

**T.C.
ISTANBUL AYDIN UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**



**THE EFFECT OF SERVICE QUALITY ON CUSTOMER SATISFACTION
AND CUSTOMER LOYALTY: A RESEARCH ON CUSTOMERS OF SUDAN
TELECOMMUNICATION COMPANIES**

MASTER'S THESIS

Sara Abdelbagi Mohamed ABDELRAHIM

**Department of Business
Business Administration Program**

JUNE, 2023

**T.C.
ISTANBUL AYDIN UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**



**THE EFFECT OF SERVICE QUALITY ON CUSTOMER SATISFACTION
AND CUSTOMER LOYALTY: A RESEARCH ON CUSTOMERS OF SUDAN
TELECOMMUNICATION COMPANIES**

MASTER'S THESIS

**Sara Abdelbagi Mohamed ABDELRAHIM
(Y2012.130029)**

**Department of Business
Business Administration Program**

Thesis Supervisor: Assist. Prof. Dr. Muhammed Talha NARCI

JUNE, 2023

APPROVAL PAGE

DECLARATION

I hereby declare with respect that this study work entitled “the effect of service quality on customer satisfaction and customer loyalty: Sudan telecommunication companies” which I submitted as a master thesis to Istanbul Aydin University was written without any defilement of scientific ethics and tradition from the introduction phase to the conclusion of the study, and all sources from which I profited were referenced accordingly.

Sara Abdelbagi Mohamed ABDELRAHIM

FOREWORD

First and foremost, I would like to express my heartfelt gratitude and appreciation to Allah, for granting me the opportunity, knowledge, and strength to undertake and complete this master's thesis. His blessings have been instrumental in every step of my academic journey.

I award my success to my forever supporters, my family. To my backbone and my first best friend since ever, my father Abdelbagi, and to my mother Afaf, whose prayers didn't let me down since day one. I am truly indebted for their unwavering love, encouragement, and belief in my abilities. Their constant support, understanding, and sacrifices have been the cornerstone of my academic achievements.

I would like also to extend my deepest appreciation to my supervisor, Assist. Prof. Dr. Muhammed Talha NARCI, for his invaluable guidance, expertise, and continuous support. I am immensely grateful for his mentorship, which has played a pivotal role in shaping the outcome of this thesis. His dedication, patience, and commitment to my academic and personal growth have been truly remarkable.

Furthermore, I would like to express my gratitude to my friends who have stood by me and provided me with their unwavering support throughout this journey. Your presence, discussions, and companionship have made this journey memorable and enjoyable.

Lastly, to everyone mentioned above, and to those who have supported me in any way, and have contributed directly or indirectly to the completion of this thesis, thank you from the bottom of my heart. Your unwavering support, patience, and belief in me have made this accomplishment possible. May Allah bless each and every one of you abundantly for your kindness and support

June 2023

Sara Abdelbagi Mohamed ABDELRAHIM

THE EFFECT OF SERVICE QUALITY ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY: A RESEARCH ON CUSTOMERS OF SUDAN TELECOMMUNICATION COMPANIES

ABSTRACT

Over the last decade, the competition and advancement in information communications technology seems to be exerting pressure on managers in this industry to demonstrate customer-focused, and maintain customer base than before, as a way to ensure customer satisfaction and brand supremacy. For such reasons, the telecom service providers are massively implementing numerous attractive campaigns and innovative promotions for continuous service improvement and keep devoted clients. In the meanwhile, it's important to consider that in marketing schools, acquiring satisfaction and loyalty of consumers stated as the measures of how service and product meet their expectations.

This research looked to pick Customers of middle- and upper-class telecom firms in metropolitan Sudan who are made up the study's target audience. A convenient sampling technique was used in this research with the use of questionnaire as a data collection method. Service quality, customer satisfaction, and customer loyalty scales were adopted in this study with the total of 39 questions divided into 4 sections. On the other hand, there were fully functional 464 questionnaire were distributed online with the use of google form survey tool. Descriptive and inferential statistics were utilized in the study to examine the data using SPSS software Version 26, with the use of Cronbach alpha reliability test, and other descriptive statistics, after that empirical test using regression modelling technique was used to test the model and hypothesis.

As indicated by the study, service excellence has a positive impact on customer satisfaction and loyalty, this study aid to investigate the connection

between service quality, customer satisfaction, and customer loyalty, give telecommunication companies a broad picture to understand what customers prefer, by illustrating their feedback on services they obtain, and demonstrating how service quality has effects on satisfaction and increase loyalty, which lead to provide better services that contribute to enhance highly competitive market within Sudan telecom companies.

Keywords: Telecommunication, Service Quality, Customer Satisfaction, Customer Loyalty, Sudan telecom

HİZMET KALİTESİNİN MÜŞTERİ MEMNUNİYETİ VE MÜŞTERİ SADAKATI ÜZERİNDEKİ ETKİSİ: SUDAN TELEKOMÜNİKASYON ŞİRKETLERİ MÜŞTERİLERİ ÜZERİNE BİR ARAŞTIRMA

ÖZET

Son on yılda, bilgi iletişim teknolojilerindeki rekabet ve ilerleme, müşteri odaklılık ve müşteri tabanını koruma konusunda bu sektördeki yöneticilere daha önce olduğundan daha fazla baskı yapmaktadır. Müşteri memnuniyetini sağlamak ve marka üstünlüğünü garanti altına almak için telekom hizmet sağlayıcıları çekici kampanyalar ve yenilikçi promosyonlar uygulamaktadır. Bu nedenlerle, pazarlama okullarında tüketicilerin memnuniyet ve sadakat kazanmanın, hizmet ve ürünün beklentilerini ne ölçüde karşıladığının bir ölçüsü olduğu belirtilmektedir. Bu araştırma, metropol Sudan'daki orta ve üst sınıf telekom şirketlerinin müşterilerini hedefleyen bir çalışma kitlesinden oluşan müşterileri seçmeyi amaçlamıştır. Bu çalışmada uygun örnekleme tekniği kullanılarak anket kullanıldı. Hizmet kalitesi, müşteri memnuniyeti ve müşteri sadakati ölçekleri bu çalışmada kullanıldı ve toplamda 39 soru 4 bölüme ayrıldı. Öte yandan, Google Form anket aracı kullanılarak çevrimiçi olarak dağıtılan tamamen işlevsel 464 anket bulunmaktadır. Araştırmada SPSS yazılımı Versiyon 26 kullanılarak tanımlayıcı ve çıkarımsal istatistikler kullanıldı, Cronbach alfa güvenilirlik testi ve diğer tanımlayıcı istatistikler kullanıldıktan sonra model ve hipotezi test etmek için regresyon modelleme teknikleri kullanıldı. Araştırmaya göre, hizmet mükemmeliyetinin müşteri memnuniyeti ve sadakati üzerinde olumlu bir etkisi vardır. Bu çalışma, telekomünikasyon şirketlerine müşterilerin tercihlerini anlamak için genel bir resim sunarak, aldıkları hizmetler hakkındaki geri bildirimlerini göstererek ve hizmet kalitesinin memnuniyet üzerindeki etkisini ve sadakati artırarak daha iyi hizmetler sunmaya katkıda bulunarak Sudan telekom şirketleri arasındaki son derece rekabetçi pazarı geliştirmeye yardımcı olur.

Anahtar kelimeler: Telekomünikasyon, Hizmet Kalitesi, Müşteri Memnuniyeti, Müşteri Sadakati, Sudan telekom

TABLE OF CONTENT

DECLARATION	i
FOREWORD	ii
ABSTRACT	iii
ÖZET	v
TABLE OF CONTENT	vii
ABBREVIATIONS	x
LIST OF TABLES	xi
LIST OF FIGURES	xii
I. INTRODUCTION	1
A. Background	1
B. Problem Statement	2
C. Research Objectives	3
D. Research Question.....	3
E. Scope of the Research	4
F. Significance of Research.....	4
G. Organization of Research.....	5
II. LITERATURE REVIEW	6
A. Quality.....	6
B. Service Concept	7
C. Service Quality.....	8
1. Reliability	10
2. Assurance	11
3. Tangible.....	12
4. Empathy	12
5. Responsiveness	13
D. Service Quality and Telecommunication Sector.....	13
1. Network Quality.....	14
2. Perceived Customer Value.....	15

E.	Customer Satisfaction	15
F.	Customer Loyalty.....	16
G.	Customer Loyalty and Service Quality: A Relationship.....	17
H.	Associating Service Quality and Customer Satisfaction.....	18
I.	Telecommunication Industry in Sudan	20
J.	Conceptual Framework	23
K.	Hypotheses of the Research	23
III.	RESEARCH METHODOLOGY	24
A.	Research Design, Population and Sample Size.....	24
B.	Sample and Sampling Technique.....	25
C.	Research Instrument.....	26
D.	Validity and Reliability of the Questionnaire	27
E.	Data Collection Method	27
F.	Data Analyses Method	28
IV.	DATA ANALYSIS AND RESULTS	29
A.	Characteristics of respondents.....	29
1.	Gender	29
2.	Age	30
3.	Level of Education	30
4.	Marital Status	31
5.	Monthly Income	31
6.	Year of using telecommunication services	31
7.	Line Type	32
8.	Tariff Plan	32
B.	Reliability Analysis.....	33
1.	Cronbach's Alpha Test.....	33
C.	The Means of Service Quality, Customer Satisfaction and Customer Loyalty	34
1.	SERVQUAL	35
D.	Correlations	36
E.	Regression Test of Service quality impact on customer satisfaction in the telecommunications sector.....	37
1.	Hypothesis Testing.....	39
F.	Regression Analysis of Service quality impact on customer loyalty	40

1. Hypothesis Testing.....	40
G. Regression Analysis of customer satisfaction impact on customer loyalty ...	41
1. Hypothesis Testing.....	42
V. RESULTS AND DISCUSSION	43
VI. CONCLUSION.....	46
A. Conclusion	46
B. Research Implications	47
C. Limitation and Further Research Direction.....	48
VII. REFERENCES.....	49
APPENDIX	60
RESUME.....	72

ABBREVIATIONS

ICT : Information and communication Technology

NTC : National Telecommunications Corporation

SERVQUAL : Service Quality

SPSS : Statistic Packages For Social Sciences

LIST OF TABLES

Table 1. Demographic characteristics of respondents (Gender)	29
Table 2. Demographic characteristics of respondents(Age)	30
Table 3. Demographic characteristics of respondents(Education).....	30
Table 4. Demographic characteristics of respondents(Marital Status)	31
Table 5. Demographic characteristics of respondents(Monthly Income)	31
Table 6. Demographic characteristics of respondents(years of using mobile)	32
Table.7. Demographic characteristics of respondents(Line type).....	32
Table 8. Demographic characteristics of respondents(Tarrif plan).....	32
Table 9. Case perocessing summary	33
Table 10. Cronbach’s Alpha Values of the Scales.....	34
Table 11. Descriptive Statistics.....	35
Table 12. Customer Satisfaction	36
Table 13. Customer Loyalty.....	36
Table 14. Correlations	37
Table 15. Model Summary.....	38
Table 16. ANOVA ^a	38
Table 17. Hypothesis Testing.....	39
Table 18. Model Summary.....	40
Table 19. ANOVA ^a	40
Table 20. Hypothesis Testing.....	40
Table 21. Model Summary.....	41
Table 22. ANOVA ^a	41
Table 23.: Hypothesis Testing.....	42

LIST OF FIGURES

Figure 1. SERVQUAL Framework Showing Service Quality Dimensions.	10
Figure 2. conceptual framework	23

I. INTRODUCTION

The potential for service growth is greater in a developing nation like Sudan. Services are actions, procedures, and outputs (Parasuraman et al., 2005; Zeithaml, 1988). Services are typically defined as "economic activities that produce a price and provide benefits for consumers at specific times and locations because it caused the beneficiary of the services to change in the way they wanted." A service provider's ability to succeed is largely reliant on the caliber of their relations with their clients, which affects their ability to win over and keep their business (Ismail et al., 2009; Mukherjee et al., 2017).

An important principle of service marketing is service quality. Due to the intense market rivalry today, developing long-term relationships becomes essential, and consumer loyalty is an increasing problem. Due to the intense rivalry, the service provider is now forced to fight in the market and set itself out from the competition on grounds other than pricing. As a result, the concept of service quality has come into being and gained popularity. A competitive advantage for the business comes from improved service quality. By offering high-quality services, every service provider can set themselves apart (Jamal and Anastasiadou, 2009).

In order to notify professionals to improve service quality to reduce customer loss and to offer solutions for doing so, this study intends to evaluate how service quality influences consumer satisfaction and loyalty. When formulating strategy, the research's findings suggest emphasizing components of service quality that affect customer satisfaction should be given top priority to encourage clients to stick around for a longer time. This could aid in developing plans to keep devoted clients.

A. Background

Consumer perception or appraisal of products or services following use is the standard definition of customer satisfaction. Past studies show that retaining a competitive edge and being a key success factor for any modern service business

both depend on quality. A competitive advantage is a crucial success component for any modern service organization (Kant and Jaiswal, 2017; Oh and Kim, 2017). According to Parasuraman, "the overall evaluation of a single service firm that results from contrasting that firm's performance with the general expectation of consumers regarding how corporates in that sector should operate" (Parasuraman et al., 1985).

The primary focus of this study is service quality, understanding what it is, how it benefits users, and why it needs to be monitored is so crucial. Several business and public sectors around the world have published a wealth of literature on how to quantify service quality. The majority of the material is offered in one of the following industries: banking, education, travel, lodging, or dining. In the current global economic downturn, the firm's retention, profitability, and productivity depend most heavily on service quality, customer satisfaction, and loyalty.

The significance of service excellence must be considered more than any other factor when establishing how the client expectations and opinions of a business's level of customer service will manifest. Customers and businesses both value how well a company serves them, whether that service is in production, in the service industry, or in retail.

Businesses must use technology to gather data on customer demand and improve service quality in order to stay competitive. Scholars urge greater investigation into the connection between service quality with customer satisfaction and loyalty in various enterprises because the empirical evidence of enterprises that is now available is limited to a few industries (Shafei and Tabaa, 2016). The extremely competitive telecommunications sector is leading the way in accepting technological advancement, which has a big impact on other industries. As a result, it offers a crucial background for studies on the connection between service quality with the customer satisfaction and loyalty (Heggde, 2011; Van Der Wal et al., 2002).

B. Problem Statement

According to the literature, many businesses use service excellence as a differentiator. In today's fiercely competitive, industrialized, and globally interconnected markets, this is even more obvious. Customers are necessary for any

firm to succeed and the telecommunications industry is no exception. Several research on customer satisfaction and the relationship between service quality with the customer satisfaction and loyalty in industrialized nations have been conducted using the SERVQUAL (service quality) model.

Unfortunately, the telecom industry in developing nations have seen very little research in this field. Because we want to comprehend how service quality functions in a developing country, we chose Sudan for this study as a developing country. The SERVQUAL scale has made it feasible to fairly understand service quality dimensions including empathy, reliability, responsiveness, tangibility, and assurance. This study intends to investigate the connection between service quality, customer loyalty, and customer satisfaction. Understanding how service quality affects customer satisfaction and loyalty would help Sudan telecom companies better satisfy their customers.

C. Research Objectives

The objectives of the study are as follow:

Objective 1: To examine the service quality's effect on customer satisfaction in the telecommunications sector.

Objective 2: To examine the service quality's effect on customer loyalty in the telecommunications sector.

Objective 3: To examine the customer satisfaction effect on customer loyalty in the telecommunications sector.

D. Research Question

These considerations suggest the following research questions:

Question 1: What is the effect of service quality on customer satisfaction in the telecommunications sector?

Question 2: What is the effect of service quality customer loyalty in the telecommunications sector?

Question 3: What is the effect of customer satisfaction on customer loyalty in the telecommunications sector?

E. Scope of the Research

This study aims to explore whether, in the Sudanese telecom sector, service quality is associated with customer satisfaction and loyalty. This study concentrates only on the Sudan industrial culture scenario. The data will be collected from telecom service users of Sudan. The time limitation for this research is 6 months. The results of this study will be useful for telecom service providers in Sudan as they develop their product and service to increase customer delight, keep consumers, and grow the telecom business sustainably.

F. Significance of Research

This study makes several contributions. First, to the management of telecommunication companies in Sudan, this study will provide reliable scientific results and findings on how service quality affects consumers. This study will give insight into how the market of Sudan operates and informing them how customers respond to the different marketing strategies employed. The study will further identify challenges faced by telecommunication companies, weaknesses and strengths as well illustrating how these factors strongly affect consumer buying behaviors in Sudan. On the other side, this study will give telecommunication companies a broad picture to understand what customers prefer. Since the researcher is more interested in finding out whether consumers are satisfied or not, the study will explain the importance of SERVQUAL dimensions. Customers will then determine whether telecom companies provide services that satisfy their interests. The study will also contribute to the knowledge (suggestions) of customer satisfaction to companies as far as Sudan's telecommunication industry is concerned. The management of telecom companies can use customer suggestions, provided by this study, .as an opportunity to position themselves in the market and to tailor satisfying services that can give the company a competitive advantage. In the end, the study will also contribute to a wide range of literature and scholarly related works as far as the mobile telecommunication sector in Sudan is concerned. Currently, there is less literature to support arguments made by some studies concerning the telecommunication industry in Sudan. This study, therefore, sets the stage for more empirical studies to be conducted into the telecommunication industry in Sudan.

G. Organization of Research

This research is based on a total of six chapters including References/bibliography and appendix.

Chapter 1 – Introduction consists of Introduction, background, problem statements, research objective, research questions, the scope of the study, and significance of the study.

Chapter 2 – Literature Review shows a detailed study performed by different practitioners and academicians in the field of telecommunication, overall service quality, customer satisfaction, and customer loyalty.

Chapter 3 – Research Methodology based on the study-related nature of research, research design, targeted population, sample size, data collection method, research instrument, and data integration method.

Chapter 4 – Data analysis Results include data analysis and hypothesis interpretation.

Chapter 5 – Discussion provides a critical debate on the study findings.

Chapter 6 – Conclusion and Recommendation consist of conclusion, recommendation, limitation of the research, and suggestions for future research.

II. LITERATURE REVIEW

The significance of the telecommunications industry to an economy cannot be overstated. This is due to the fact that it serves as the primary method for carrying out every single action and operation. It facilitates decision-making, planning, organizing, motivating, educating, giving feedback, fostering interpersonal and professional relationships, and information sharing. Telecommunication is used in all public, monetary, governmental, cultural, and business actions. Communication obstacles between and among big groups of people, individuals, cooperative organizations, and governmental agencies have been greatly reduced thanks to mobile telecommunication networks. Telecommunications services have grown to be crucial components of various nations' socioeconomic development (Heggde, 2011).

The existing literature is reviewed in this chapter to identify the pertinent ideas that are crucial to the investigation. A brief introduction to quality, service, service quality, customer satisfaction, and customer loyalty will be provided at the beginning of the chapter. The chapter will also examine the research gap and provide a theoretical framework.

A. Quality

For all corporate bodies, the concepts of quality, efficiency, productivity, growth, and survival pose a serious challenge to survival and growth. Every successful business place a high priority on its clients, the demands for growth and survival are further exacerbated by the requirement to draw in and keep clients. Understanding and satisfying the wants and demands of consumers is essential to a company's success.

Quality can be described as the superiority and excellence of an organization's goods and services. The ability of businesses to choose which products to provide results in superior products. However, this offer should not be taken literally; it should be high of quality and capable of accommodating clients'

needs (Zeithaml, 1988).

Researchers defined quality in a variety of ways, including as superiority or excellence, going above and beyond what customers want, adding value through productive endeavors, compliance to requirements, and many more definitions (Pleger Bebko, 2000; Sivadas and Baker-Prewitt, 2000; Zeithaml, 1988). So, it is evident that there is no consensus on what constitutes quality. Researchers' inability to produce a unified definition of excellence has left it open for everyone to create their own.

Customers distinguish quality in the telecom industry based on price, reliability, and internet speed. In some industries, a high price automatically equates to high quality, and vice versa. Mobile telecom providers, however, run the danger of losing clients if they offer more prices for related data plans than their rivals do. These few characteristics operate as powerful cues for clients to be drawn to high-quality services. Consumers always want dependable services. Goods that make them happy also provide solutions to their current and upcoming issues. Customers compare their expectations with their perceptions of the products before making a purchase. Producers to monitor consumer preferences about quality. Businesses use the SERVQUAL instrument to quantify the differences between customer perceptions and expectations. This suggests that this tool is a reliable signal for businesses to learn which characteristics matter to customers.

B. Service Concept

A service is something of a fictitious or immaterial nature. A service and a product are typically not distinguished from one another. Services are nonetheless grouped generically as a component of the production process. Services were previously described as outputs of actions rather than physical things. However, since some services, like restaurants and clinics, have significant tangible components, they may not always be distinguished from products (Morgan, 1988; Previte and Robertson, 2019).

Services are used just as they are created. Services are produced in and throughout the process, and it's conceivable that a consumer participates as a co-producer. Only symbols like coupons, certificates to agents, and airtime vouchers can

be used to prove ownership.

The service idea was identified by Fynes and Lally as a crucial element of the processes of service innovation, service design, and service development that seek strategic benefits. Their investigation examined a variety of published works and discovered that the service notion revolves around value (Fynes and Lally, 2008).

According to the existing literature, the concept of a service is a process. Yet it doesn't explain how the service notion may be applied in businesses. The service idea is defined by numerous earlier scholars, who also explain how to incorporate it into systems to improve various service design procedures. They believe that managers and designers must make decisions regarding each individual service component when creating a new or improved service. They also emphasize the necessity of decision-making at all organizational levels. They did note one current issue facing service organizations, though. The difficulty of making decisions that are consistent at every level while concentrating more on providing services to target clients. As a result, for clients to view the services accurately, they must operate without interruption (Anselmsson and Johansson, 2014; Mahr et al., 2019; Ponsignon et al., 2011).

C. Service Quality

In the 1880s, the trend of service quality was introduced to establish a competitive advantage as firms realized that the quality of the product is the only assurance to maintain a competitive edge (Van Der Wal et al., 2002). Zeithaml and Malhotra well-defined service excellence as “the comparison of buyers’ hope and realization of services”. perceived service excellence shows positivity in telecommunication sector such as higher buyer satisfaction, and good feedback from a customer in the form of repurchasing and sharing good words about the product (Zeithaml et al., 2002). The work conducted by them is the most well-known and reveals ten types of dimensions.

Service quality is described as the activity of individuals or activates of groups of people, intangible nature which occurs or takes place always between consumers and teams of service providers, and it can happen physically as well when it comes to goods or tangible products. Researchers explained that Excellence of

service is a measurement of how customers get satisfaction and the experienced they have had in telecommunication sector (Sabiote et al., 2012; Zhang et al., 2022). Namukasa defined excellence of service as reflected by the buyer's perception of provided services and the expectations of the customers. He observes that "service excellence depends on the requirement of customer's and need, and the level of services delivered to the customers must meet the expectation of the customers (Namukasa, 2013). Many authors agreed that there are two main components of the service quality, following the so-called "European perspective": technical quality, functional quality (Bhat and Darzi, 2020; Chiu et al., 2009).

Numerous research has discovered a connection between client happiness and the caliber of services rendered. High-quality services must first satisfy the needs of the client. The most popular system for assessing service quality was created by Parasuraman and is called the SERVQUAL Scale. The 22-item scale that is used to rate the quality of a service both before and after. It is including five categories: tangibles, reliability, assurance, empathy, and responsiveness (Parasuraman et al., 2005).

SERVQUAL is multi-dimensional model that consider as the essential most appropriate instrument that assess service excellence, this method was develop to measure customer service and the satisfaction of service they perceived. SERVQUAL scale is widely used by academic researchers, and has been applied to various service industries. The scale was firstly discover by Parasuraman, Berry, and Zeithaml in 1985 (Parasuraman, Zeithaml, & Leonard , 1985) then later tested and refined the model from (1988- 1994) to reach its final stage. The scale has 5 dimensions with total of 22 items divided into those five dimensions as follow:

Tangibles, assurance and responsiveness comprising four items, on the other hand reliability and empathy containing five items.

SERVQUAL method was developed based on data from five service industries, including, credit card companies, telephone services, repair and maintenance, securities brokerages, and retail banking. It has been tested and use to measure service excellence in various contexts (Wymer, Zhu, & Chen, 2002).

The discrepancy between a customer's expectations prior to and after using a service determines how satisfied or dissatisfied, they are. Additionally, studies back

up the notion that customers' expectations of the caliber of a service may be affected if they are exposed to more promotional materials about a company. A client's opinion of the service quality can be gathered from organizations that supply services and have well-developed customer relationship management systems to increase the satisfaction of their customers (Clow and Vorhies, 1993; Munawar Khan and Fasih, 2014; Zeina T Al Hakim and Bassem E. Maamari, 2017).

In order to address service quality, prior studies have also examined the differences between consumers' expectations for service quality and the actual service received. The chart below shows how customer satisfaction can be impacted by the five service quality criteria of tangibility, reliability, assurance, empathy, and responsiveness (Khan and Fasih, 2014). This study will concentrate on the aspects of servqual that allow technique for assessing and managing service quality (Buttle, 1996; Sureshchandar et al., 2002; Tambi et al., 2008).

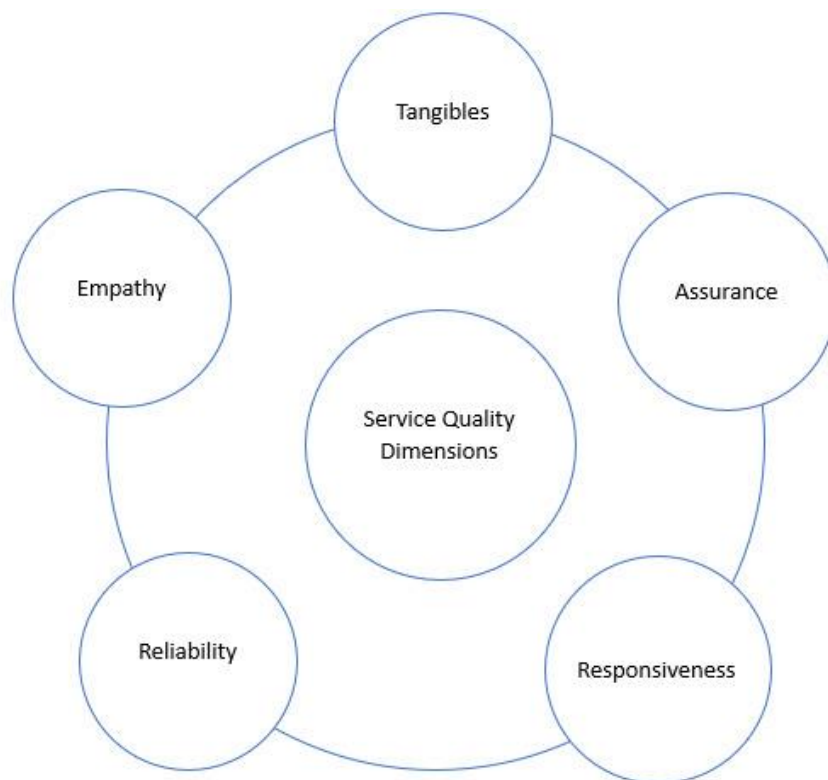


Figure 1. SERVQUAL Framework Showing Service Quality Dimensions.

1. Reliability

The capacity to consistently and exactly provide the service that has been promised is known as reliability. According to past researches reliability is one of the

strongest predictors of service quality and customer satisfaction is favorably influenced by reliability in the banking, hotel, telecommunications, and retail industries, accordingly (Hernon et al., 1999; Rareş, 2014).

One of the main factors influencing service quality continues to be reliability. In a nutshell, reliability refers to the capacity to consistently meet customers' expectations, respond to their issues in a timely manner, and maintain an error-free track record. Many researchers determined that dependable businesses provide services in the proper way. So, another definition of reliability is the capacity to deliver services dependably, accurately, and with the capability of addressing consumer issues (Knop, 2019; Lee and Kim, 2012; Ocampo et al., 2019).

Consistency and reliability are related concepts. The term consistency describes how items and pieces are compatible and consistent. According to Frei et al., service quality calls for consistency of service output around a perfect goal value chosen by clients (Frei et al., 1999).

2. Assurance

The capacity of a company's employees to motivate confidence and trust by their knowledge, courtesy, and other qualities is known as assurance. Assurance is a factor that affects service quality in the telecommunication industry. It also has an impact on how customers perceive employee competence, which is essential for gaining the trust of clients. In the banking and telecommunications industries, assurance plays a critical role in service quality and positively affects customer satisfaction (Erdil and Yildiz, 2011; Petridou et al., 2007; Yeo et al., 2015). Lee came to the conclusion that customers expect businesses to lead their respective industries in the solutions they provide. Customers are reassured that they can trust you when you demonstrate your expertise, whether by listing your qualifications and professional certificates or by posting client testimonials (Lee and Kim, 2012).

When clients have a wide range of choices yet are unsure of whom to believe when making a purchase, assurance is essential. Imagine you are in charge of an online shop. You must understand how to stand out and win clients' trust given that they are constantly inundated with marketing from possibly dishonest internet retailers.

3. Tangible

Tangible, for instance, include equipment and staff look. Several studies' findings indicate that customer issues are less effectively solved by tangibles and have less bearing on how well services are perceived in the telecommunication industry. But other studies claimed that tangibles are important to forecast customer satisfaction in numerous sectors (Mukherjee et al., 2003; Parasuraman et al., 1985).

The majority of the time, tangible assets are objects manufactured by humans. Physical attributes like tools, facilities, and personal appearance are referred to as tangible dimensions in previous studies (Krishnamurthy et al., 2010; Sureshchandar et al., 2002). One of the key factors in the telecom business that persuades clients to enter shop halls and make service purchases are tangibles like Sim card packets and telecom network shop interior design. Because of this, tangibility should always be adjusted to match customer perception and expectation.

4. Empathy

Empathy is the kind of considerate, one-on-one service that a business offers its clients. Researchers in the past have suggested that clients should receive tailored service and treatment. Businesses should demonstrate empathy for their clients, just as they would if they were giving them personalized service. The past studies' findings also demonstrate that, in the telecommunications industry, empathy is a strong predictor of customer satisfaction (Lecompte and Goetz, 2016; Parasuraman et al., 1985).

Giving customers individualized attention is the definition of empathy. It is thought that empathy is innate and cannot be learned. Due to the courteous treatment clients receive from personnel, customer loyalty grows. Employees with empathy are reported to be able to recognize the wants of consumers and are also recognized for customizing their engaging behaviors to meet the demands of certain clients. Also, as personnel gets more adept at recognizing their clients, customer satisfaction levels rise. Customers' needs and wants change daily in a developing society, and it is always the responsibility of businesses to satisfy those needs. When their needs are not satisfied, they are forced to look for alternative providers (Giacobbe et al., 2013; Moorman et al., 2019).

5. Responsiveness

Response time and customer-friendly behavior are referred to as responsiveness. For many company sectors, responsiveness is a critical component of client satisfaction. In addition, customer satisfaction is significantly predicted by responsiveness (Parasuraman et al., 1985; Zeithaml et al., 2002).

The capacity to respond quickly and adaptably to client needs is known as responsiveness. Past studies have shown that responsiveness, The second most important characteristic, after reliability, was self-knowledge, It include achieving important personal needs and goals as well as understanding one another so that the partners may understand and support one another. It also embraces the idea of adaptability and the capacity to create services that meet the client requirements (Krishnamurthy et al., 2010; Parasuraman et al., 1985). On the other hand, some investigations discovered that public sector telecom service provider' poor responsiveness was a significant contributor to consumers' discontent since these telecom service providers' fail to offer fast service and because workers are overworked and unwilling to assist the clients. So, it can be inferred from the claims that the responsiveness aspect of Customer satisfaction will be significantly impacted by service quality, particularly in the service sector (Bolton and Drew, 1991; Saleh and Ryan, 2006).

D. Service Quality and Telecommunication Sector

Six main factors can be used to assess the level of service quality: the billing system, communication service, cell phones, service and support, value-added offerings, and price structure offered by the business (Wen & Hilmi, 2011).

Dropped calls' frequency, voice quality, and coverage are used to gauge network, often referred to as network quality. Loudness, the degree of distortion present during the conversation, and the Considerations are made for voice tone when gauging voice quality. When a customer subscribes to a mobile plan, they are typically offered a discounted mobile device, which can draw in new customers (Shafei et al., 2016, Santouridis et al., 2010; Lim et al., 2006, Lim et al., 2004).

Mobile devices are rated according to their quality, diversity, and design when gauging service quality. When it comes to telecommunications services, a

company's ability to fulfill a service or deliver an item to the consumer as committed is used to judge its customer service performance (Munyanti, and Mastrom, 2018, Shafei et al., 2016).

Researchers came to the conclusion that when selling customers products and services, the service provider should give full solutions. As a result, the amount of customer service a representative provides will be defined by a skill set that consists of knowledge, decorum, exceptional listening abilities, and a readiness to make concessions in order to solve an issue (Jeng et al.2012, Munyanti, and Mastrom, 2018).

Moreover, it also refers to the system for customer assistance, the method for addressing complaints, and the ease with which complaints can be reported. If the level of customer service did not reach their expectations, the majority of customers would be dissatisfied. The value-added service provided by the company includes traditional voice services like caller melodies or custom ringtones, horoscope topics, and daily news updates (Tripathi et al., 2009, Kim et al., 2004).

Several researchers have classified the accurateness of billing and the service provider's ease of access as value-added services. Price is referred to as the sum of money that must be paid for the client to receive the goods or service (Cronin and Taylor, 1992; Ojo et al., 2010) .

In relation to the telecommunications industry, the price includes costs associated with maintaining the relationship between the service providers as well as the cost of the items being purchased, such as SIM cards, recharge vouchers, SMS charges, internet charges, and phone prices. Price, then, is a crucial element that influences how customers make decisions. Since it represents the caliber of communication between the business and the consumer, the correctness of the billing system is one of the service quality dimensions (Arman Khan et al., 2021; Lee et al., 2001; Santouridis and Trivellas, 2010).

1. Network Quality

Many researchers recognized two components of service quality: service quality: technical and functional i.e. what services are provided and how clients are served. By employing resources, customers can see the method's technical or final product quality in what they receive, but they can also see the functional or process

quality of the process itself. It could be difficult to evaluate the "what" or technical excellence of some services (Crosby et al., 1990; Kang and James, 2004). For instance, a bank is technically in good standing if a customer uses his bank account to pay a bill. Although evaluating technical quality may be difficult for a client, they rely on other measurements of quality qualities related to the method. Several academics proposed that evaluations of service quality also consider the method in which the service is provided. The service quality measurement specifically only takes into account one functional dimension, not both (Parasuraman et al., 1985; Saleh and Ryan, 2006).

2. Perceived Customer Value

Consumer perceived definitions of product value identified by previous researchers, each with a body of literature to support it, are as follows: Value are; cheap cost, anything I desire in a product, the quality I get for the amount I pay, and what I get in return for what I provide. These four categories have been combined, and perceived value is now understood to be the consumer's overall assessment of the usefulness of a product based on perceptions of what is offered and what is received. All parties agree that a trade-off between advantages and costs is necessary to maximize customer value (Churchill, 1979; Cronin and Taylor, 1992).

Perceived value is a major idea in marketing that influences preference, satisfaction, loyalty, and other important outcomes. Perceived value is also defined as the advantages or benefits that customers experience in comparison to the total expenditures, they incur (Hale, 2015).

According to earlier research, perceived value governs rather than exclusively depends on service quality the relationship between client happiness and the caliber of the service. Additionally, they contend that perceived value in the service sector modifies the link between consumer pleasure and service quality (Chen and Dubinsky, 2003; D. Safi and S. Alagha, 2020).

E. Customer Satisfaction

Customer satisfaction is the general assessment of the purchasing experience made by the customer. It can also be described as an overall assessment of how well customer expectations for service were met through the usage of scenarios (Johnson

et al., 2018).

According to some academics, Customers who are happy are more likely to shop there again, make additional purchases, and spread good word of mouth. In contrast, a dissatisfied consumer will always be associated with frustration. A happy customer is more likely to be a devoted supporter and return to the business. Several studies have established a strong and positive correlation between customer satisfaction and customer loyalty (Desiyanti et al., 2018; Munawar Khan and Fasih, 2014).

A strong case has been made in the past regarding the link between satisfaction with service and intentions to act. Results from earlier studies also showed that, in contrast to service quality, which was solely cognitive, satisfaction was a broader notion with two parts: intellectual and emotive. Customer satisfaction is defined as how closely a service meets the customer's expectations in their overall assessment. A higher level of customer satisfaction results from improvements in service reliability and planning. If businesses want to ensure greater customer happiness, they must understand how customers see their service quality and how to quantify it (Fida et al., 2020).

Oliver developed the anticipation theory of disconfirmation; the author shows how consumer satisfaction levels depend on both predicted and actual service, and that positive disconfirmation happens when businesses deliver superior goods and services compared to expectations. Dissatisfaction will result if a service or product's performance falls short of expectations (Zeina T Al Hakim and Bassem E. Maamari, 2017).

Customer satisfaction is one of the most important performance factors for a company operating in a highly competitive market. To succeed in business and provide excellent value to your target market, you must develop solid relationships with your customers. You can tell if a company is providing high-quality service or not by using customer satisfaction surveys (Smith et al., 1999).

F. Customer Loyalty

The phrase "customer loyalty" can be used to describe a person's general allegiance or deep devotion to a service, product, or corporation. Consumer loyalty is

approached using three different methods: behavioral loyalty, attitudinal loyalty, and integrated attitudinal and behavioral loyalty (Ghosh et al., 2004; Kumar et al., 2009).

One definition of customer loyalty that is appropriate for this study is the level of a customer's loyalty to a service provider, their opinion of the provider, and their consideration of only using this provider when a need for this service arises. These studies came to the conclusion that repeat customer purchases, good word of mouth, and personal recommendations to new clients might all result from their loyalty (Munawar Khan and Fasih, 2014).

Numerous researchers have also defined customer loyalty as a way of thinking, loyalty as manifested in action, and purchasing based on circumstances or individual characteristics. They explained how keeping positive relationships between customers and businesses may keep customers loyal. According to the 20-80 rule, a company's top 20% of clients may generate 80% of its profits. Also, they stressed the complexity of client loyalty (Mahmood et al., 2018; Santouridis and Trivellas, 2010; Sivadas and Baker-Prewitt, 2000). As a result, it may be said that there are many kinds of loyalty and customers. Loyal customers come in various forms. According to their behavioral and attitudinal traits, Martell divided customers into three groups: single users, many users, and non-users. Attitudinal loyalty serves as the foundation for customer loyalty. The main purpose of relationship marketing initiatives is to increase loyalty.

G. Customer Loyalty and Service Quality: A Relationship

Reliability, empathy, and service quality—three components of service quality—were discovered to be positively linked, according to the findings of various previous studies. Studies in the retail industry have shown a strong correlation between customer loyalty and all service quality metrics. With customer pleasure acting as a mediating factor. Empathy had the strongest positive correlation while assurance had the lowest, according to studies on tangibles in the telecommunications business. Responsiveness and reliability were also found to be strongly associated with customer loyalty.

In a study on the Kenyan mobile telecommunications industry, researchers discovered a favorable association between customer loyalty and each of the

SERVQUAL model's service quality measures. The strongest factor influencing client loyalty is empathy. Apart from tangibility, all consumer perceptions of service quality factors had a favorable effect on customer loyalty. In the research project carried out by researchers in Ghana's telecommunications business, all five SERVQUAL constructs were discovered to be closely related to customer loyalty (Heggde, 2011; Ibrahim et al., 2014; Ojo et al., 2010; S. Alnsour et al., 2014; Van Der Wal et al., 2002).

What a service provider can do to meet client expectations and maintain those expectations throughout the duration of a long-term connection to obtain subsequent purchases is referred to as customer retention. According to past studies, the main benefit of customer retention was repurchasing intent. According to the experts, in order to maintain client loyalty and satisfaction, service providers should always control these factors. It is simpler to keep the customer from selecting goods and services from rivals by ensuring satisfaction and loyalty (Zhang et al., 2022).

In the telecommunications sector, a service contract with an alluring pricing might help a company keep a customer for a predetermined amount of time. Consumer loyalty is a preference for a brand, a commitment, and a purchase intention. Due to the positive feelings toward the specific company, this loyalty has resulted in a strong desire to repurchase the same brand or service (Mahmood et al., 2018; Sivadas and Baker-Prewitt, 2000).

Customer satisfaction and loyalty are essential components of the customer retention process. Many studies have examined the connection between client retention and loyalty. Giving away gifts, discount coupons, and freebies at an event or festival can increase a customer's loyalty to a certain brand or business by enticing them to make another purchase. Thus, it's crucial that a business that can thrive in a cutthroat industry cultivates valuable relationships with its clients through cultivating client loyalty (Arman Khan et al., 2021; Trenevskaja Blagoeva and Mijoska, 2019).

H. Associating Service Quality and Customer Satisfaction

Long-term retention of a repeat client profile is challenging. This is partially a result of the competition between numerous organizations. Yet there is only one way to stop this phenomenon: by preserving quality and keeping customers happy.

Numerous research emphasizes the importance of comparing expectations and perceptions to figure out the relationship between customer satisfaction and quality. In fact, many people have advocated using a disconfirmation-based approach to measure expectations and perceptions as the greatest tool for gauging quality and satisfaction (Parasuraman et al., 1985; Zeithaml et al., 2002).

The studies that link customer satisfaction and service quality will be extracted in this step. Researchers looked into whether technical and financial service quality dominated client satisfaction and discovered a favorable relationship between these two characteristics and consumer pleasure. However, their analysis noted that this relies on the dimension used by the organization (Sureshchandar et al., 2002).

In his study on the effects of value, quality, and customer satisfaction on consumer behavioral intentions, Cronin found that the three variables were positively correlated with changes in consumers' purchase volumes. The study also discovered that service value and quality have an impact on customer satisfaction (Cronin and Taylor, 1992).

The results of Cronin were comparable to those of Anderson, who discovered that when quality falls short of expectations, it has a greater negative effect on satisfaction than when quality meets or surpasses human expectations. Buyer elasticity can occasionally have an impact on customer satisfaction. Yet, this varies by industry and company. The likelihood that customers will find a company's products less appealing to purchase decreases as more customers become unaware of the company's services. Systematically, all businesses encounter this wave, and occasionally the only option is to remain with the default course of action while keeping an eye on market developments. When examining customers' purchasing intentions, the type of correlation between service quality and satisfaction is frequently used (Anderson and Sullivan, 1993; Cronin and Taylor, 1992).

In order to shape consumers' purchasing intentions, Taylor and Baker conducted a study to evaluate the connection between service quality and satisfaction. The results of the empirical research showed that the association between service quality and purchase intent was moderated by customer satisfaction. According to their study, when satisfaction increases relative to other variables, the beneficial impact of service quality on purchase intentions increases.

However, their study goes on to make the argument that models of consumer behavior that take into account both satisfaction and service quality produce a clearer picture of understanding consumer purchase intentions than simple models that solely take into account these factors. Their study also advised marketers to measure customer satisfaction levels for individual service encounters as well as the short- and long-term prognosis for service quality (Anderson and Sullivan, 1993; Cronin and Taylor, 1992; Taylor and Baker, 1994).

Carlson conducted an online poll in order to create a model that would make it simple to evaluate the relationship between user attitudes and the quality of e-services. They observed that customer satisfaction with retail outlets is influenced by service quality. Customers are also presumptively more likely to recommend a department when they are happy than when they are unhappy. Their results agreed with a number of other studies' findings that service quality plays a significant role in determining customer satisfaction (Carlson and O'Cass, 2010; Krishnamurthy et al., 2010; Rust et al., 1995).

When levels of dissatisfaction are higher, service sectors always lose more. Several factors contribute to satisfied clients. They include courteous staff, informed staff, accurate billing, and prompt services. A study by Muhammad et al. looked at the relationship between customer satisfaction and service quality among Pakistani customers of conventional banks and Islamic banks. The study used the SERQUAL scale to create a questionnaire and the Analytical Hierarchy Process to analyze the results. The results of their investigation showed that an improvement in banks' service quality had bigger effects on customer contentment, however the relationship between customer satisfaction and service quality has also drawn various interests in understanding loyalty in business (Buttle, 1996; Muhammad Awan et al., 2011; Wong and Sohal, 2003).

I. Telecommunication Industry in Sudan

Communication businesses have largely been accepted during the past ten years as information technology develops. The development of this technology has unquestionably helped a wide range of people around the world have cheaper access to communication services. With the use of a phone, users may now send and receive brief messages, download data, and access the internet (Ibrahim et al., 2014).

Also, it may come as a surprise to learn that large amounts of data may be sent both domestically and globally in a matter of seconds or minutes thanks to telecommunication, which is the primary medium for communication and interaction between and among individuals and groups. It appears that managers in this field are under pressure from competition and advances in information and communication technologies to provide better, more consistent customer service than in the past in order to maintain customer satisfaction and brand dominance.

According to the literature, many businesses use service quality as a competitive advantage. Several scholars concur that in today's competitive marketplace, organizations must compete not only on price but also on the quality of their services and goods. In today's highly globalized, industrialized, and competitive marketplaces, this is even more obvious. Customers are a company's lifeblood, and the telecommunications industry is no exception (Agyapong, 2011; Dubey and Srivastava, 2016).

Not to mention that in marketing colleges, winning over consumers' contentment and loyalty is referred to as a way to gauge how well the goods and services provided live up to their expectations. Customers now demand adequate services and are more aware of the standards of quality that are necessary for a product or service to be successful. This has increased competition among businesses in the industry and has made it harder for them to survive and expand. Sudan's telecommunications and Internet infrastructure have recently been upgraded, and the ICT industry has experienced impressive growth.

Sudan's ICT is among the most advanced in Africa and the Middle East as a result of the growth of the country's telecommunications industry, as well as the diversification and use of ICT services, including Internet and its applications (Sudan - Logistics Capacity Assessment - Digital Logistics Capacity Assessments).

MTN, Sudatel, and Zain are three international carriers that provide mobile-cellular and mobile broadband services in Sudan. These are the leading telecom companies. Given the increased competition facing telecommunications companies, they should pay close attention to the service they offer.

Sudan's telecommunications sector is essential to the social and economic progress of the nation. The Sudanese telecommunications sector has the following

significant features: Sudan's telecoms industry has recently experienced intense rivalry. There are many telecom companies that offer voice calls, data, and internet connectivity, giving customers more options.

Sudan has made investments in the creation of telecommunications infrastructure, including the development of fiber-optic cables and the growth of mobile networks. As a result, connection has improved and services may now be provided in far-off places. The use of mobile phones has increased significantly in Sudan. High mobile penetration rates have been facilitated by the expanding accessibility of reasonably priced smartphones and competitive mobile service packages, allowing a sizable section of the population to use communication services.

Internet accessibility and connectivity have improved in Sudan. Wider availability of broadband connections has made it possible for people and businesses to connect to the internet more quickly and reliably. The use of mobile money has increased in Sudan. Telecom companies have launched mobile payment networks that let consumers send money, pay bills, and conduct financial transactions effortlessly through their mobile phones. The National Telecommunications Corporation (NTC) oversees the Sudanese telecom sector.

The NTC defines standards for quality, ensures fair competition, and creates policies for the development of the sector. Voice calls, SMS, mobile internet, value-added services, and other services are all offered by telecom providers in Sudan. These services serve numerous economic sectors by catering to both individual consumers and companies. The telecommunications sector has helped Sudan's education, healthcare, agriculture, and e-commerce industries all undergo a digital transition.

The adoption of digital technologies has been made easier, and information and services are now easier to obtain. Sudan has worked to improve global connection by developing terrestrial and underwater fiber-optic linkages with its neighbors. Due to these measures, Sudan is now more connected to the world's communications network. In Sudan, it is still difficult to bring telecommunications services to remote and underserved communities.

However, initiatives are being put in place to increase connectivity in distant

areas and network coverage is being expanded in an effort to close the digital divide. These elements demonstrate the development and importance of the telecommunications sector in Sudan, which supports population connectedness, social advancement, and economic prosperity. In conclusion, the primary goal of this study is to investigate and analyze the impact of service quality, which has five dimensions: tangible, reliable, responsive, empathic, assurance, and on client satisfaction and client loyalty in Sudan telecommunication firms.

J. Conceptual Framework

According to the deductive technique used in the study, the conceptual framework was created in accordance with the theoretical justification and empirical input.

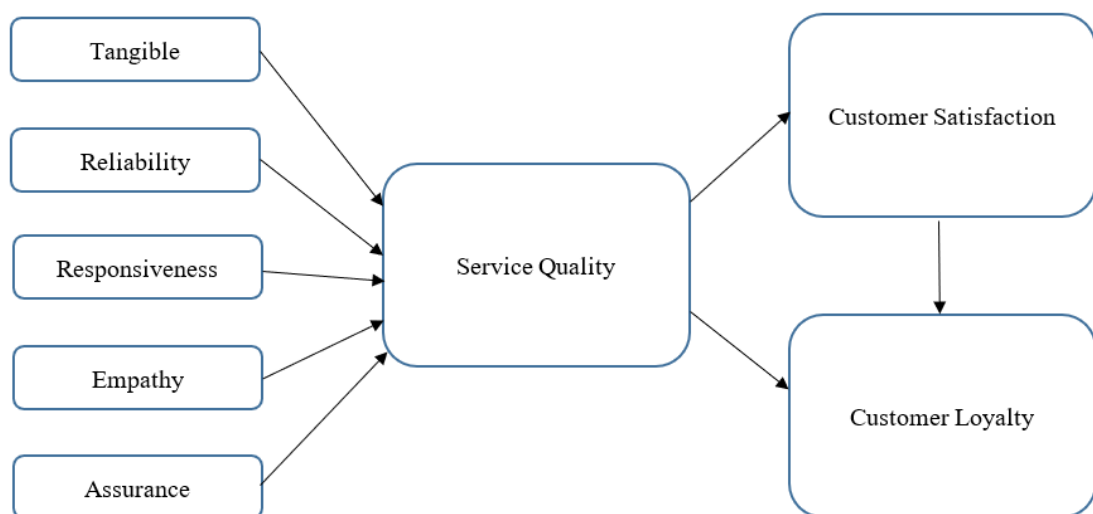


Figure 2. conceptual framework

K. Hypotheses of the Research

In the light of above discussed past studies we developed following hypothesis:

H₁: Service quality has a positive effects on customer satisfaction.

H₂: Service quality has a positive effects on customer loyalty.

H₃: Customer satisfaction has a positive effects on customer loyalty.

III. RESEARCH METHODOLOGY

The purpose of this study is to assess the connection between customer satisfaction, customer loyalty and several aspects of service quality. These dimensions are reliability, tangibility, empathy, assurance, and responsiveness, respectively as mentioned in the whole study. The researcher's suggested methodologies and processes are presented in this chapter. Study population, study design, sampling design, data collection tools, validity and reliability of the research instrument, and method of data analysis are all covered in this chapter.

A. Research Design, Population and Sample Size

A plan that is strengthened to get desired findings is called a research design. Depending on the sort of research, there are numerous research design options. Using a survey research design, this study was conducted. This approach was chosen due of its benefits, including minimal cost, less interviewer bias, control over time, and the fact that there are no geographical restrictions. Additionally, a survey research design aids the researcher in obtaining information from respondents that is devoid of prejudice and secrecy. The design of this research was quantitative research and deductive in nature to study the effect service quality is determines on customer satisfaction and customer loyalty and this study is also trying to answer the connection between customer satisfaction and customer loyalty.

This investigation looked to choose Customers of middle- and upper-class telecom firms in Khartoum who are made up the research universe. Due to the population's availability to telecommunications services, that has 34 million, 630 thousand people in 2021 (Telecommunication in sudan, n.d.), and the fact that most individuals in metropolitan regions in Sudan have access to mobile phones, these locations are the ones that are being targeted.

The formula we employ to determine the sample size is as follows:

$$n = (Z^2 * p * q) / E^2$$

Where n is the necessary sample size. $Z = Z$ -score for the appropriate level of confidence $p =$ the anticipated percentage of the population that possesses the desired feature $q = 1 - p$ E is the intended error margin.

We make the cautious assumption that $p = 0.5$, which yields the highest sample size necessary for any given population. We anticipate that roughly 50% of clients will be satisfied and committed to the Sudanese telecommunications businesses.

Let's now compute the sample size based on the projected values:

$Z = Z$ -score for a 95% confidence interval; for large populations, the typical value is 1.96 $E = (0.05)$ margin of error

$$n = (1.96^2 * 0.5 * 0.5) / (0.05^2) \quad n = (3.8416 * 0.25) / 0.0025 \quad n = 0.9604 / 0.0025 \quad n \approx 384.16$$

Accordingly, using these presumptions, you would require a sample size of about 384 respondents. Although this equation implies an infinite population number, this is not how the world actually works. We employ the following formula to account for the finite population:

$$n' = (n * N) / (n + N - 1)$$

Where: The adjusted sample size is n' . Starting sample size is n . Size of the population, N

Using the estimated values, let's get the corrected sample size:

$$n' = (384 * 34,630,000) / (384 + 34,630,000 - 1) \quad n' = 13,297,440,000 / 34,630,383 \quad n' \approx 384$$

According to this computation, the corrected sample size is still 384 respondents, roughly.

B. Sample and Sampling Technique

It is not always easy for researchers to gather information from various targeted groups of people simultaneously. There are several ways to do sampling, including stratified and basic random methods, but the non-probabilistic sampling method described here is the most effective and priciest. Additionally, it permits

long-term data collection without affecting the responses of participants. Additionally, using non-probabilistic sampling is the greatest strategy to lessen the impact of uncontrolled elements in research. Urban Sudan was the focus of the study. For this experiment, a non-probabilistic sampling method was used. In a non-probabilistic examination process, samples are selected without providing equal opportunity to every member of the population. 1000 of the intended respondents were given a survey form to complete. There were 464 survey forms that were fully functional, representing a response percentage of roughly 46.4%.

C. Research Instrument

The questionnaire method was used to conduct this research. The choice of the questionnaire was based on the nature of the study, which examined the relationship between customer satisfaction, customer loyalty and service quality. The questionnaire was especially created to satisfy the needs of the research and answer all research concerns highlighted in the current study in a sequence and in easy language that is easy to understand by the respondents. In addition, it is especially considered that unnecessary questions should not be part of the questionnaire. In fact, questions are made to the point without any complexity that is difficult to understand for the respondents. The SERVQUAL model and the stated hypothesis served as the foundation for the questionnaire's development. This current study's model served as a reference for the structured questionnaire because it offers a thorough understanding of all the information pertaining to the research questions, which attempt to describe how customers perceive the quality of services in urban Sudan and in reality, while also assessing their levels of satisfaction and loyalty. This research is intended for academic purposes only and every respondent will be treated as anonymous.

There were no open-ended inquiries used. On a 5-point Likert scale, the questions were graded, ranging from 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree.

The questionnaire form contain 39 questions in total, composed of four sections, the first one contain 8 items that focus on demographic characteristics of participants, so that we can understand the background of respondents, second section have 22 questions related to servqual dimensions that first conceptualized and

proposed by (Parasuraman et al., 1985; Zeithaml et al., 2002), 4 questions were used for customer satisfaction that adopted from (Steven A Taylor, 1994), and 5 questions to measure customer loyalty which adopted from (Backman & Crompton, John L., 1991).

D. Validity and Reliability of the Questionnaire

One of the most crucial factors in determining if research findings are credible is reliability and validity. In terms of research measurements, variables, and conclusions, the two must be mirrored. The degree to which an idea may be precisely measured in a quantitative way is known as validity. Accuracy of scientific discoveries is another issue that validity is particularly concerned with. In order to determine whether the questionnaire was compatible with other questionnaires used in other studies, a thorough evaluation of relevant, substantive literature was conducted after this investigation to determine its validity. When a study is said to be reliable, it means that the measures were accurate and trustworthy, meaning that if another researcher used the same equipment or measurement, they should get consistent results. The well-known tool and test known as Cronbach's alpha is used by researchers to assess an instrument's internal consistency. It shows how closely linked a group of items making up a scale are to one another. Cronbach's alpha values range from 0 to 1. The reliability of the scale increases with higher values, and vice versa. Generally speaking, Cronbach's alpha values should be 0.70 and higher for optimal dependability. It is claimed that 0.70 and higher is considered to be acceptable. This does not preclude, however, the acceptance of 0.60. In fact, according to 72 academics, it is appropriate for recently established measures like those used in this study.

E. Data Collection Method

Data from 464 clients of mobile service provider firms was gathered online through standardized questionnaires. A survey strategy was employed to collect the data for this study, in which questionnaires were used to get replies from the participants. I sent a personal message to every targeted customer asking him or her to fill out the survey and I was amazed to see the positive response in the span of 30 days I administer 1000 questionnaire out of which 464 questionnaires were filled it

was a very agile and honest response.

F. Data Analyses Method

The current study is quantitative, and after doing an analysis, we anticipate presenting quantitative findings. For performing the analysis of quantitative data, a variety of software programs are available, some of which are more user-friendly and comprehensive, such as the statistical package for the social sciences (SPSS). With the help of SPSS Version 26, descriptive and inferential statistics were utilized in the study to examine the data. The data integration techniques for the aforementioned project include transcription, splitting the information into meaningful units, using these units to comprehend and describe the current issue, and interpreting them to get to final findings. Through descriptive statistics, data was examined. Mean values and standard deviation were calculated, while exploratory factor analysis was used to evaluate the validity and Cronbach's alpha was used to evaluate the reliability. The influence of service quality on customer satisfaction and loyalty as well as the impact of customer satisfaction on loyalty were assessed using simple regression.

IV. DATA ANALYSIS AND RESULTS

In this chapter, SPSS software is used to apply statistical techniques to the primarily obtained data, and the findings are extracted and interpreted to test the research hypothesis. Second, descriptive analysis and the use of simple regression analysis is to identify the impact of service quality on customer satisfaction and customer loyalty and also to evaluate the connection between customer satisfaction and customer loyalty. There is only one predictor here. That is the service quality variable. The other two are dependent variables. That means multiple regressions cannot be used, simple regressions should be used. Only one variable can be estimated at a time. Therefore, we use simple regression to test hypothesis.

A. Characteristics of respondents

The findings on respondents' demographic data are presented in this section; this includes respondents' gender, age, level of education, monthly income, number of years customers have been using different mobile networks in Sudan, type of Mobile line which customers are using and as well as which tariff plan is most commonly used in Sudan.

1. Gender

The study findings indicate a high proportion of female respondents with a percentage of 53.2% compared to male who had 46.8% as tabulated in table.

Table 1. Demographic characteristics of respondents (Gender)

Gender	Frequency	Percent
Male	217	46.8
Female	247	53.2
Total	464	100.0

2. Age

The analysis shows the different categories of ages that filled the online questionnaire that was found on different platforms. Results report that ages between 18-30 had the highest number of respondents with 58.0%, followed by those within the age of 31-40 with 24.1%, and 9.3% of the respondents were aged 41-50, while 5.6% was aged 51 and above and under 18 contribute only 3% of whole sample.

Table 2. Demographic characteristics of respondents(Age)

Age	Frequency	Percent
under 18	14	3.0
18 - 30	269	58.0
31 - 40	112	24.1
41 - 50	43	9.3
51 and above	26	5.6
Total	464	100.0

3. Level of Education

The results in the table describe the level of education of respondents who participated in the study. As clearly indicated in the table, the number of graduate participants were the highest with a percentage of 36.2% followed by post graduate participant with a frequency of 34.5%, and 24.8% of the responded qualification was undergraduate and only 4.5% of respondent were high school students.

Table 3. Demographic characteristics of respondents(Education)

Level of education	Frequency	Percent
High school and above	21	4.5
under graduate	115	24.8
graduate	168	36.2
Post graduate	160	34.5
Total	464	100.0

4. Marital Status

The results in the table describe the marital status of respondents who participated in the study. As clearly indicated in the table, the number of single participants were the highest with a percentage of 63.4% and 36.6% of respondent were married.

Table 4. Demographic characteristics of respondents(Marital Status)

Marital Status	Frequency	Percent
single	294	63.4
married	170	36.6
Total	464	100.0

5. Monthly Income

The results in the table describe the monthly income of respondents who participated in the study. The participants whose salary ranges between 45000 SDG and above account for the highest number with 50.9% followed by salary earners between 25000 SDG and below with 22.4 %. As reflected in the table, the salary ranges between 35000 to 45000SDG contribute very less percentage that is only 11.2% whereas 15.5% of responded were taking salary in range of 25000 to 35000 SDG.

Table 5. Demographic characteristics of respondents(Monthly Income)

Monthly Income	Frequency	Percent
25000 SDG and below	104	22.4
25000 - 35000 SDG	72	15.5
35000 - 45000 SDG	52	11.2
45000 SDG and above	236	50.9
Total	464	100.0

6. Year of using telecommunication services

The results in the table describe the number of years respondent are using telecommunication services who participated in the study. As clearly indicated in the table, that 75.9% of the participants are using telecommunication lines for more than 5 years, while 12. % participants are using for 13 years and 8.4% and 3.2% participants are using telecommunication services for 3-5 and for less than one year

respectively.

Table 6. Demographic characteristics of respondents(years of using mobile)

years of using mobile	Frequency	Percent
less than 1 year	15	3.2
1 - 3 years	58	12.5
3 - 5 years	39	8.4
5 years and above	352	75.9
464	464	100.0

7. Line Type

According to analysis results 43.5% participants are using Zain line while 36.4% and 20.0% participants are using Sudani and MTN telecommunication services respectively.

Table.7. Demographic characteristics of respondents(Line type)

Line type	Frequency	Percent
Zain	202	43.5
MTN	93	20.0
Sudani	169	36.4
Total	464	100.0

8. Tariff Plan

The results in the table describe the tariff plan which respondents were using who participated in the study. As clearly indicated in the table, the number of pre-paid tariff using participants were the highest with a percentage of 72.2% followed by postpaid tariff using participant with a frequency of 21.8%, and 6% of the responded were not aware of their tariff plan.

Table 8.Demographic characteristics of respondents(Tarrif plan)

Tariff plan	Frequency	Percent
Pre-paid	335	72.2
Post-Paid	101	21.8
Don't know	28	6.0
Total	464	100.0

B. Reliability Analysis

Reliability of data is checked to know whether the data is reliable enough to peruse further analysis or not. Reliability of responses is measured using Cronbach's Alpha test, it is a degree of inner reliability that shows how closely items are associated as a set. It is an extent of scale consistency. Precisely it can be said Cronbach's alpha isn't a statistical test, it is a measure of unwavering quality (or consistency). (Nunnally and Bernstein, 1978) suggested how to calculate coefficient alpha (also called Cronbach alpha) to evaluate the consistency of a various-item variable. (Churchill Jr and Peter, 1984) recommended acceptance value for Cronbach alpha. The result of alpha beneath 0.70 is objectionable. Nunnally (1978; 1988) specified newly established measures that can be recognized with result of 0.60, else, 0.70 will be threshold for alpha coefficient. Though, keeping in mind that the usage of such scales for the first time in new research, for all scales 0.60 was set value for alpha coefficient. The criteria are that the test value must be greater than 0.7 in that case primary collected data is reliable to conduct further analysis.

The table below shows the actual total number of participants who filled the questionnaire, as it shown below no excluded cases, which means that all cases were valid and no missing data.

Table 9. Case peocessing summary

Case Processing Summary		N	%
Cases	Valid	464	100.0
	Excluded ^a	0	.0
	Total	464	100.0

a. List wise deletion based on all variables in the procedure.

1. Cronbach's Alpha Test

Cronbach's alpha is simply measuring how items in group of questions are close to each other or how well items vary together. Thus, it gives us estimations of how good or bad the measurement accuracy of group of items is.

Table 10. Cronbach's Alpha Values of the Scales

Reliability Statistics		
Scale Names	Cronbach's Alpha	N of Items
SERVQUAL	.939	22
Customer Satisfaction	.905	4
Customer Loyalty	.879	5

Analysis shows that the alpha coefficient for 22 items related to Servqual scale is .939, for 4 items related to customer satisfaction scale is .905, and for 5 items related to customer loyalty scale is .879 that are greater than standard value 0.70, which clearly shows that all the scales applied in this study has a high level of internal consistency. Thus, all questions are reliable and further statistical tests can be performed on it.

C. The Means of Service Quality, Customer Satisfaction and Customer Loyalty

This table shows the descriptive statistics for three variables: service quality, customer satisfaction and customer loyalty. Each variable has multiple items and the table reports the mean and standard deviation for each item.

1. SERVQUAL

Table 11. Descriptive Statistics

Descriptive Statistics	Mean	Std. Deviation
This network has a good coverage nationwide	2.6530	1.18953
The service provider accurately keeps all transactions safe and reliable	3.2996	.97192
There are enough number of branches allocated within different regions	3.3211	1.13567
They provide their services at the times promised	3.1466	1.17022
Employees have knowledge to answer the questions of the customer	3.2198	1.17532
Employees are never being too busy to answer the customer's questions.	2.9849	1.15429
Operating hours are convenient to all customers	3.1379	1.09107
The services requested by the customers are carried out as soon as possible	3.1573	1.12838
This network provides different means of contact through telephone, branches, emails, over the counter, Posta and website	3.1853	1.12507
The customer care team carefully understands what I tell them	3.3685	1.11342
All services of this mobile operator shaped to fulfil customers' demands and interests	3.0560	1.11008
When a customer has a problem, Employees shows a sincere interest to solve the problem	3.0603	1.11180
Employees of my mobile operator are always polite and nice	3.5754	1.03017
Employees of my mobile operator always give each customer individualized attention	3.2866	1.05658
Customer complaints and suggestions are taken into consideration in order to improve service quality	2.8966	1.12984
I always like the furniture and couch because they are comfortable for customers' interaction with customer care within the showrooms	3.1315	1.09286
Counters are always equipped with sophisticated facilities like Wi-Fi, camera, re-load machine	2.9935	1.10074
Materials and information related to services (promotion banners, cards) always clearly displayed	3.3276	1.06405
The pricing policies of products and services for this mobile operator are attractive	2.6379	1.27543
I will continue using this mobile operator unless there are poor adjustments made to prices	3.3233	1.20788
This operator offers prices for different services that suit my needs	2.6810	1.25806
Price ranges for this mobile operator are better than other networks	2.9073	1.11636

Table 12. Customer Satisfaction

Descriptive Statistics	Mean	Std. Deviation
Services provided by this mobile operator are exactly what I need	2.7565	1.11681
Service quality has improved my satisfaction with the mobile operator as a customer	2.8621	1.12614
I am happy with my mobile operator because it meets all my expectations	2.8793	1.14145
As a customer, I am generally satisfied with the services I received from the mobile operator	2.9828	1.14581

Table 13. Customer Loyalty

Descriptive Statistics	Mean	Std. Deviation
I would highly recommend the mobile operator to my friends and family	3.0409	1.14803
I feel loyal to this mobile operator	3.1272	1.13600
I am likely to make positive comments about the mobile operator to my friends and relatives	3.1681	1.19655
I will not use another network even if it gets lost or damaged by prevailing conditions	3.0216	1.16629
I enjoy being a customer of this mobile operator	2.8147	1.28125

D. Correlations

The goal of correlation is to quantify the degree of relationship between two variables. How do we discover the relationships between different variables? This is accomplished by examining the values in each of the correlation matrix's individual cells, which display the Pearson correlation coefficient between each pairwise combination of variables. The table below shows the correlations between the variables of SERVQUAL Mean, Satisfaction Mean, and Loyalty Mean. There is a strong positive correlation between SERVQUAL Mean and Satisfaction Mean ($r =$

.731, $p < .01$) and between Satisfaction Mean and Loyalty Mean ($r = .824$, $p < .01$). There is also a strong positive correlation between SERVQUAL Mean and Loyalty Mean ($r = .747$, $p < .01$). These correlations suggest that as the perception of service quality increases, so does satisfaction, which leads to greater loyalty. This implies that organizations that prioritize service quality can enhance customer satisfaction and loyalty, which can benefit their bottom line by fostering repeat business and referrals.

Table 14. Correlations

Correlations		Servqual	Customer Satisfaction	Customer Loyalty
Servqual	Pearson Correlation	1	.731**	.747**
	Sig. (2-tailed)		.000	.000
	N		464	464
Customer Satisfaction	Pearson Correlation		1	.824**
	Sig. (2-tailed)			.000
	N			464
Customer Loyalty	Pearson Correlation			1
	Sig. (2-tailed)			
	N			

** . Correlation is significant at the 0.01 level (2-tailed).

E. Regression Test of Service quality impact on customer satisfaction in the telecommunications sector.

A statistical tool called a simple regression analysis is used to quantify the association between one independent variable and one dependent variable.

Table 15. Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change in R Square	F Change	df1	df2	Sig. F Change
1	.731 ^a	.534	.533	.68281	.534	530.258	1	462	.000

a. Predictors: (Constant), SERVQUAL

Table 16. ANOVA^a

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	247.219	1	247.219	530.258	.000 ^b
	Residual	215.395	462	.466		
	Total	462.614	463			

a. Dependent Variable: Satisfaction
b. Predictors: (Constant), SERVQUAL

To assess how well a regression model fits the data, this table provides the R, R², modified R², and the standard error of the estimator.

R value is represented by column "R", the multiple correlation coefficient. This multiple correlation coefficient is called Pearson correlation coefficient which is a scalar among theoretical and true results of the dependent variable in linear regression system that has an intercept. In statistical way, the coefficient of multiple correlation is a value of how close a given variable can be forecast by use of a linear function of further variables set. It is relation among the variable's data and the finest estimation calculated linearly from the prognostic variables.

Multiple correlation coefficient results are between 0 and 1; the higher the value the better forecast of the criterion variable from the predictor variables, hence value 1 shows that the predictions are exactly same and value 0 represents that there is no linear combination of the predictor variable and the variables' is one measure for better prediction of dependent variable; in this research R is found to be 0.731 which shows a good prediction level.

Coefficient of determination (R^2 column) shows R^2 value. R^2 is main result of regression analysis. It is read as the mathematical value of proportion of the change in the criterion variable which is estimated from the predictor variable. The square of correlation (R) among predicted dependent variable value and true dependent variable value is called coefficient of determination R^2 . It also ranges from 0 to 1. Value of R^2 equivalent to 0 indicates the predictor variable cannot be forecast from criterion variable, while a value of R^2 equals to 1 suggests that criterion variable can be correctly foretold from the predictor variable, value of R^2 equals to 0.10 shows 10% of the variance in Y is predictable from X and so on.

It is shown that value of R square here is .534 that the research predictor variables explain 53.4% of the variability of research criterion variable.

ANOVA table demonstrates the overall fit of the model, with significance less than 0.05 indicating overall model significance.

According to the table, the predictor factors significantly and statistically predict the criterion variable. Here, p .05 demonstrates that the regression model fits the data well, indicating that it can statistically significantly predict the criterion variable.

1. Hypothesis Testing

Table 17. Hypothesis Testing

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.163	.135		-1.204	.229
	SERVQUAL_Mean	.976	.042	.731	23.027	.000

a. Dependent Variable: Satisfaction_Mean

Our first hypothesis examines the service quality impact on customer satisfaction in the telecommunications sector. Our research results indicate strong acceptance for hypothesis H_1 demonstrating that service quality positively affects customer satisfaction in telecommunication sector. The p-value is ($0.000 < .05$), which indicates that the results are accepted H_1 .

F. Regression Analysis of Service quality impact on customer loyalty

Table 18. Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change in R Square	F Change	df1	df2	Sig. F Change
1	.747 ^a	.558	.557	.64824	.558	583.945	1	462	.000

a. Predictors: (Constant), SERVQUAL_Mean

Table 19. ANOVA^a

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	245.386	1	245.386	583.945	.000 ^b
	Residual	194.142	462	.420		
	Total	439.528	463			

a. Dependent Variable: Loyalty_Mean
b. Predictors: (Constant), SERVQUAL_Mean

Based on data in the table, it is shown that value of R square between service quality and customer loyalty is .558 it explains that customer loyalty is 55.8% influence by the quality of service provided.

Here, p .05 demonstrates that the regression model fits the data well, indicating that it can statistically significantly predict the criterion variable.

1. Hypothesis Testing

Table 20. Hypothesis Testing

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.012	.129		.096	.923
	SERVQUAL_Mean	.973	.040	.747	24.165	.000

a. Dependent Variable: Loyalty_Mean

Our research results indicate strong acceptance for hypothesis H₂ which states that service quality has a positive effect on customer loyalty in the telecommunications sector. The p-value is (0.000 < .05), which indicates that the results are accepted.

G. Regression Analysis of customer satisfaction impact on customer loyalty

Table 21. Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.824 ^a	.679	.679	.55243	.679	978.238	1	462	.000

a. Predictors: (Constant), Satisfaction_Mean

Table 22. ANOVA^a

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	298.536	1	298.536	978.238	.000 ^b
	Residual	140.992	462	.305		
	Total	439.528	463			

a. Dependent Variable: Loyalty_Mean
b. Predictors: (Constant), Satisfaction_Mean

According to the table above the value of R square is calculated to be .679 that our predictor variables explain 67.9% of the variability of our criterion variable.

According to the table, the predictor factors significantly and statistically predict the criterion variable. Here, p .05 demonstrates that the regression model fits the data well.

1. Hypothesis Testing

Table 23.: Hypothesis Testing

Coefficients ^a		Unstandardized		Standardized	t	Sig.
Model		Coefficients	Std. Error	Coefficients		
		B		Beta		
1	(Constant)	.729	.078		9.338	.000
	Satisfaction_Mean	.803	.026	.824	31.277	.000

a. Dependent Variable: Loyalty_Mean

The third research hypothesis tests whether customer satisfaction has positive impact on customer loyalty in the telecommunications sector. The p-value is ($0.000 < .05$), which indicates that the results are accepted H_3 . Thus, customers who are satisfied with the service that they perceived are likely to remain loyal to their service provider.

V. RESULTS AND DISCUSSION

This study's major goal was to investigate how service quality affects customer loyalty and satisfaction. For this purpose, a few analyses were conducted using SERVQUAL dimensions as the independent variable and customer satisfaction and loyalty as the dependent variables. Regression analysis was used to test the hypothesis. Using the SERVQUAL model developed by Parasuraman et al. in 1988, the study thoroughly examined the effects of each antecedent of service quality on customer satisfaction and customer loyalty. The results showed that service quality has a favorable effect on customer satisfaction and customer loyalty. The outcome is consistent with (Agarwal & Dhingra, 2023).

The descriptive analysis suggests that the highest number of people who filled in the survey which in this case online were in between ages 18-30 years and that they are well conversed with the usage of mobile phones. This was then followed with descriptive of females having the highest number of respondents in the category of gender. It is also believed that females do carry out a lot of business in Sudan and this is one of the reasons as why they had the highest number of respondents from the analysis. Based on the population of Sudan, this study assumed that the majority number of respondents would be married. However, this was not the case when majority of the respondents turned out to be single. In addition, the number of singles is also greatly increasing due to the rise in the number of youths. Graduate students were also found to be the highest within the analysis. This is likely because most Sudanese can only afford to study till graduation.

Reliability analysis clearly demonstrated that the scale employed had a high level of internal consistency. The Cronbach alpha value provides a good explanation for this. The value for SERVQUAL customer satisfaction and customer loyalty were 0.939, 0.905 and 0.879 respectively. A Cronbach alpha of 0.70 and above is believed to be acceptable by many profound researchers, and a value of 0.8 and above is good. Since the Cronbach alpha from the analysis of our study were greater than the standard value 0.70, shows that the questions were reliable.

Correlation was carried out to assess the degree to which two variables are associated. According to our results, there is a strong positive correlation between SERVQUAL Mean and Satisfaction Mean ($r = .731, p < .01$) and between Satisfaction Mean and Loyalty Mean ($r = .824, p < .01$). There is also a significant positive relationship between SERVQUAL Mean and Loyalty Mean ($r = .747, p < .01$). These correlations suggest that satisfaction rises in tandem with perceptions of higher-quality services, which leads to greater loyalty. This implies that organizations that prioritize service quality can enhance customer satisfaction and loyalty, which can benefit their bottom line by fostering repeat business and referrals.

The regression model used in this study demonstrated that the total SERVQUAL dimensions may account for the variation in overall customer satisfaction and customer loyalty. The SERVQUAL factors' effects on customer loyalty and satisfaction are depicted by the regression model. According to the findings, each component of service quality is a reliable indicator of client happiness. According to the significance of the variables, there was a correlation between the dependent variables of customer satisfaction and loyalty and the five independent factors SERVQUAL dimensions.

The findings are consistent with past studies (Dalbehera, 2020; Rowley, 2006; Stiakakis and Georgiadis, 2009; Zhang et al., 2022) that have highlighted the importance of service quality in customer satisfaction, and they support hypothesis number one, which holds that service quality positively increases customer satisfaction. The results suggest that consumers in the telecom sector give the quality of the services they receive a high priority.

The research hypothesis number two was also accepted, and the result emphasizes how important it is to provide top-notch services in order to win over customers. Clients are more inclined to stay loyal to their service provider and refer the business to others if they believe they are receiving high-quality services.

According to the study, client loyalty and satisfaction are positively associated. Which was the third hypothesis this research highlights how crucial customer happiness is to maintaining client loyalty in the telecom industry. Customers who are happy with their service providers are more inclined to stick with them, which lowers customer churn and boosts income for the business.

The study's findings lead to the conclusion that service quality, consumer satisfaction, and customer loyalty are important factors for telecommunication service providers to take into account. The results suggest that in order to retain and win over the loyalty of their clients and, ultimately, to boost their bottom line, service providers must prioritize the quality of their products.

VI. CONCLUSION

A. Conclusion

This study's goal was to determine how customer loyalty and satisfaction are impacted by service quality. In Sudan, this study is being done. With the use of a summary and synthesis of prior research, the research framework and hypothesized linkages were constructed in this study using an empirical technique. 464 users' online survey responses yielded the following data. Utilizing SPSS, the data was analyzed. The study model was then empirically tested using linear regression. The findings imply that customer happiness is influenced by various aspects of service quality. Numerous research supports the likelihood that service quality has an influence on customer satisfaction (Anderson and Sullivan, 1993; Carlson and O'Cass, 2010; Cronin et al., 2000; Krishnamurthy et al., 2010c; Muhammad Awan et al., 2011b; Rust et al., 1995; Sivadas and Baker-Prewitt, 2000).

These studies collectively provide evidence for the relationship between service quality and customer satisfaction. The primary distinction between our analysis and the studies described above is that we measured the relationship between customer happiness and service quality rather than the discrepancy or gap between consumers' perceptions and expectations. Instead, according to the answers given by diverse participants to the online questionnaire, this study examined how particular aspects of service quality influence satisfaction.

Therefore, assessing the Disparity between respondents' perceptions and expectations of services should be taken into consideration by someone concerned in determining the impact of service quality on customer satisfaction. Last but not least, according to the study, the SERVQUAL model may be used to accurately measure the variation in customer satisfaction and overall service quality. Any business' success is built on the satisfaction of its customers. In the current market, it is crucial for telecom businesses to keep their word to customers and do it in a way that maximizes client retention. In the same vein, given that our findings demonstrate the

significance of the SERVQUAL model, managers should be able to comprehend all of the model's dimensions in order to determine which trait consumers value the most. They will be able to easily restructure their organizations' strategies and orient them toward the interests of their consumers by doing this.

B. Research Implications

Service managers need to be aware of a number of significant consequences that this study has identified. First, when dealing with customers, personnel of telecommunications firms need to exhibit compassionate behaviors. One of the primary stakeholders of an organization and one of its internal consumers is its workforce. This has an immediate influence on how they do business since the empathy they demonstrate directly affects both brand awareness and customer loyalty. It should be mentioned that this study found that customer satisfaction is greatly impacted by empathy. Employees should therefore receive training on how to exhibit compassionate behaviors to encourage a customer-friendly atmosphere at work. Once this is done, client loyalty increases and business increases.

Second, service reliability needs to be applied to retain current clients and draw in new ones. It is necessary to develop strategies that emphasize the value of reliability. This could be accomplished by ensuring connectivity throughout all of Sudan's geographical regions. Perhaps the extent to which telecom corporations make their services available to everyone in various locations determines how reliable they are. The next step should be to hire personnel who have the necessary abilities to respond as quickly as possible to consumer complaints. Therefore, managers should refrain from hiring people who struggle to solve interpersonal conflicts when under time pressure.

Thirdly, this study's findings supported the significance of responsiveness. The ability to react quickly to a situation is the most crucial component of a corporation. There is no justification for entering into negotiations if this is absent. Managers should always take into account employing staff who can quickly detect customers' problems for better service. Customer service representatives that answer phone calls always have a talent for comprehending the issues that need to be resolved by the callers. The same is true for customers, who call customer service centers looking for solutions rather than justifications. Therefore, managers should

consider integrating process restructuring to identify reoccurring issues clearly so that they can be addressed.

C. Limitation and Further Research Direction

The study has a few limitations that need to be investigated further in further studies. First when analysing the service industry, it's critical to gauge views and expectations along with client happiness and loyalty. Unfortunately, the two were not considered in the current study when determining the size of the service quality disparity. The perception-expectations model should be considered when measuring service quality in future studies, it is urged here.

Another aspect to take into account while conducting research is the population or overall number of respondents. Despite being chosen at random for this study, the sample does not accurately reflect all users of telecommunications services. With only 464 responses, the sample size was too small, making it difficult to generalize the study's conclusions. It should be mentioned that the sample size of 464 is rather little when taking into account the total number of consumers in Sudan for various telecom operators. Therefore, to increase the results' generalizability, the academic literature suggests that sample coverage should be broad. In the future, a larger sample should be offered, and the geographic scope of such studies should be broadened.

Thirdly, in addition to the criteria taken into account in this study, additional factors like switching fees, individualized services, etc. may have a big impact on customer loyalty. Finally, because this study was restricted to the Sudanese telecom industry, its practical application is somewhat limited. To make the service broad and all-encompassing, it might also incorporate other service industries.

VII. REFERENCES

JOURNAL

AGARWAL, R., AND DHINGRA, S. (2023). Factors influencing cloud service quality and their relationship with customer satisfaction and loyalty. **Heliyon**.

AGYAPONG, G. K. Q. (2011). The Effect of Service Quality on Customer Satisfaction in the Utility Industry – A Case of Vodafone (Ghana). **International Journal of Business and Management**, 6(5).
<https://doi.org/10.5539/IJBM.V6N5P203>

ANDERSON, E. W., AND SULLIVAN, M. W. (1993). The Antecedents and Consequences of Customer Satisfaction for Firms. *Https://Doi.Org/10.1287/Mksc.12.2.125*, 12(2), 125–143.
<https://doi.org/10.1287/MKSC.12.2.125>

ANSELMSSON, J., AND JOHANSSON, U. (2014). A comparison of customer perceived service quality in discount versus traditional grocery stores: An examination of service quality measurement scales in a Swedish context. **International Journal of Quality and Service Sciences**, 6(4), 369–386.
<https://doi.org/10.1108/IJQSS-03-2013-0012>

ARMAN KHAN, JAVED AHMED, AND FARMAN ULLAH KHAN. (2021). An Empirical Study of Customer Satisfaction and Loyalty: An Evidence of Telecom Sector in Pakistan. **Journal of Business and Tourism**, 5(2), 65–78. <https://doi.org/10.34260/JBT.V5I2.139>

BACKMAN, S. J., & CROMPTON, JOHN L. (1991). The usefulness of selected variables for predicting activity loyalty. **Leisure Science**.
<https://doi.org/10.1080/01490409109513138>

BARTOLOVIĆ, V., MARTINOVIĆ, V., AND COBOVIĆ, M. (2022). CUSTOMER SATISFACTION SURVEY WITH THE QUALITY OF

TELECOMMUNICATIONS SERVICES. *EMC Review - Časopis Za Ekonomiju - APEIRON*, 24(2). <https://doi.org/10.7251/EMC2202320>

BHAT, S. A., AND DARZI, M. A. (2020). Online Service Quality Determinants and E-trust in Internet Shopping: *A Psychometric Approach*. **Vikalpa**, 45(4), 207–222. <https://doi.org/10.1177/02560909211012806>

BOLTON, R. N., AND DREW, J. H. (1991). A Multistage Model of Customers' Assessments of Service Quality and Value. **Journal of Consumer Research**, 17(4), 375–384. <https://doi.org/10.1086/208564>

BUTTLE, F. (1996). SERVQUAL: review, critique, research agenda. *European Journal of Marketing*, 30(1), 8–32. <https://doi.org/10.1108/03090569610105762>

CARLSON, J., AND O'CASS, A. (2010). Exploring the relationships between e-service quality, satisfaction, attitudes and behaviours in content-driven e-service web sites. *Journal of Services Marketing*, 24(2), 112–127. <https://doi.org/10.1108/08876041011031091>

CHEN, Z., AND DUBINSKY, A. J. (2003). A Conceptual Model of Perceived Customer Value in E-Commerce: A Preliminary Investigation. **Psychology and Marketing**, 20(4), 323–347. <https://doi.org/10.1002/MAR.10076>

CHIU, C. M., CHANG, C. C., CHENG, H. L., AND FANG, Y. H. (2009). Determinants of customer repurchase intention in online shopping. **Online Information Review**, 33(4), 761–784. <https://doi.org/10.1108/14684520910985710>

CHURCHILL, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. **Journal of Marketing Research**, 16(1), 64. <https://doi.org/10.2307/3150876>

CLOW, K. E., AND VORHIES, D. W. (1993). Building a Competitive Advantage for Service Firms : Measurement of consumer expectations of service quality. **Journal of Services Marketing**, 7(1), 22–32. <https://doi.org/10.1108/08876049310026079>

CRONIN, J. J., BRADY, M. K., & HULT, G. T. M. (2000). Assessing the effects of

- quality, value, and customer satisfaction on consumer behavioral intentions in service environments. **Journal of Retailing**, 76(2), 193–218. [https://doi.org/10.1016/S0022-4359\(00\)00028-2](https://doi.org/10.1016/S0022-4359(00)00028-2)
- CRONIN, J. J., AND TAYLOR, S. A. (1992a). Measuring Service Quality: A Reexamination and Extension. **Journal of Marketing**, 56(3), 55. <https://doi.org/10.2307/1252296>
- CROSBY, L. A., EVANS, K. R., AND COWLES, D. (1990). Relationship Quality in Services Selling: An Interpersonal Influence Perspective. **Journal of Marketing**, 54(3), 68. <https://doi.org/10.2307/1251817>
- DALBEHERA, S. (2020). *Measuring Service Quality in Digital Library Services by the Research Scholars of S.O.A. University of Odisha Using E-S-QUAL Model.* 111–126. <https://doi.org/10.1108/S2055-364120200000026007>
- DESIYANTI, N. L., SUDJA, I. N., AND BUDI MARTINI, L. K. (2018). Effect of Service Quality on Customer Satisfaction, Customer Delight and Customer Loyalty (Study on LPD Desa Adat Sembung and LPD Desa Adat Seseh). **International Journal of Contemporary Research and Review**, 9(03), 20660–20668. <https://doi.org/10.15520/IJCRR/2018/9/03/483>
- DUBEY, A., & SRIVASTAVA, A. K. (2016). *Impact of Service Quality on Customer Loyalty-A Study on Telecom Sector in India.* 18(2), 45–55. <https://doi.org/10.9790/487X-18214555>
- ERDIL, S. T., AND YILDIZ, O. (2011). Measuring service quality and a comparative analysis in the passenger carriage of airline industry. *Procedia - Social and Behavioral Sciences*, 24, 1232–1242. <https://doi.org/10.1016/j.sbspro.2011.09.117>
- FIDA, B. A., AHMED, U., AL-BALUSHI, Y., AND SINGH, D. (2020). Impact of Service Quality on Customer Loyalty and Customer Satisfaction in Islamic Banks in the Sultanate of Oman. **Journal of Services Marketing**, 24(2), 112–127. <https://doi.org/10.1177/2158244020919517>

- FREI, F. X., KALAKOTA, R., LEONE, A. J., AND MARX, L. M. (1999). Process variation as a determinant of bank performance: Evidence from the retail banking study. **Management Science**, 45(9), 1210–1220. <https://doi.org/10.1287/MNSC.45.9.1210>
- FYNES, B., AND LALLY, A. M. (2008). *Innovation in Services: From Service Concepts to Service Experiences*. 329–333. https://doi.org/10.1007/978-0-387-76578-5_48
- GHOSH, S., SURJADAJA, H., & ANTONY, J. (2004). Optimisation of the determinants of e-service operations. **Business Process Management Journal**, 10(6), 616–635. <https://doi.org/10.1108/14637150410567848>
- GIACOBBE, R. W., JACKSON, D. W., CROSBY, L. A., AND BRIDGES, C. M. (2013). A Contingency Approach to Adaptive Selling Behavior and Sales Performance: **Selling Situations and Salesperson Characteristics**. 26(2), 115–142. <https://doi.org/10.2753/PSS0885-3134260202>
- HALE, A. T. (2015). Theory Development in Services Marketing: Transcending Service Specificity. *Developments in Marketing Science: Proceedings of the Academy of Marketing Science*, 42–47. https://doi.org/10.1007/978-3-319-13084-2_9
- HEGGDE, G. (2011). Strategies for Sustainable Channel Relations in Mobile Telecom Sector. **Journal of Economics and Behavioral Studies**, 1(1), 7–18. <https://doi.org/10.22610/JEBS.V1I1.216>
- HERNON, P., NITECKI, D. A., AND ALTMAN, E. (1999). Service quality and customer satisfaction: An assessment and future directions. **Journal of Academic Librarianship**, 25(1), 9–17. [https://doi.org/10.1016/s0099-1333\(99\)80170-0](https://doi.org/10.1016/s0099-1333(99)80170-0)
- IBRAHIM, M., KHALIL SHAHID, M., AND FAYAZ AHMED, S. (2014). The Impact of Telecom Services Characteristics on Consumer for Use in Pakistan. **Advances in Economics and Business**, 2(4), 172–179. <https://doi.org/10.13189/aeb.2014.020403>
- ISMAIL, A., ALLI, N., ABDULLAH, M. M., AND PARASURAMAN, B. (2009).

Perceive Value as a Moderator on the Relationship between Service Quality Features and Customer Satisfaction. **International Journal of Business and Management**, 4(2). <https://doi.org/10.5539>

JAMAL, A., AND ANASTASIADOU, K. (2009). Investigating the effects of service quality dimensions and expertise on loyalty. **European Journal of Marketing**, 43(3–4), 398–420. <https://doi.org/10.1108/03090560910935497>

JOHNSON, E. C., KARLAY, J. S., FREGIDOU-MALAMA, M., HYDER, A., AND JOHNSON, E. C. (2018). **Impact of Service Quality on customer Satisfaction Liberia Revenue Authority**. 35(1), 9–19. [https://doi.org/10.1016/s0099-1223\(99\)80170](https://doi.org/10.1016/s0099-1223(99)80170)

KANG, G. DU, AND JAMES, J. (2004). Service quality dimensions: An examination of Grönroos's service quality model. **Managing Service Quality: An International Journal**, 14(4), 266–277. <https://doi.org/10.1108/09604520410546806>

KANT, R., AND JAISWAL, D. (2017). The impact of perceived service quality dimensions on customer satisfaction: An empirical study on public sector banks in India. **International Journal of Bank Marketing**, 35(3), 411–430. <https://doi.org/10.1108/IJBM-04-2016-0051>

KNOP, K. (2019). Evaluation of quality of services provided by transport and logistics operator from pharmaceutical industry for improvement purposes. **Transportation Research Procedia**, 40, 1080–1087. <https://doi.org/10.1016/j.trpro.2019.07.151>

KRISHNAMURTHY, R., B. D. T. M., SIVAKUMAR, MR. A. K., AND SELLAMUTHU, DR. P. (2010a). INFLUENCE OF SERVICE QUALITY ON CUSTOMER SATISFACTION: APPLICATION OF SERVQUAL MODEL. **International Journal of Business and Management**, 5(4), p117. <https://doi.org/10.5539/IJBM.V5N4P117>

KUMAR, M., KEE, F. T., & MANSOR, A. T. (2009). Determining the relative importance of critical factors in delivering service quality of banks: An application of dominance analysis in SERVQUAL model. **Managing Service Quality**, 19(2), 211–228.

<https://doi.org/10.1108/09604520910943198>

- LECOMPTE, M. D., AND GOETZ, J. P. (2016). Problems of Reliability and Validity in Ethnographic Research. *Http://Dx.Doi.Org/10.3102/00346543052001031*, 52(1), 31–60. <https://doi.org/10.3102/00346543052001031>
- LEE, H., AND KIM, C. (2012). A DEA-SERVQUAL Approach to Measurement and Benchmarking of Service Quality. **Procedia - Social and Behavioral Sciences**, 40, 756–762. <https://doi.org/10.1016/j.sbspro.2012.03.262>
- LEE, J., LEE, J., AND FEICK, L. (2001). The impact of switching costs on the customer satisfaction-loyalty link: Mobile phone service in France. **Journal of Services Marketing**, 15(1), 35–48. <https://doi.org/10.1108/08876040110381463>
- MAHMOOD, A., TAUHEED RANA, M. L., AND KANWAL, S. (2018). Relationship between Service Quality, Customer Loyalty and Customer Satisfaction. **Lahore Journal of Business**, 6(2), 135–154. <https://doi.org/10.35536/LJB.2018.V6.I2.A6>
- MAHR, D., STEAD, S., AND ODEKERKEN-SCHRÖDER, G. (2019). Making sense of customer service experiences: a text mining review. **Journal of Services Marketing**, 33(1), 88–103. <https://doi.org/10.1108/JSM-10-2018-0295>
- MOORMAN, C., VAN HEERDE, H. J., MOREAU, C. P., AND PALMATIER, R. W. (2019). JM as a Marketplace of Ideas. **Journal of Marketing**, 83(1), 1–7. <https://doi.org/10.1177/0022242918818404>
- MORGAN, I. P. (1988). Preserving the Multi-service Concept in the Change from Entrepreneurial to Professional Management. **International Journal of Operations and Production Management**, 8(3), 20–30. <https://doi.org/10.1108/EB054822>
- MUHAMMAD AWAN, H., SHAHZAD BUKHARI, K., AND IQBAL, A. (2011). Service quality and customer satisfaction in the banking sector: A comparative study of conventional and Islamic banks in Pakistan.

Journal of Islamic Marketing, 2(3), 203–224.
<https://doi.org/10.1108/17590831111164750>

MUKHERJEE, A., NATH, P., AND PAL, M. (2003). Resource, service quality and performance triad: A framework for measuring efficiency of banking services. **Journal of the Operational Research Society**, 54(7), 723–735. <https://doi.org/10.1057/PALGRAVE.JORS.2601573>

MUNAWAR KHAN, M., AND FASIH, M. (2014a). Impact of Service Quality on Customer Satisfaction and Customer Loyalty: Evidence from Banking Sector. **Soc Sci Pakistan Journal of Commerce and Social Sciences**, 8(2), 331–354. <https://doi.org/10.1177/0022242985044865403>

NAMUKASA, J. (2013). The influence of airline service quality on passenger satisfaction and loyalty the case of Uganda airline industry. **TQM Journal**, 25(5), 520–532. <https://doi.org/10.1108/TQM-11-2012-0092>

NEGI, R. (2010). Determining satisfaction through customer-perceived service quality and value: Evidence from Ethiopian Telecommunications. **International Journal of Services and Operations Management**, 7(3), 333–350. <https://doi.org/10.1504/IJSOM.2010.035056>

O. D. SAFI, DR. F., AND S. ALAGHA, DR. M. (2020). The Relationship Between Service Quality And Customer Satisfaction. **International Journal of Scientific and Research Publications (IJSRP)**, 10(8), 767–787. <https://doi.org/10.29322/IJSRP.10.08.2020.P10497>

OCAMPO, L., ALINSUB, J., CASUL, R. A., ENQUIG, G., LUAR, M., PANUNCILLON, N., BONGO, M., AND OCAMPO, C. O. (2019). Public service quality evaluation with SERVQUAL and AHP-TOPSIS: A case of Philippine government agencies. **Socio-Economic Planning Sciences**, 68. <https://doi.org/10.1016/j.seps.2017.12.002>

OH, H., AND KIM, K. (2017). Customer satisfaction, service quality, and customer value: years 2000-2015. **International Journal of Contemporary Hospitality Management**, 29(1), 2–29. <https://doi.org/10.1108/IJCHM-10-2015-0594>

OJO, O., OJO, AND OLU. (2010).The Relationship Between Service Quality and

- Customer Satisfaction in the Telecommunication Industry: Evidence From Nigeria. **BRAND. Broad Research in Accounting, Negotiation, and Distribution**, *1*(1), 88–100. <https://EconPapers.repec.org/RePEc:bra:journl:v:1:y:2010:i:1:p:88-100>
- PARASURAMAN, A., ZEITHAML, V. A., AND BERRY, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. **Journal of Marketing**, *49*(4), 41–50. <https://doi.org/10.1177/002224298504900403>
- PARASURAMAN, A., ZEITHAML, V. A., AND MALHOTRA, A. (2005). E-S-QUAL a multiple-item scale for assessing electronic service quality. **Journal of Service Research**, *7*(3), 213–233. <https://doi.org/10.1177/1094670504271156>
- PETRIDOU, E., SPATHIS, C., GLAVELI, N., AND LIASSIDES, C. (2007). Bank service quality: Empirical evidence from Greek and Bulgarian retail customers. **International Journal of Quality and Reliability Management**, *24*(6), 568–585. <https://doi.org/10.1108/02656710710757772>
- PLEGER BEBKO, C. (2000a). Service intangibility and its impact on consumer expectations of service quality. **Journal of Services Marketing**, *14*(1), 9–26. <https://doi.org/10.1108/08876040010309185>
- PONSIGNON, F., SMART, P. A., AND MAULL, R. S. (2011). Service delivery system design: Characteristics and contingencies. **International Journal of Operations and Production Management**, *31*(3), 324–349. <https://doi.org/10.1108/01443571111111946>
- PREVITE, J., AND ROBERTSON, N. (2019). A continuum of transformative service exchange: insights for service and social marketers. **Journal of Services Marketing**, *33*(6), 671–686. <https://doi.org/10.1108/JSM-10-2018-0280>
- RAREŞ, O. D. (2014). Measuring Perceived Service Quality Offline vs. Online: A New PeSQ Conceptual Model. **Procedia Economics and Finance**, *15*, 538–551. [https://doi.org/10.1016/s2212-5671\(14\)00505](https://doi.org/10.1016/s2212-5671(14)00505)

- RUST, R. T., ZAHORIK, A. J., AND KEININGHAM, T. L. (1995). Return on Quality (ROQ): **Making Service Quality Financially Accountable**. *Https://Doi.Org/10.1177/002224299505900205*, 59(2), 58–70. <https://doi.org/10.1177/002224299505900205>
- S. ALNSOUR, M., ABU TAYEH, B., AND AWWAD ALZYADAT, M. (2014). Using SERVQUAL to assess the quality of service provided by Jordanian telecommunications Sector. **International Journal of Commerce and Management**, 24(3), 209–218. <https://doi.org/10.1108/IJCOMA-03-2012-0021>
- SABIOTE, C. M., FRÍAS, D. M., AND CASTAÑEDA, J. A. (2012). The moderating effect of uncertainty-avoidance on overall perceived value of a service purchased online. **Internet Research**, 22(2), 180–198. <https://doi.org/10.1108/10662241211214557>
- SALEH, F., AND RYAN, C. (2006). Analysing Service Quality in the Hospitality Industry **Using the SERVQUAL Model**. *Http://Dx.Doi.Org/10.1080/02642069100000049*, 11(3), 324–345. <https://doi.org/10.1080/02642069100000049>
- SANTOURIDIS, I., AND TRIVELLAS, P. (2010a). Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece. **TQM Journal**, 22(3), 330–343. <https://doi.org/10.1108/17542731011035550>
- SIVADAS, E., AND BAKER-PREWITT, J. L. (2000). An examination of the relationship between service quality, customer satisfaction, and store loyalty. **International Journal of Retail and Distribution Management**, 28(2), 73–82. <https://doi.org/10.1108/09590550010315223>
- SMITH, A. K., BOLTON, R. N., AND WAGNER, J. (1999). A model of customer satisfaction with service encounters involving failure and recovery. **Journal of Marketing Research**, 36(3), 356–372. <https://doi.org/10.2307/3152082>
- STEVEN A TAYLOR, T. L. (1994). **An assessment of the relationship between service quality and customer satisfaction in the formation of**

- consumer's purchase intentions. Journal of retailing**, 70(2), 163-178.
<https://www.sciencedirect.com/getaccess/pii/0022435994900132/purchase>
[e](#)
- SUDAN - LOGISTICS CAPACITY ASSESSMENT - Digital Logistics Capacity Assessments.* (n.d.). Retrieved March 31, 2023, from <https://dlca.logcluster.org/display/public/DLCA/Sudan>
- SURESHCHANDAR, G. S., RAJENDRAN, C., AND ANANTHARAMAN, R. N. (2002a). Determinants of customer-perceived service quality: A confirmatory factor analysis approach. **Journal of Services Marketing**, 16(1), 9–34. <https://doi.org/10.1108/08876040210419398>
- TAMBI, A. M. B. A., GHAZALI, M. C., AND RAHIM, N. A. B. A. (2008). **Service quality at an Inland Revenue Board's branch office in Malaysia.** *Http://Dx.Doi.Org/10.1080/14783360802227761*, 19(9), 963–968. <https://doi.org/10.1080/14783360802227761>
- TAYLOR, S. A., AND BAKER, T. L. (1994). An assessment of the relationship between service quality and customer satisfaction in the formation of consumers' purchase intentions. **Journal of Retailing**, 70(2), 163–178. [https://doi.org/10.1016/0022-4359\(94\)90013-2](https://doi.org/10.1016/0022-4359(94)90013-2)
- TRENEVSKA BLAGOEVA, K., AND MIJOSKA, M. (2019). Assessing Organizational Maturity in Predictive Analytics of Telecommunications Companies in the Republic of Macedonia. **Economic Analysis**, 52(1), 48–55. <https://doi.org/10.28934/EA.19.52.12.PP48-55>
- VAN DER WAL, R. W. E., PAMPALLIS, A., AND BOND, C. (2002). Service quality in a cellular telecommunications company: a South African experience. **Managing Service Quality: An International Journal**, 12(5), 323–335. <https://doi.org/10.1108/09604520210442119>
- WEN, C. H., & HILMI, M. F. (2011). Exploring Service Quality, Customer Satisfaction and Customer Loyalty in the Malaysian Mobile Telecommunication Industry. **Science and Engineering Research**, 720–725
- WONG, A., AND SOHAL, A. (2003). Service quality and customer loyalty

perspectives on two levels of retail relationships. **Journal of Services Marketing**, 17(5), 495–513.
<https://doi.org/10.1108/08876040310486285>

WYMER, W., ZHU, F. X., & CHEN, I. (2002). IT- based services and service quality in consumer banking. **International Journal of Service Industry Management**, 69–90

YEO, G. T., THAI, V. V., AND ROH, S. Y. (2015). An Analysis of Port Service Quality and Customer Satisfaction: The Case of Korean Container Ports. **Asian Journal of Shipping and Logistics**, 31(4), 437–447.
<https://doi.org/10.1016/j.ajsl.2016.01.002>

ZEINA T AL HAKIM, AND BASSEM E. MAAMARI. (2017a). Measuring Perceived Service Quality and Customer Satisfaction for Service Managers: The case of the Lebanese Retail Banking Industry. **E-Service Journal**, 10(2), 23. <https://doi.org/10.2979/ESERVICEJ.10.2.02>

ZEITHAML, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. **Journal of Marketing**, 52(3), 2–22. <https://doi.org/10.1177/002224298805200302>

ZEITHAML, V. A., PARASURAMAN, A., & MALHOTRA, A. (2002). Service quality delivery through web sites: A critical review of extant knowledge. **Journal of the Academy of Marketing Science**, 30(4), 362–375.
<https://doi.org/10.1177/009207002236911>

ZHANG, L., YI, Y., AND ZHOU, G. (2022). Cultivate customer loyalty in national culture: a meta-analysis of electronic banking customer loyalty. **Cross Cultural and Strategic Management**, 29(3), 698–728.
<https://doi.org/10.1108/CCSM-08-2021-0155>

INTERNET SOURCE

<https://www.sciencedirect.com/science/article/pii/S2405844023023848>

TELECOMMUNICATIONS IN SUDAN. (n.d.). Retrieved from world data info:
[https:// www.worlddata.info/africa/sudan/telecommunications.php](https://www.worlddata.info/africa/sudan/telecommunications.php)

APPENDIX

Appendix A: Study Questionnaire

Appendix B: Ethical Approval Form

Appendix A: Study Questionnaire

THE EFFECT OF SERVICE QUALITY ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY: A RESEARCH ON CUSTOMERS OF SUDAN TELECOMMUNICATION COMPANIES

Hello,

I am a student currently studying master's in Business Administration at Istanbul Aydin University. I would like to inform you that this is my greatest opportunity having you as one of a few people who are about to sacrifice their time to attend to my questionnaire. I am undertaking a research topic which is about "THE EFFECT OF SERVICE QUALITY ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY: A RESEARCH ON CUSTOMERS OF SUDAN TELECOMMUNICATION COMPANIES". Please help me to collect data by answering the following questions. This research is intended for academic purposes only and every respondent will be treated as anonymous. I would like to thank you in advance for your contribution.

Kindly note that the questionnaire form will contain some closed-ended type questions and custom five-part Likert scale, ranging from 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree

Thank you very much

Section One: Demographic Characteristics of Participants

1. Gender

- Male
- Female

2. Age

- Under 18

- 18 - 30
- 31 – 40
- 41- 50
- 51 and above

3. Education Level

- High school or below
- Undergraduate degree
- Graduate degree
- Postgraduate

4. Marital Status

- Single
- Married
- Divorced

5. Monthly Income

- SDG 25000 and below
- SDG 25000- SDG 35000
- SDG 35000- SDG 45000
- SDG 45000 and above

6. How many years do you use your current network

- Less than 1 year
- 1-3 years
- 3- 5 years
- 5 or above

7. Which line type do you use?

- Zain
- Mtn

- Sudani
- 8. What is your tariff plan?
- Prepaid
- Postpaid

Section two: Service quality for Participants:

- 9. This network has a good coverage nationwide
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- 10. The service provider accurately keeps all transactions safe and reliable
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- 11. There are enough number of branches allocated within different regions
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- 12. They provide their services at the times promised

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

13. Employees have knowledge to answer the questions of the customer

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

14. Employees are never being too busy to answer the customer's questions.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

15. Operating hours are convenient to all customers

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

16. The services requested by the customers are carried out as soon as possible

- Strongly disagree

- Disagree
- Neutral
- Agree
- Strongly agree

17. This network provides different means of contact through telephone, branches, emails, over the counter, Posta and website

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

18. The customer care team carefully understands what I tell them

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

19. All services of this mobile operator shaped to fulfil customers' demands and interests

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

20. When a customer has a problem, Employees shows a sincere interest to solve the problem

- Strongly disagree

- Disagree
- Neutral
- Agree
- Strongly agree

21. Employees of my mobile operator are always polite and nice

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

22. Employees of my mobile operator always give each customer individualized attention

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

23. Customer complaints and suggestions are taken into consideration in order to improve service quality

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

24. I always like the furniture and couch because they are comfortable for customers' interaction with customer care within the showrooms

- Strongly disagree

- Disagree
- Neutral
- Agree
- Strongly agree

25. Counters are always equipped with sophisticated facilities like Wi-Fi, camera, re-load machine

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

26. Materials and information related to services (promotion banners, cards) always clearly displayed

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

27. The pricing policies of products and services for this mobile operator are attractive

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

28. I will continue using this mobile operator unless there are poor adjustments made to prices

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

29. This operator offers prices for different services that suit my needs

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

30. Price ranges for this mobile operator are better than other networks

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Section three: Customer satisfaction

31. Services provided by this mobile operator are exactly what I need

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

32. Service quality has improved my satisfaction with the mobile operator as a customer

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

33. I am happy with my mobile operator because it meets all my expectations

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

34. As a customer, I am generally satisfied with the services I received from the mobile operator

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Section four: Customer loyalty

35. I would highly recommend the mobile operator to my friends and family

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

36. I feel loyal to this mobile operator

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

37. I am likely to make positive comments about the mobile operator to my friends and relatives

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

38. I will not use another network even if it gets lost or damaged by prevailing conditions

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

39. I enjoy being a customer of this mobile operator

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Appendix B: Ethical Approval Form:

Evrak Tarih ve Sayısı: 13.03.2023-80912



T.C.
İSTANBUL AYDIN ÜNİVERSİTESİ REKTÖRLÜĞÜ
Lisansüstü Eğitim Enstitüsü Müdürlüğü

Sayı : E-88083623-020-80912
Konu : Etik Onayı Hk.

13.03.2023

Sayın SARA ABDELBAGI MOHAMED
ABDELRAHİM

Tez çalışmanızda kullanmak üzere yapmayı talep ettiğiniz anketiniz İstanbul Aydın Üniversitesi Etik Komisyonu'nun 02.03.2023 tarihli ve 2023/02 sayılı kararıyla uygun bulunmuştur. Bilgilerinize rica ederim.

Dr.Öğr.Üyesi Mehmet Sencer GİRGİN
Müdür Yardımcısı

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Belge Doğrulama Kodu : BSC4CJCN3Z Ptn Kodu : 82082 Belge Takip Adresi : <https://www.turkiye.gov.tr/istanbul-aydin-universitesi-ebys/>
Adres : Beyoğlu Mah. İnönü Cad. No:38 Sefaköy , 34295 Küçükçekmece / İSTANBUL Bilgi için : Tuğba SÜNNETÇİ
Telefon : 444 1 428 Ünvani : Yazı İşleri Uzmanı
Web : <http://www.aydin.edu.tr/> Kep Adresi : iau.yazisleri@iau.hn03.kep.tr Tel No : 31002



RESUME

Name Surname

Sara Abdelbagi Mohamed Abdelrahim

Education

2021- 2023: Master of Business Administration at IAU (Istanbul Aydin University).

2013- 2017: Bachelor degree in Public Relations and Advertisement at National Ribat University.

Language

Arabic: Native language

English: Advanced

Personal Skills

- Excellent organizational skills
- Team leader
- Problem Solving
- Enthusiastic and energetic with good communication skills- both written and verbal
- Experienced with most Microsoft Office programs
- Highly motivated
- Vision oriented

Certificate of Appreciation

- Volunteer certificate, Diplomatic Simulation at Best Diplomats Turkey 2023
- Volunteer certificate, World Youth Model United Nations 2021
- Academic Excellence Certificate, National Ribat University 2017
- Volunteer certificate, Goatee Institute 2016

Work Experience

- From November 2022 to December 2022 as assistant export manager in Nemkar for cleaning equipment.

Duties:

- Receiving the client's list of orders from the export manager and making sure that all items are available in coordination with the warehouse, metal department, and the textile department.
- Preparing labels and ensuring that they are compatible with all orders
- Manage and follow up the shipping process with warehouse management on the day of shipment
- Finalizing the shipping procedures, taking photos for the container inside and outside, delivering the receipts to both parties, the accounting department of the company and the driver of the shipment.
- From June 2020 to December 2020 as marketing specialist in Zafar international company

Duties:

- Preparing the monthly social media marketing plan for the agents
- Preparing the requirements and documents needed from chartered Institute of marketing
- Participate in interviewing sales team member for Zafar training center
- Participate as coordinator with UNIDO project in three states around Sudan.
- From December 2019 to April 2020 as a trainee in marketing Department at worker's National Bank

Duties:

- Participate in opening accounts for new customers and preparing their statements in one of the bank branches for six days
- Represent the bank in Khartoum International fair during all the exhibition days
- Preparing the presentations for meeting with the head department
- From August 2018 to September 2019 as call center supervisor in Sudatel telecommunication group.

Duties:

- Answering questions for agents, and handling challenging calls from them
- Training and guiding agents on how to manage calls and dealing with customers
- Monitoring agents progress and motivating them for better performance
- Preparing and presenting weekly reports for agents' performance and calls that they received in details to the top management for better improvement