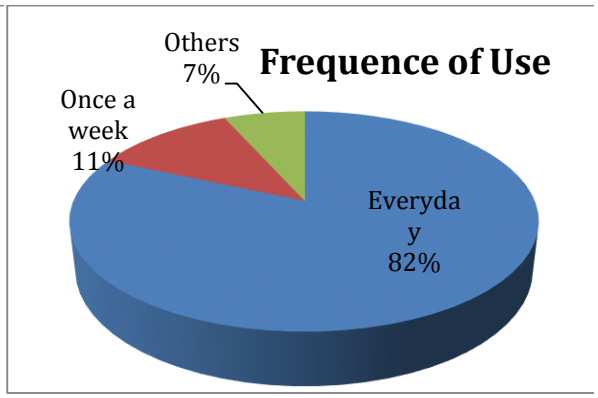


Fig 2 – Purpose of Use

Fig3 – Frequency of Use

Customers seem to be okay with the amount they pay. When asked about the price, most of them (97%) find the cost as normal, good or very good (fig 44). The same view was observed when they were asked for general comments.

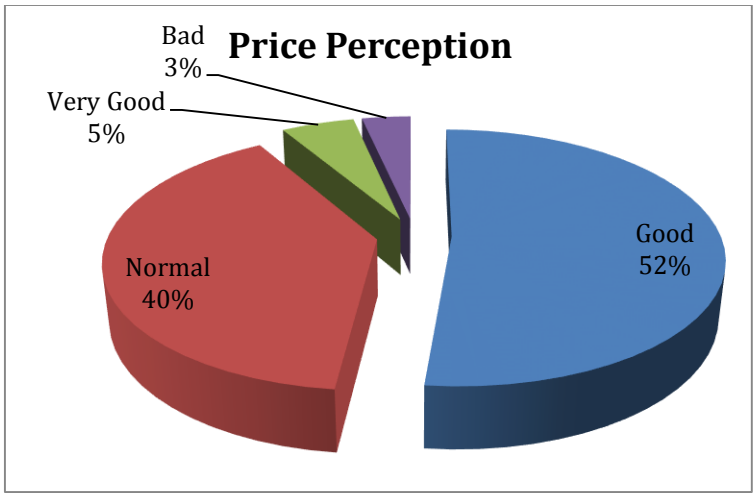


Fig 4 – Price Perception

QoS are the issues that collectively create a notion of quality in any service. There were mixed results on the QoS matrices such as speed and link stability. When asked about their views on speed offered, more than 70% said it was either good or very good while only 16% said it was either bad or very bad (fig 5). However, when asked about the main reason why they left, some (35%) pointed at speed as the reason (fig 6). Although this can contradict their answers about their feelings on speed, close examination shows that 11% pointing to speed alone as a reason for them to leave. This shows that there were other strong factors.

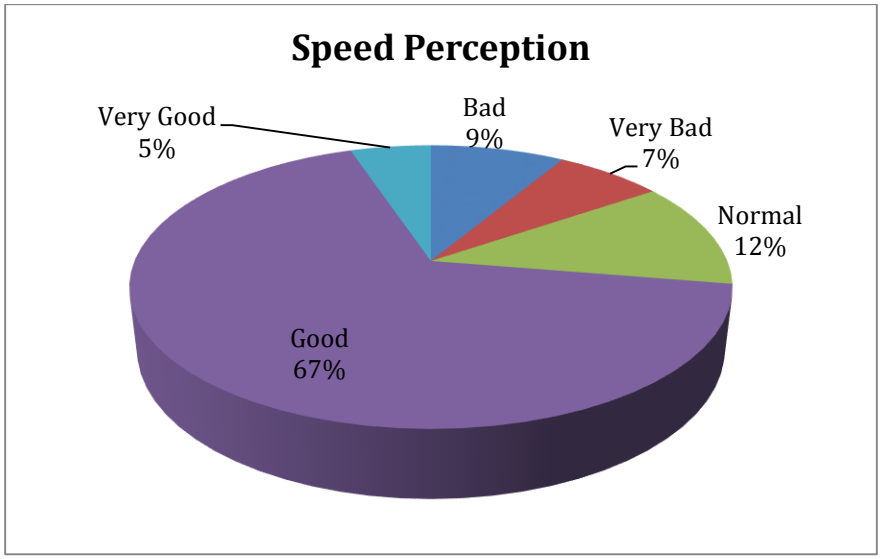


Fig 5 – Speed Perception

Looking into other reasons, 40% of participants indicated that lack of an effective customer care was the reason for them to leave (fig 6).

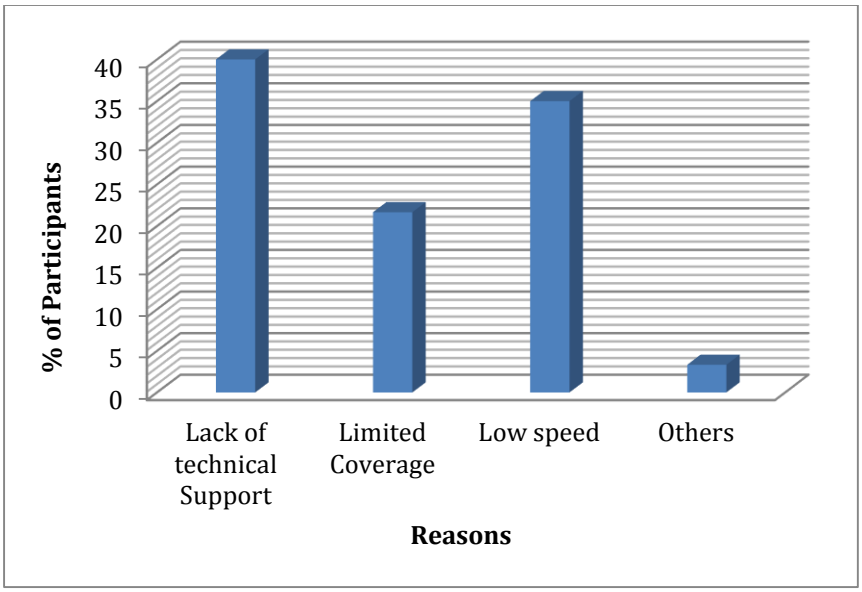


Fig 6 – Reason for leaving

For the nature of the business and service, speed, cost and the availability of the service will always be at the centre stage. These together give a customer a perception of whether or not the service of a certain quality. Since the study clearly established that cost is not the problem, the focus was then on the remaining two. For speed, a specific question on the perception clearly showed that although some clients were concerned about the speed, more than 70% were happy and clearly this cannot be the reason for customers to leave.

The focus was now on the availability of service. Many customers pointed out that there are a number of problems on that;

i) Service is not always available, highly affected by power cut. Many customers have backup power and they are normally operational in the event of power cut and they would expect the service to be available.

ii) Due to the changes in the current data industry, many clients move across the city. Because many have tried other services such as mobile dongles, lack of mobility features on the service did put some customers off, pointing low coverage as a reason for them to leave.

iii) Although it is understandable machines do break sometimes, many customers are not happy with the after sell support. 40% directly pointed that technical support should be improved (fig 7).

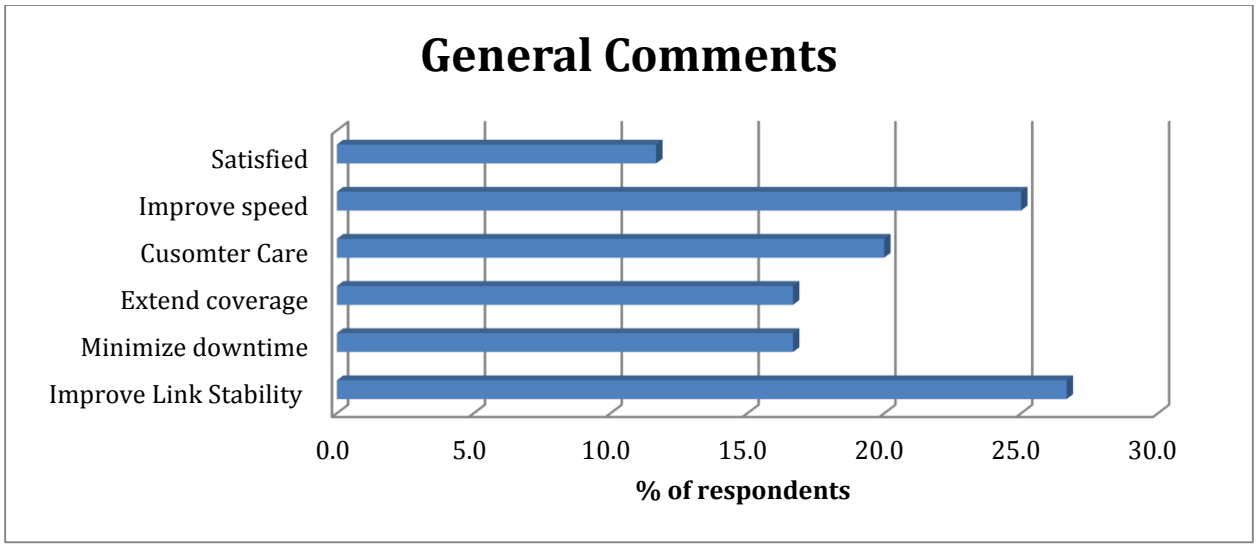


Fig 7 – Areas to be improved

Discussion with the executives and engineers highlighted efforts the company had put to ensure its customers are satisfied. The company had a mechanism to receive customer calls and respond to the calls either physically or remotely. Executives, technical team and help desk believed they had done enough to address customer queries in a professional and timely manner.

III. DISCUSSIONS

Customers' perceptions, loyalty and retention

Generally, most customers appeared to be satisfied with the speed and price of the service regardless with the fact they stopped using the service. Stopping using internet services from this ISP did not mean they stopped using internet services from other ISPs. This shows that regardless of the service level offered, more is needed to retain the customer, same observed by Hennig-Thurau and Klee (1997).

One of the issue that over 40% of participants pointed out help desk as reason for leaving and 20% pointed on the same as an area to be improved. Many pointed out that after sales services were not efficient enough to address issues on timely manner. Due to the nature of Internet use, an ineffective after sale service can be frustrating. During discussion with engineers and executives of the company, it appeared that the company had established a fully functional customer help desk and response team. It could be argued that the customers perceived the customer help desk as ineffective regardless. Having a fully fledged customer care unit should not necessarily mean a competent service delivery. It has been suggested that having customer-oriented employees can help in creating a better corporate image (Hoffman et.al, 1991). In this case, it can be argued that employees did not have customer oriented skills and competencies to address issues raised by customers or to create stable links. In many business sectors, competent staff increases the customer value and quality of the service delivered and hence impacting customers' satisfaction and therefore corporate image (Moller, 2006). As viewed by Kandampully and Suhartanto (2003) customer satisfaction plays a role in gaining customer loyalty which influences customer retention.

As pointed earlier, customer retention is closely related to customer loyalty than quality of service offered (Andreassen and Lindestad, 1998). In this case although it is not proven that participants were not loyal to the company, it can be argued that there were also not sympathetic and regardless the fact that the price and speed were okay, they opted for another ISP. Retaining customers is toughest task of all in business since giving them good services is not enough to retain them. It takes more than satisfying a customer to retain them and hence management should work hard to understand how the organization has been perceived by customers. This understanding will help the management to increase the QoS and therefore consumer value which was also observed by Hu et.al. (2009).

For ISPs, customer's perceptions are driven by mainly speed of the service, link stability (service availability) and mostly importantly the quality of help desk. Establishing a business and delivering good services should go hand in hand with soft skills training to employees. This means, the organization should value the role of after sales support equally as the service itself.

IV. CONCLUSION

This paper has presented findings from a study aimed at examining factors that influences customers' QoS perception. The study has observed that for an ISP to retain customers, more need to be done. Although ensuring that technical matrices such as speed, latency, link stability and error rate are taken care, same should be put on non technical issues such as help desk effectiveness. It should be noted that most customers do not have skills to accertain the level of QoS they should be experiencing and hence use unguided perception to express their satisfaction or dissatisfaction of the service. The study also found out that prices for the particular ISP were perceived as acceptable by most customers. It was also established that most customers were satisfied with the speed offered. It was observed however that link stability and availability of service was considered as important by many users.

Although acquiring customers is a challenging task, retaining them might be even more challenging. This is due to the fact that customer retention is more related to customer loyalty that is to quality of service. In this dynamic industry, ISPs should do more to gain customer loyalty which is related to corporate image. Therefore, despite the importance of good technical metrics, ISPs should put extra effort to ensure that is fully understands the view customers has about the company. Good technical QoS performance, help desk and after sale support together with a good corporate image will put an organization in a better competitive position.

V. REFERENCES

[1] Marilly, E.; Martinot, O.; Betge-Brezetz, S.; Delegue, G., "Requirements for service level agreement management," *IEEE Workshop on IP Operations and Management, 2002*

[2] Grzech, A.; Rygielski, P., Świątek, P. Translations of service level agreement in systems based on service-oriented architectures. Cybernetics and Systems Vol. 41, Iss. 8, 2010

[3] BUCCAFURRI, F. et al., 2008. Analysis of QoS in cooperative services for real time applications. Data & Knowledge Engineering, 67(3), pp. 463.

[4] Andersson, C. GRPS and 3G Wireless Applications, Willey, 2001, pg 158.

[5] Oodan, A.P., Ward, K.E. and Mulee, A.W., *Quality of Service in Telecommunications* (1997). London: Institution of Electrical Engineers.

[6] **E. Sedoyeka** Z. Hunaiti and D. Tairo. Analysis of QoS Requirements for Developing Countries: Tanzania Case Study. Int. Journal Of Computing And Ict Research (Ijcir). 2009 Volume 3.

[7] Jha, S, Mahbub, H (2002) *Engineering Internet Qo*S, Norwood, MA: Artech House

[8] Gupta, M.; Jha, S.C.; Koc, A.T.; Vannithamby, R., "Energy impact of emerging mobile internet applications on LTE networks: issues and solutions," *Communications Magazine, IEEE* , 2013 vol.51,2.

[9] International Telecommunication Union (ITU), ICT Fact and Figures 2014

[10] Meeker, M. and Wu, L. INTERNET TRENDS CONFERENCE, KPCB, 2013

[11] Andersson, C. GRPS and 3G Wireless Applications, Willey, 2001, pg 158.

[12] Hongxia Tong, Jian Cao, ShenSheng Zhang and Yujie Mou. A fuzzy evaluation system for web services selection using extended QoS model. Kybernetes Vol. 38 Nos 3/4, 2009 pp. 513-521

[13] Christos Bouras and Afrodite Sevasti. Pricing QoS over transport networks. Internet Research Volume 14 · Number 2 · 2004

[14] Yeonjoon Chung; Min Ho Park; Eui Hyun Paik, "A QoS negotiable service framework for multimedia services connected through subscriber networks," IEEE Tenth International Symposium on Consumer Electronics, 2006. ISCE '06. 2006

[15] Ito, Y.; Tasaka, S., "QRPp1-1: User-Level QoS Assessment of a Multipoint-to-Multipoint TV Conferencing Application over IP Networks," Global Telecommunications Conference, 2006. GLOBECOM '06. IEEE .

[16] Xiao Liu; Yun Yang; Dong Yuan; Gaofeng Zhang; Wenhao Li; Dahai Cao, "A Generic QoS Framework for Cloud Workflow Systems," IEEE Ninth International Conference on Dependable, Autonomic and Secure Computing (DASC), 2011.

[17] Guo-qi Liu; Zhi-liang Zhu; Yi-qiang Li; Dan-Cheng Li; Jun-chang Cui, "A New Web Service Model Based on QoS," International Symposium on Intelligent Ubiquitous Computing and Education, 2009.

[18] Zhu Yong; Li Wei; Luo Junzhou; Zheng Xiao, "A novel two-phase approach for QoS-aware service composition based on history records," IEEE International Conference on Service-Oriented Computing and Applications (SOCA), 2012.

[19] Wang Zai-jian; Yu-ning Dong; Hai-xian Shi; Zhang Hui, "Modeling and analysis of QoS class mapping for hybrid QoS domains using Flow Aggregate," Wireless Communications and Mobile Computing Conference (IWCMC), 2013 9th International , vol., no., pp.503,508, 1-5 July 2013

[20] Al-khateeb, F.B., "Predicting internet usage in two emerging economies using an extended technology acceptance model (TAM)," Collaborative Technologies and Systems, 2007. CTS 2007. International Symposium on , vol., no., pp.143,149, 25-25 May 2007.

[21] Gupta, M.; Jha, S.C.; Koc, A.T.; Vannithamby, R., "Energy impact of emerging mobile internet applications on LTE networks: issues and solutions," Communications Magazine, IEEE , vol.51, no.2, 2013.

[22] Hennig-Thurau, T. and Klee, A. (1997), The impact of customer satisfaction and relationship quality on customer retention: A critical reassessment and model development. Psychol. Mark., 14: 737–764.

[23] J.Joseph Cronin Jr., Michael K Brady, G.Tomas M Hult, Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments, Journal of Retailing, Volume 76, Issue 2, Summer 2000, Pages 193-218

[24] Tor Wallin Andreassen, Bodil Lindestad, (1998) "Customer loyalty and complex services: The impact of corporate image on quality, customer satisfaction and loyalty for customers with varying degrees of service expertise", International Journal of Service Industry Management, Vol. 9 Iss: 1, pp.7 – 23

[25] Douglas Hoffman, K.; Ingram, Thomas N. Creating Customer-Oriented Employees: The Case in Home Health Care. Source: Journal of Health Care Marketing . June 1991, Vol. 11 Issue 2, p24-32.

[26] Jay Kandampully, Dwi Suhartanto, (2000) "Customer loyalty in the hotel industry: the role of customer satisfaction and image", International Journal of Contemporary Hospitality Management, Vol. 12 Iss: 6, pp.346 – 351

[27] Kristian Möller, Role of competences in creating customer value: A value-creation logic approach, Industrial Marketing Management, Volume 35, Issue 8, November 2006, Pages 913-924

[28] Jay Kandampully and Dwi Suhartanto. The Role of Customer Satisfaction and Image in Gaining Customer Loyalty in the Hotel Industry. Journal of Hospitality & Leisure Marketing. Volume 10, Issue 1-2, 2003

[29] Hsin-Hui (Sunny) Hu, Jay Kandampully and Thanika Devi Juwaheer. Relationships and impacts of service quality, perceived value, customer satisfaction, and image: an empirical study The Service Industries Journal. Volume 29, Issue 2, 2009 pages 111-125