Journal of Marketing and Consumer Research
ISSN 2422-8451 An International Peer-reviewed Journal
Vol.88, 2023

The Effect of Service Quality on Customer Satisfaction towards ADSL Broadband Internet Service Provided by Ethiotelecom with Reference to Small and Medium Enterprise (SME) Subscribers in Hawassa City, Ethiopia

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Abstract
Customer service becomes the most imperative aspect of business accomplishment in most industries. However, the study of customer satisfaction never ends due to the reason of dynamic behavior of searching their satisfaction, and service quality can deliver a good measurement means to predict their satisfaction. Thus, the aim of this research was to examine the effect of service quality on customer satisfaction towards ADSL broadband internet service provided by Ethiotelecom with reference to SME subscribers in Hawassa City. To this end, modified SERVQUAL model has applied with additional important variable, Network quality. The study has conducted with a questionnaire survey method under descriptive and explanatory research design. To select representative sample, the probability sampling techniques, stratified sampling was applied. Altogether out of the 322 distributed questionnaire, 320 (99%) were used for analyzing the study. For the analysis, both descriptive and inferential statistics were employed with the help of Statistical Package for Social Sciences (SPSS) Version 24. Majorly, multiple linear regression models were applied to estimate the effect of each SERVQUAL dimension on customers' satisfaction. The overall finding revealed that all factors had positive and statistically significant effect on customer satisfaction towards ADSL broadband internet services. Even though it has high effect in overall view, network quality is the most influential factor which can influence the overall satisfaction of the customers. This is evident to say that SME customers are demanding more improvements on the network quality aspects of broadband internet service than the other service quality dimensions. The finding also shows that the majority of respondents (63.4%) are dissatisfied. Thus, Ethiotelecom should work hard to improve its customer's satisfaction. And the researcher expects that the findings of this research would be useful for Ethiotelecom in formulating appropriate strategies and addressing the area of attention for the network improvement and expansion of broadband internet service in the whole country.
Keywords:service quality, customer satisfaction, SERVQUAL, ADSL broad band internet service, network quality
DOI: 10.7176/JMCR/88-01
Publication date: January 31st 2023

1. Introduction

Broadband internet service quality has been regarded as having the potential not only to deliver strategic benefits for customers, but also to enhance operational efficiency and profitability. Service quality is the degree and direction of discrepancy between consumer's perceptions and expectations in terms of different but relatively important dimensions of service quality, which can affect the future purchasing behavior of the customers (Parasuraman, A., Zeithaml, V.A., Berry, L. 1985). It is considered as one of the top priorities of firms as it gives the company a competitive advantage, helps to sustain growth and increases efficiency (Anderson, Fornell, 1994). Perceived quality is simply the overall customer's assessment of the standard process of receiving customer services. The key strategy for the success and survival of any business institution is the deliverance of quality services to customers (Parasuraman. al 1985; Zeithaml et., al, 1990). Excellent services increases customer satisfaction and leads to repeat customer purchase behavior (Cronin & Taylor, 1992) which ultimately increases the market share of the companies and generates high revenues. Customer Satisfaction is feeling of pleasure or disappointment which results from comparing a product's or service's perceived performance or outcome against expectations (Kotler, 2012). It is the provisions of goods or services that fulfill customer expectation in terms of quality of service and more specifically in relation to price paid. The goal of most effective business is to maintain a high level of customer satisfaction by providing value added transactions through excellent service quality that can enhance company performance and profitability in return. Customer satisfaction is highly interrelated with service price and service quality where fair service price and higher service quality brings enhanced customer satisfaction, repeat patronage, and increased profits and customer loyalty (Anderson, Fornell, 1994). In today's dynamic and competitive environment telecommunication industry plays an important role for the success of any businesses. It has great influence on economic, social, political,

personal and legal affairs where it is becoming a prerequisite for successful achievements. Telecom services recognized throughout the world as an important tool for the socio-economic development of a nation where it has a significant contribution for the country GDP. It is the key support and essential service for rapid growth and modernization of various sectors of the economy (Dubale 2010). Ethio telecom has a mission of rendering a nationwide reliable telecom network infrastructure as well as implementing critical enterprise and business processes in satisfying customers, enhancing service capability throughout the country. However, the company is getting many negative feedbacks from the customers in terms of service provisioning, speed & quality which are largely termed as network quality problem. Thus, focus of this study is on determining the effect of service quality on customers' satisfaction towards ADSL broadband internet service provided by Ethio telecom. Further, this study has investigated the relationship of service quality and customer satisfaction using the SERVQUAL instrument (tangibles, reliability, responsiveness, empathy, assurance) given by Parasuraman, et al. (1988) and one additional dimension 'Network quality' which is substantially important in telecom service and didn't investigated with the previews researcher yet was considered with intention of filling the gap in literature.

1.1. Statement of the Problem

Appreciating the recent attempt of Ethiotelecom upgrading its infrastructure and telecom service provision to world class standard, the assessment of quality of services and customer satisfaction level is substantially important. Service quality has become a notable research area because of its strong impact on customer satisfaction, business performance, customer loyalty and gaining higher profit. ***The ground statement of this research is that, even though the company aimed at increasing number of subscribers seems to be promising enough, the other side, quality problems remains highly controversial issues and need to be addressed against level of customer satisfaction as ADSL broadband internet services in Ethiopia have been receiving many negative feedbacks in terms of speeds, connectivity, quality and other factors. This current issue is equally important to both academic and the industry, and substantiates the importance of this research***. A number of studies have addressed regarding to service quality and customer satisfaction and many of the studies have linked service quality and customer satisfaction as having direct relationship (Lai et al., 2009; Wu and Lang, 2009; Kuo et al.,2009; Baker, 2000). ***Evidently, these all studies were not considered the 'Network quality'.*** In Ethiotelecom where service quality is the big issue of the customers, it is worthwhile to include Network quality to achieve higher customer satisfaction level and succeed in the upcoming privatization and competition. Although a lot of researches have been conducted on service quality and customer satisfaction, customer loyalty and company performance, as to the researcher knowledge there is no study conducted on analyzing service quality and customer satisfaction level considering important variable network quality on ADSL broad band internet service with special reference to SME customers. Therefore, this research promised to examine the effect of service quality on customer satisfaction towards ADSL Broadband Internet services with special reference to Small and Medium Enterprise (SME) customers in Hawassa city by testing the following research hypotheses.

1.2. Research Hypothesis

Main hypotheses:

H1: Service quality dimensions have positive and significant effect on customer satisfaction towards ADSL broadband internet services.

Sub hypotheses:

H1.1: Tangibility has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

H1.2: Reliability has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

H1.3: Responsiveness has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

H1.4: Assurance has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

H1.5: Empathy has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

H2: Network quality has positive and significant effect on customer satisfaction towards ADSL broadband internet services.

1.3. Significance of the Study

Justification of the research importance is mainly raised in two concerns; how the research will contributes in filling literature gap and who will be benefited from the result. On top of that, this study is expected to show the

relative degrees of importance among the two constructs (Service Quality dimensions and Customer Satisfaction) of ADSL broadband service delivered by Telecom Company. As it clearly indicated in the statement of the problem, service quality and customer satisfaction has been recognized as one of the important issues and generated a substantial amount of interest among managers and researchers. Thus, service quality has been proposed as one of effective way for organizations to increase customer satisfaction and company performance. Therefore, this study helps Ethioteleom to identify its strength and weakness towards service quality and levels of customer satisfaction in order to improve its service quality and build its competences for the forthcoming competition. Finally, although service quality and customer satisfaction extensively addressed by many scholars and practitioners, to the best of the researcher knowledge there are no studies in Ethiopia regarding investigation of service quality and customer satisfaction with special attention to ADSL broadband internet service and MSE subscriber customers. This study is therefore intended to close the gap, which is aimed to understanding the overall service quality and customer satisfaction level and factors perceived to be important in increasing their satisfaction. A clear understanding of these factors is critical to ensure that the company effort with has made on delivering quality service are matched with the needs of their customers. Furthermore, the study will give insight for other researchers to explore and investigate more in the area, in a broader scope and wider context.

2. Literature Review

Despite the fact that the diffusion of broadband internet in the telecom world is at its infant stage various definition has out reached in the literatures in different ways. For example the definition given by Becta has defined broadband as a generic term to describe high-speed symmetrical service, allowing fast in and outbound data capacity (Becta, 2008; OECD, 2008). And Robert who have perhaps done the most to popularize the issue to the world of entertainment has defined broad band as ―any technology – currently, cable, telephone-based (DSL), wireless, or through electric power lines – that permits users to communicate and download online entertainments at rates substantially faster than older generation ‗dial-up' services, and unlike dial-up services, is ‗always on.‖(Robert, 2005). In line with the definition and comparison broadband internet with dial up given by Robert, Sang Won has also defined broadband internet empirically as ―a high-speed internet services, such as ADSL, cable and satellite; broadband service can transmit information at up to 40 times the speed of a dial-up modem connection‖ (Sang won, 2007). Furthermore, according to the International Telecommunication Union (ITU) definition, broadband refers to an Internet connection speed of 256 Kbps or higher as the total throughput in both, download and upload, directions. This statistical indicator is defined irrespective of type of access or type of device used for Internet access, or method of payment. Dwivedi et al. (2009) confirmed that broadband, as an key enabling technology in the networked society, can help boost the economy of countries at a national level and can help to improve the lives of their citizens by facilitating delivery of education, health and telecommunications services at low cost and to a wider population. The broadband revolution continues, the ever increasing competition in the broadband service markets forcing broadband service suppliers to plan their strategies for delivery of ―triple play‖ of their services, with voice, data and video provided by a single connection. According to U.S National Telecommunication and Information studies, over recent years, as the internet and intranets have evolved, increasing requirements for bandwidth intensive applications such as peer to peer file sharing and Tele-working has resulted in relentlessly increasing demands for higher broadband bandwidth provisioning.

2.1. SERVQUAL Model

In 1988 the authors refined the Gap model into five dimensions Reliability, Responsiveness, Assurance (which contains communication, competence, credibility, courtesy, and security). Tangibles, and Empathy (which contains access and understanding) while keeping the construction of the model and theory the same and rename the as SERVQUAL. This way, Parasuraman et al. (1988), defines the quality of services as a difference between customer expectations and the perception. Thus, the SERVQUAL instrument appears in an examination whose aim was to create an instrument to assess the quality of services. Later, due to various statistical changes in the SERVQUAL instrument, the 97 items became 22, while the ten dimensions were regrouped into five final dimensions which are stated above. Since the authors operationalized service quality as being a gap between customer's expectations and perceptions of performance on these variables, the service quality measurement scale is comprised of a total of 44 items (22 for expectations and 22 for perceptions). Likert scale, from 1 (strongly disagree) to 7 (strongly agree) and are compared to arrive at (Perception-Expectation) gap scores. The higher (more positive) the perception minus expectation scores, the higher is to be the level of perceived service quality, and vice versa. (Parasuraman et al.,1988) noted that organizational leaders should minimize the gap to maintain overall service quality and satisfaction.

Tangibles can be illustrated as the appearance of physical offices, equipment, work force, and correspondence materials. Parasuraman et al.,(1985) tangibility can be characterized as the presence of physical offices, staff, and equipment and composed materials.

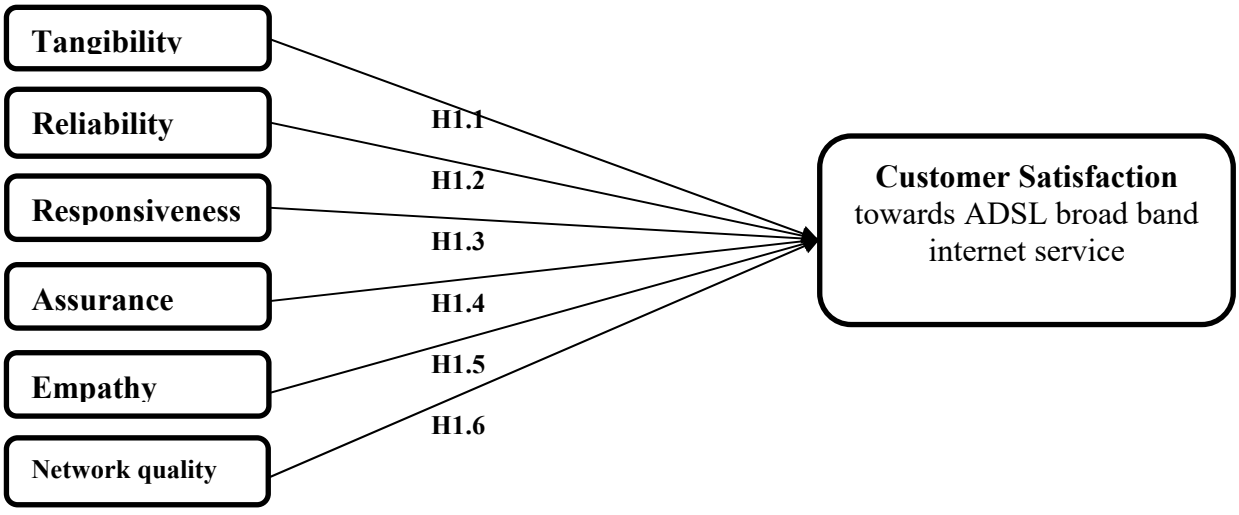
Reliability is defined as capacity to execute the guaranteed benefit reliably and precisely (Armstrong, 2012). If a company is providing a good service, a company and its staff should be ready to respond to consumer's queries about products and services offered (Ojo, 2010). Timely responses to requests, is one of the important customer's expectation. Therefore, this should not be delayed or ignored simply because these are fundamental issues. Online support is offer by some companies that provides customers with instant resolution to their queries.

Responsiveness characterized as the readiness or willingness of workers to give benefit or immediate response to the customer need. Offer quick service and willingness to give assistance to the customers (Armstrong, 2012). Customers highly appreciates to provide service in a timely manner, this aspect should be understood by the good service providers (Ahmed et al., 2010).

Assurance is basically courtesy, competence, credibility; security of the firm employees gives to its customer. Parasuraman et al., (1985), interpreted (AS) as information to have cordiality of workers and their capability to motivate confidence and trust. If company's representatives provide genuine and caring service, customers would want to do business (Zakary & Angelova, 2011).

Empathy can be interpreted as the care, individualized concentration the company provides to its customers (Armstrong, 2012). Customer and employee interactions are reflected through the dimension of empathy (Armstrong, 2012) to attract customers through caring is a key determinant and by providing variety in the features of service products that will fulfill their wants and need in the marketplace. Therefore, the researcher adopts a modified SERVQUAL model with six dimensions; tangibles, reliability, responsiveness, assurance, empathy and network quality. The service quality gap is going to be measured using these customized six dimensions and three items for perceived value (see appendix one). Based on the narrow down scope of literature review above, the relationship between service quality dimensions, overall service quality and customer satisfaction can be shown in figure here below. The five service quality dimensions have been selected from the SERVQUAL and one additional dimension (Network quality) is added. The conceptual framework guided the formulation of this study's hypotheses and depicts the effect and/ or relationships between service quality and customer satisfaction. Customer satisfaction was conceptualized as the consequence of service quality performance. Brady and Cronin (2001) emphasize that no generic service quality model is applicable without customization. For this reason the initial 22 items of SERVQUAL model are modified and additional items are included to measure the overall service quality and customer satisfaction of Ethio telecom ADSL broadband service. Based on the above theoretical and empirical literature, the following integrated frame work was developed and it shows the relationship between service quality and customer satisfaction. Finally, hypothesis was derived from the research frame work and therefore, this frame work has been used as a point of reference in this thesis.

Figure 2.2: Conceptual framework of the study



Source: Adapted from Parasuraman et. al. (1985) & Negi (2009) **and modified by the researcher (2022)**

3. Methods and Materials

The study has conducted with special reference to SME subscribers in Hawassa City; Sidama Regional State, South of Ethiopia. In this research, both **descriptive** and **explanatory** research design were employed as it tries to investigate correlation of service quality dimensions on overall service quality of Ethiotelecom and empirically measure the effect of overall service quality on customer satisfaction. Descriptive research design helps to describe respondents and their perception on variables identified and determining equivalence between

groups by using simple analyses of means and standard deviations for the variables of interest for each group in the study and gap analysis for each variable. The mean indicates to what extent the sample group on average agrees or does not agree with the different statement. Explanatory research design aids to investigate the correlation of service quality dimensions with overall service quality of Ethiotelecom and as well empirically measure the effect of overall service quality on customer satisfaction. Similarly it will shows the most significant variable and contribution level on overall service quality. Moreover, the researcher has utilized **quantitative research type with deductive approach** so as to make simple use of statistical analysis by applying systematic measurements and statistics. The study will be conducted with Cross-sectional survey method since all the data will be collected at one point in time. Survey method is popular since it allows the collection of a large amount of data from a sizeable population in a highly economical way (Saunders, Lewis, & Thornhill, 2009).

3.1. Sample Design and Sampling Procedure

Target Population: According to Sekaran (2003), populations refer to the entire group of people, events, or things of interest that can be a focus for the researcher to investigate. For this research, the population covers only Small and Medium Enterprise customers that use ADSL broadband internet service in Hawassa city. The total number of Small and Medium Enterprise customers of Ethiotelecom as of September 2021 is 1658. The sample frame for this study is obtained from Ethiotelecom Hawassa district enterprise division data base as of September 2021.

Sampling Technique: Given the ADSL broadband internet subscribers of Ethiotelecom under SME customer category in Hawassa city as population of this study, probability sampling technique specifically stratified sampling and simple random sampling method were used. First, stratified sampling technique is used in dividing the population in strata based on type of SME that are *Small Business plc, Internet café, Hotel and Restaurant and Private University colleges*. Then, a proportionate representative is selected from each stratum using a simple random sampling technique. Applying this simple random sampling is good due to the fact that, as it explained by Flower and Rice, it possesses the recognized characteristics of a good sample frame such as comprehensiveness, accuracy, adequacy, and up-to-date and non-duplicated information (Fowler 2002, Rice 1997).

Sample Size: As it depicted under the target population here above, the total number of Small and Medium Enterprise customers of Ethiotelecom as of September 2021 is 1658. Out of these, 322 total sample is determined by applying scientific formula as it depicted here below. These customers are selected from four type of small and medium enterprise (SME) such as Small Business plc, Internet café, Hotel and Restaurant and Private University colleges.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{1658}{1+1658(0.05)^2} = 322$$

Where,
n = required sample size,
N = population size;
$(e)2$= is level of precision (0.05 in this research at 95% confidence interval);
Then, the total sample size is allocated among the four customer categories based on their proportion to size as proposed by (Bowley, 1926). This ensures to get fair representation of samples from small and medium enterprise (SME). Thus, a total sample size of 322 is drawn using stratified random sampling technique to collect data from respondents. Accordingly, the four stratums of SME sub segments such as Small Business plc, Internet café, Hotel and Restaurant and Private University colleges are clearly stated with proportional size here below;

$$ni = \frac{n}{N}$$

$$ni = \frac{322}{1658} = 19.420\%$$

Where,
ni - Sample size required from each customer category
n - Total sample size,
N - Population of Small and Medium enterprise
According to enterprise division of Ethiotelecom Hawassa district, as of September 2021 in each category there are 450, 78, 1118 and 12 customers respectively. Then the sample size is selected proportionally from each stratum using simple random sampling. Based on this 88, 15, 217 and 2 sample sizes were taken from Small Business plc, Internet café, Hotel and Restaurant and Private University colleges respectively.

3.2. Method of Data Collection

A questionnaire survey is used as the research instrument. The reason for choosing this instrument is that it is the best way to collect quantitative data and economical in nature. The questionnaire dimensions and items were adapted based on SERVQUAL concepts, theories as well as the previous research information. English version questionnaire was prepared with the hope of any respondent who has engaged in using Google internet can understand and measure the dimensions. The questionnaire consists of three parts including part I: questions about company information, part II: asking questions related to service quality of ADSL broadband services which affect customers satisfaction, and part III: asking questions related to overall service quality and customer satisfaction level. Respondents were requested to indicate their level of influence for each item in the questionnaire using a five-point Likert scale. The five dimensions of service quality used in the SERVQUAL Model for measurement of service quality which was developed by Parasuraman *et al*. (1988). The other one services related factor (network aspect) is adopted from a literature which was used specifically for telecommunication industry. Negi (2009) in his study of user's perceived service quality of mobile communications in Ethiopia suggest that network aspect has significant impact on service quality and customer satisfaction. Joshi *et al.,* (2010) in their study of service quality in telecom sector found that network quality is very important factor in determining service quality. Therefore, the researcher adopted this dimension (network quality) to the ADSL broadband internet service because both mobile and internet are telecommunication services and they share the same backbone (network) at high level. Hence, this study will be used a modified SERVQUAL dimensions.

3.3. Method of Data Analysis

In order to analyze the data of this study, both descriptive and inferential statistics were employed. The reason for using descriptive statistics is to summarize the data collected in tables and graphs for better understanding for the reader and for the researcher to easily examine the results and to answer some basic research questions. To present a descriptive statistics for this study, means, standard deviations, percentage values were used. Besides, inferential statistics were used to generalize and make predictions from the results of the data. The reason for this choice of test is because of the nature of the data which was categorical in nature. In doing so, the research has tested the effect of service quality dimensions on customer satisfaction. To present inferential statistics, multiple linear regression analysis is used to answer research questions and test the hypotheses. This study used a quantitative data analysis method which has conducted using SPSS (Statistical Package for the Social Science) version 24. The reason for this choice of analysis method is because the data to be collected is quantitative and examine the relationship between variable under the study with the five dimensions of SERVQUAL model and one additional dimension that is Network quality.

3.4. Model Specification

To examine the effect of service quality on customer satisfaction towards ADSL broadband internet service of Ethiotelecom and/or proving or disproving the hypothesized connection in line with the objectives of explaining the effect those anticipated independent variables will have on dependent variable, multiple linear regressions model is proposed to be applied. Multiple linear regressions analysis is a major statistical tool for predicting the unknown value of a variable from the known value of two or more variables and it is about finding a relationship between variables (independent and dependent) and forming a model. The model for this research is developed using 6 (six) explanatory variables or predictors, which have direct effect on a consumer satisfaction. This model will be recalled for the analysis part and substituted for the purpose of clear interpretation. Therefore, the model is constructed according to the general econometric model as follow; $\mathbf{Yi = \beta0 + \beta1X1i + \beta2X2i + \ldots\ldots + \beta nXni + \varepsilon,}$ Where ε is the error term for ith observation and others are expressed in the following table. This basic regression model is rewritten in terms of the variables used in this research to show the relationship among them based on the research conceptual frame work. Then, to keep the format of the model and keys more clear and attractive, the fallowing presentation is optimized.

$$\mathbf{Y = \beta o + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + \varepsilon}$$

Where Y is the response and the independent variables are those which explain the response ranges from X1 to X6.

4. Results And Discussion

This study was conducted with an objective of analyzing the effect of service quality on customer satisfaction towards ADSL broadband internet services of Ethio-telecom with special reference to SME subscribers in Hawassa city.

Survey Response Rate: a total of 322 sets of questionnaires were administered and distributed to the customers ADSL broadband internet services that were at the internet services providing center at the time of data collection in the selected sample area. However, only 320 duly filled in questionnaires were returned

representing the response rate of 99.38 percent and preeminent rate for the study analysis.

4.1. Descriptive Analysis for the Study Variables

To substantiate the inferential analysis result, the study has summarized service quality dimensions and customer satisfaction score by using descriptive analysis. SME subscribers in Hawassa city were asked to rate the level of their agreement to each question under the six attributes namely: tangibility, reliability, responsiveness, assurance, empathy and network quality on a five point Likert scale with: **1= strongly disagree, 2= disagree, 3 = neutral, 4= agree and 5= strongly agree (see Appendix I).** Therefore, the mean indicates to what extent the sample group on average agrees or does not agree with the different statement. The lower the mean, the more the respondents disagree with the statement and the higher the mean, the more the respondents agree with the statement based on the mean range developed by **Al-Sayaad et al. (2006)**.

Table 4.3.1: Five-Scaled Likert Criterion

No	Mean Range	Responses option
1	**[1.00-1.80]**	**Strongly disagree**
2	**(1.80-2.60]**	**Disagree**
3	**(2.60-3.40]**	**Neutral**
4	**(3.40-4.20]**	**Agree**
5	**(4.20-5.00]**	**Strongly agree**

Source: Al-Sayaad et al. 2006, Cited in Ambaye, 2018

By referring the above mean range rule of **Al-Sayaad et al. (2006)**, the following results have been interpreted with their respective service quality dimensions.

Table 4. 3, Summarized Descriptive Analysis: Means Score and Standard Deviation

Dimensions	N	Minimum	Maximum	Mean	Std. Deviation
Tangible	320	2	5.00	3.5000	0.62602
Reliability	320	2	5.00	3.3127	0.79956
Responsiveness	320	2	5.00	3.1807	0.94417
Assurance	320	2	5.00	3.2125	0.90408
Empathy	320	2	5.00	3.1945	0.72639
Network quality	320	2	4.00	2.0670	0.86159
Customer satisfaction	320	2	4.	2.1570	0.86158

Source: own survey, 2022

As presented in table 4.3, customers' perception of tangibility was rated high comparatively (mean= 3.5). According to **Al-Sayaad et al. (2006),** the mean range is lies in between **3.40-4.20** which means the majority of the respondents were agreed with the statements under this dimension. This may indicate that most Ethio telecom customers agree that the company has up-to-date equipment, appealing facility and neat appearance of employees. Reviews of documents also show that the company currently has modern equipment such as 3G &4G modems, IPCC, MSAG, ERP, CRM and better data center (Ethio telecom, 2021). Customers rating of reliability item also show that there is dissatisfaction on the items (mean 3.31). This reflects the consistency and dependability of Ethio telecom performance in providing service as promised and by time that has shown weakness. On the contrary, the same respondents mildly agree that Ethio telecom keeps customer records accurately. Also, assurance and empathy dimensions are among the most highly rated service quality dimensions (mean = 3.21 and mean = 3.19 respectively) next to tangibility (mean = 3.5). These shows customers have neutral opinion about the service quality of Ethio telecom with regards to these dimensions. From all service quality dimensions, the lowest score is shown on the network quality (mean 2.067). This implies that customers' perception of the technical service quality of ethio telecom is unsatisfactory. Respondents perception about the broadband internet speed and un interruption of different services is low (mean = 2.75 and mean = 2.87 respectively). Also ethio telecom customers mildly agree that Ethio telecom have adequate network coverage and good quality of voice during the call and the score of responsiveness was the lowest next to network service quality dimensions (mean = 3.18). This reflects the consistency and dependability of Ethio telecom is not up to

the expectations of customers in terms of providing prompt services and readiness in handling customers request within reasonable time. Analysis of individual service quality item shows that convenient business or operating hours, up-to-date equipment, and employees' appearance shows the highest mean score in the study. On the other hand, the respondents rating for providing the service as promised, the level of customer rating is the lowest service quality items in this study (mean = 3.21). In addition to this, the mean score for providing prompt service, internet speed and un-interruption of services shows among the lowest rating (mean < average). Generally, Table 4.3 indicates the customers' perception of service quality dimensions and satisfaction level is found to be low especially for network quality and customer satisfaction.

4.2. Inferential Analysis

Multiple Linear Regression Analysis: The multiple regression analysis was conducted to investigate the effect of independent variables on the dependent variable and identify the relative significant influencer. The first task of multiple regressions was performed above with the help of the four assumptions, and the next is producing output relating to Model Summary, ANOVA and Beta coefficient.

Model Summary:

Table 4.4.2.1.1: Model Summary result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.842[a]	.709	.705	.31107	1.991

a. Predictors: (Constant), tangibility, reliability, responsiveness, assurance, empathy, network quality

b. Dependent Variable: customer satisfaction

Source: own survey, 2022

Based on table 4.4.2.1.1 here above, the regression model justifies that the R-value which is 0.842 indicates that the correlation strength between dependent and independent variables. This value infers the presence of high correlation between predictor variables and customer satisfaction.

R-Square is statistical measure that illustrate the proportion of the variance for a dependent variable that explained by an independent variables to the regression model. It also explains to what extent the variance of one variable explains the variance of another variable. In this research the value of R-square is **0.709**, this shows that **70.9%** of the variation in customer satisfaction is explained by explanatory variables and the remaining **29.1%** of the variation of the customer satisfaction is explained by other factors which are not included in the model.

The adjusted R–Square is a modified version of R-square that has been adjusted for the number of predictor in the model. It compares the explanatory power of regression model that contain different number of predictors. The Adjusted R- Square value of **0.705** indicates relationship between predictors and customer satisfaction. This implies that most of the predictor variables included in the regression model is relevant in explaining customer satisfaction.

Durbin-Watson statistic expresses that whether the assumption of independent errors is acceptable or not. As the conservative rule suggested that, values less than 1 or greater than 3 should definitely raise alarm bells (Field, 2005). So that the desirable result is when the value is closer to **2**, and for this data the value is **1.991**, which is so confidently close to 2 that the assumption has almost met.

ANOVA Model Fit:

Table 4.4.2.2.1: ANOVA Model Fit result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	86.368	6	14.395	148.402	.000[b]
	Residual	35.416	313	.097		
	Total	121.784	319			

a. Dependent Variable: customer satisfaction

b. Predictors: (Constant), tangibility, reliability, responsiveness, assurance, empathy, network quality

Source: own survey, 2022

The significant level in ANOVA table 4.4.2.2.1 here above shows that the combination of variables significantly predicts the dependent variable. ANOVA tests whether the model is significantly better at predicting the outcome than using the mean as a best guess; specifically, the F-ratio represents the ratio of the improvements in prediction that results from fitting the model, relative to the inaccuracy that still exists in the model. For these data, F is 148.402, which is significant at $p<0.001$. This result tells us there is less than a 0.1% chance that an F-ratio is larger would happen by chance alone and the regression model results is significantly better prediction of customer satisfaction towards ADSL broadband internet service.

Beta Coefficient:

Multiple linear regressions analysis is conducted to achieve the objectives alongside with proving and/or disproving the hypothesis proposed in this research. This method helps to predict the score on variables and the level of importance of the variables. It can also scrutinize the relationship between variables. Thus, regression coefficient is computed to investigate the effect of the independent variables on the dependent variable of the study. A model of the relationship is hypothesized, and estimates of the parameter values are used to develop an estimated regression equation. The model has proved and agreed to satisfactory that the estimated regression equation can be used to predict the value of the dependent variable given values for the independent variables from the following beta coefficient.

Table 4.4.2.3.1: Beta Coefficient result

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**p-v(Sig)**
		B	Std. Error	Beta		
1	(Constant)	**.451**	.134		3.358	**.001**
	Tangibility	**.121**	.026	.132	3.029	**.002**
	Reliability	**.211**	.027	.270	7.795	**.000**
	Responsiveness	**.274**	.028	.332	9.770	**.000**
	Assurance	**.124**	.038	.267	3.298	**.002**
	Empathy	**.163**	.038	.205	4.295	**.001**
	Network quality	**.456**	.027	.533	16.969	**.000**

a. Dependent Variable: customer satisfaction

Source: own survey, 2022

The regression coefficients result presented in table 4.4.2.3.1 here above shows the relative effect of each factors on customer satisfaction. Unstandardized regression coefficients indicate how much one-unit change in the independent variable predicts the outcome (dependent) variable. By recalling the model specifications of the variables from the chapter three of methodology part, it was said that, the unstandardized coefficients ($\beta 1$ up to $\beta 6$) are the coefficients of the estimated regression model. The model variable's specifications were written in line with each model variable result, as it can be seen here below. Hence, the model of customer satisfaction (**Y**) can be written by including error term (ε) as

Model equation

$$Y = \beta o + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \varepsilon$$

Result substitution

$$Y = 0.451 + 0.121X1 + 0.211X2 + 0.274X3 + 0.124X4 + 0.163X5 + 0.456X6 + 0.05$$

Interpretation:

The intercept ($\beta 0$) is the point on the vertical axis where the regression line crosses the Y axis. And in here, it gives the expected value of customer satisfaction (**Y**) as **0.451** where all the 6 (six) predictor's variables of customer satisfaction are null or not exists. The other customer satisfaction determinant beta's can be obtained and interpreted from the above beta coefficient table 4.4.2.3.1 as follows.

Keeping all other variables constant;

- For every one unit increment on ***tangibility*** of ADSL broadband internet services, the % of customer satisfaction increases by 12.1%.
- For every one unit increment on ***reliability*** of ADSL broadband internet services, the % of customer satisfaction increases by 21.1%.
- For every one unit increment on ***responsiveness*** with ADSL broadband internet services, the % of customer satisfaction increases by 27.4%.
- For every one unit increment on ***assurance*** with ADSL broadband internet services, the % of customer satisfaction increases by 12.4%.
- For every one unit increment on ***empathy*** to customer with ADSL broadband internet services, the % of customer satisfaction increases by 16.3%.
- For every one unit increment on ***network quality*** of ADSL broadband internet services, the % of customer satisfaction increases by 45.6%.

The t-values of the model also publicized the contribution level of each variable. From the very beginning, the t-test associated with b-value is significant if the value in the column labeled Sig. is less than .05 and the

predictor is making significant contribution to the model. This means that the smaller the value of the sig. with the larger the value of t, the greater the contribution of that predictor. According to the t-statistics indicated in the table 4.4.2.3.1 here above, the t-values and associated significance status are given as follows: tangibility (3.029, p>.05), reliability (7.795, p<.05), responsiveness (9.770, p<.05), assurance (3.298, p<.05), empathy (4.295, p<.05) and network quality (16.969, p<.05). Therefore, one can conclude that network quality has the highest effect on customer satisfaction with the value of 16.969. Next to network quality, responsiveness and reliability are the main factor in affecting customer satisfaction towards ADSL broadband internet services in the Hawassa city context. From the statistically significant variables, tangibility, assurance and empathy had considerable effect on customer satisfaction. Further explanation from t-value is that all predictors have their own contribution even in difference in strength is observed since their respective sig. values are less than the alpha value.

Hypothesis Testing:

For this study, 5% significance level has been selected to prove and/or disprove hypothesis. According to Malhotra (2006) null hypothesis will be rejected if p value is less than 0.05. In other words, we will reject the null hypotheses where the p-values are less than alpha (0.05) and the alternative hypotheses will be accepted. Thus, this study applied analysis of multiple linear regressions to explain the causality between dependent variable and several independent variables that were expressed in the hypotheses. On the basis of the above benchmark and analysis, the study hypotheses are validated as follows:

Table 4.4.3.1: Hypothesis testing result

Hypothesis	Decision	Reasons	Implication
H1: Service quality dimensions have positive and significant effect on customer satisfaction towards ADSL broadband internet services.			
H1.1: Tangibility has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.121 & t-value = 3.029 P-value < 0.05	Positive effect and statistically significant
H1.2: Reliability has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.211 & t-value = 7.795 P-value < 0.05	Positive effect and statistically significant
H1.3: Responsiveness has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.274 & t-value = 9.770 P-value < 0.05	Positive effect and statistically significant
H1.4: Assurance has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.124 & t-value = 3.298 P-value < 0.05	Positive effect and statistically significant
H1.5: Empathy has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.163 & t-value = 4.295 P-value < 0.05	Positive effect and statistically significant
H2**:** Network quality has positive and significant effect on customer satisfaction towards ADSL broadband internet services.	Accepted	β1 = 0.456 & t-value= 16.969 P-value < 0.05	Positive effect and statistically significant

Source: own survey, 2022

4.3. Discussion of the Result:

Till now, all the above analysis showed the statistical and quantitative explanations of the unknown and the known variables with a specific emphasis on the subject entitled “The effect of service quality on customer satisfaction towards ADSL broadband internet services provided by ethio telecom with special reference to SME subscribers in Hawassa city”. Here under, the major discussion part is going to be incorporated existing theories and empirical literatures and internalized with the measures used under each variables based on respondents agreement/disagreement level.With regarding to network quality, the result has appreciated as there is a positive and statistically significant (p< 0.05, β= 0.456) relationship between network quality and customer satisfaction. Hence, hypothesis two (H2) is supported, that is: network quality has positive and significant effect on customer satisfaction towards ADSL broadband internet services is supported. Moreover, among the six service quality dimensions, network quality is the strongest predictor of overall satisfaction. This finding supports the study of

Joshi et al., (2010); Negi (2009) and Wang & Lo (2002) that network quality is the best predictor of service quality in the telecom sector. The implication of this result, the availability of 7 days and 24 hours network connection without break, high and consistence speed of broadband internet service of Ethio telecom have a significant and positive influence on customer satisfaction. Considering each SERVQUA dimensions, the result has appreciated as there is positive and statistically significant ($p< 0.05$, $\beta= 0.274$) relationship between responsibility and customer satisfaction towards ADSL broadband internet services. And next to network aspect, responsiveness is the second most predictor of customer satisfaction among the entire service quality dimensions used in this study. Thus, this finding confirms sub-hypothesis one of ($H_{1.3}$) that responsiveness has positive and significant effect on customer satisfaction. The result indicates that the attributes such as ET have operating hours convenient to its customers; employees who involve in the delivery of the service (such as Front line and sales persons) will give prompt service, will never be too busy to respond to customers request promptly and are willing to help to customers have positive and significant effect on customer satisfaction of ADSL broadband internet service of ET. The result also appreciated there is positive and significant ($p < 0.05$, $\beta = 0.124$) relation between assurance and customer satisfaction. This means assurance attributes like ET employees do tell customers exactly when the requested broadband service be performed; when ET employees promise to do something by a certain time, they will do so; ET employees do have the knowledge to answer customers' questions and customers will feel assured that service requests are duly (properly) followed up have positive and significance effect on customer satisfaction and **(H1.4)** is supported. Further there is also a positive and significance relationship b/n overall customer satisfaction of broadband internet service and Empathy (at $p< 0.05$, $\beta= 0.163$), Reliability (at $p< 0.05$, $\beta= 0.211$). And this means the attributes of Empathy (ET Employees will be consistently nice or courteous with customers, will give customer individual attention; further when a customer faces a problem, employees of service provider do show a sincere interest in solving it; and overall Employees of service provider do have their customer's best interests at heart) and Reliability (The behavior of ET employees creates confidence in customers; the broadband internet service is provided at the promised time; ET employees do understand the specific needs of their customers; and ET does keep its records accurately) have a positive significance influence on broadband internet customers' satisfaction of ET. And hence, sub-hypothesis one (**H1.1, H1.2 & H1.5)** are supported by the result and consistent to the study of Joshi et al., (2010); Negi (2009) and Wang & Lo (2002).

5. Conclusion and Recommendation

Conclusion: on the whole, the study has successfully achieved the objective of investigating the effect of service quality on customer satisfaction towards ADSL broadband internet services provided by Ethio telecom with special reference to small and medium enterprise (SME) in Hawassa city, which has examined the effect of tangibility, reliability, responsiveness , assurance , empathy and network quality on customer satisfaction and validated the hypothesized connection between the independents and dependent variables.

- ✓ The overall finding revealed that, all factors identified had positive and statistically significant effect on customer satisfaction. Even though it has high influence in overall view, the most influential factors are network quality, responsiveness and reliability whereas assurance, empathy and tangibility had considerable effect on consumer customer satisfaction towards ADSL broadband internet service with reference SME customers in Hawassa City context.
- ✓ It is strongly concluded that network quality was essential to the customer which clearly shows that customers pay due attention on the output of services apart from the process of service delivery and functional service quality.
- ✓ The study also further disclosed that the overall quality of ADSL internet service provided by Ethiotelecom was below customer expectation and rated low.
- ✓ Regarding to the overall customer satisfaction, one can conclude that SME subscribers were not satisfied with ADSL internet service as they rated their satisfaction level too low.

Recommendations: This study finding contributes some managerial implications for the business in telecom services which had targeted almost all people of the country. The study shows network quality, the company's responsiveness, service reliability, assurance, empathy and tangible factors have a positive and significant effect on customer satisfaction towards ADSL broad band internet service. According to this study, Telecom Company can generate more powerful marketing strategy by concentrating on these important factors. As it clearly indicated in the analysis and conclusion, Ethio telecom SME customers' perception about service quality dimensions and overall satisfaction is at lower rate. In order to perform well in service quality dimensions and satisfy customers, the following recommendations may help to address the problems identified.

- ✓ Network quality is the most predictor of service quality and has also significant effect on determination of customer satisfaction. Therefore, the company should improve its network coverage available, high and consistence speed, because it is the network quality in which customers are complaining. More specifically, the company should improve provisioning of its services and delivering or providing network of 24 hours a

day and 7 days a week without break, broadband internet speed to high level, and consistent speed of broadband internet service without major interruptions, there shouldn't be significant delay over maintenance of broadband connection and others courses of action is better to take place.

- ✓ Responsiveness has also significant effect on determination of customer satisfaction. The company should improve the responsiveness by improving the commitment of its employees to keep customers informed when service will be performed, to give prompt service & to be busy to respond to customers' request promptly and willing to help to customers.
- ✓ Reliability is the third predictor of service quality and customer satisfaction. Therefore, the company should improve provisioning of its services and delivering the services as premised time to the customers, improve in creating error free customer profile and improving resources management related to recording and documentation systems and simplify or modernize its bill payment systems.
- ✓ Regarding to the assurance and empathy dimensions, since these two factors have also significant effect on determination of customer satisfaction, the company has to give a due attention on improving the issues that affect them. The company should improve the assurance of its broadband internet service provisioning; this is related with how the company's performance in creating assurance for customers by showing whether their requests are duly/properly followed up. This can be done by improving the knowledge, motivation and commitment of its employees, especially these who involve directly or indirectly in the provisioning of its services; where by providing different training or incentive schemes the company has to minimize customer-to-employee contacts so as to minimize problems related with employee behaviors, this also can be improved by modernizing and improving its customer care and service processes, easing the accessibility to its toll-free numbers and websites for customers for clarification of problems and to know account status. In addition to improving its records management and customer problem handling process, the company should also simplify or modernize its bill payment systems and scratch cards distribution systems.
- ✓ Management effort and intensive strategy should be geared towards improving the network quality, reliability, and responsiveness service quality dimensions. Since customers' dissatisfaction and importance rating on the service quality dimension is different, the company should give priority to the customer.

Implication for Further Studies

- ✓ This study assessed only the effect of service quality on customer satisfaction by only studying ADSL and SME subscribers. So, it is difficult to generalizing all customers of Ethiotelecom are satisfied or dissatisfied based on this study. This is due mainly it did not consider sample groups from key account customers and residential. Therefore, it is recommended to undertake further studies that consider the limitations in this regard and broaden the scope.
- ✓ Another issue that needs to be looked into is the image of the company, which has a strong effect on the perceptions of service quality and customer satisfaction. To this end, it would be good if future studies focus on the use of other relevant models such as the Gronroos model of service quality, which focuses on measuring service quality based on three parameters namely functional quality, technical quality and image of the company.
- ✓ In general, it would be valuable to conduct further research concerning employing concepts such as customer satisfaction with price affordability, usage rate, intention to use new service and financial performance to provide more in-depth insight. Thank you.

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