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Overall Service Quality of Nigeria Seaport: Case of Nigeria Hub Port Apapa Port Complex

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ABSTRACT

The aim of this study is to analyze the overall service quality of seaports in Nigeria focusing at the Apapa port complex, Lagos. The study used SERVQUAL model and structural equation model to analyze the customer's perception from the seaport users and port operator via structured questionnaire. From the analysis, SERVQUAL model result shows various relationships that exist between the overall quality of service and their indicators. Ports and customers expect more than what they perceive therefore ports and must strive hard to improve all the service quality dimensions for improved customer satisfaction. Hypothesis result shows a positive and significant relationship between overall service quality and tangibles. Recommendations on various policy implications on how to create new strategies to improve customer satisfaction at the nation's ports.

Keywords: service quality, seaport, SERVQUAL model and perception.

INTRODUCTION

The pivotal role of maritime transport in the socioeconomic, transformational changes and political development of nations all over the world is very crucial and well recognized as the most cardinal factor for growth and development. This seems to reflect in the most recent studies of industrial growth and productivity which continues to pay careful attention to the immense contributions and importance of this critical industry and vital subsector of the global economic system. The social needs for maritime transport has to do with how it helps in solving human problems, especially regarding operational-industry modalities, recreational transformational linkages and business-transactional exchanges, as well as the movement of goods and services across African continental borders (NPA 2011). The maritime industry includes all enterprises engaged in the business of designing, constructing, manufacturing, acquiring, operating, supplying, repairing and/or maintaining vessels, or compo-

nent parts thereof: of managing and/or operating shipping lines, stevedoring and customs brokerage services, shipyards, dry docks, marine railways, marine repair shops, shipping and freight forwarding services and similar enterprises.

Generally, the industry embraces all the maritime-related business activities which take place within the country's maritime environment. These include offshore economic activities such as fishing, salvage, towage, underwater resources and onshore economic activities such as port activities, maritime transport (shipping), ship construction, repairs and maintenance activities.

The maritime industry plays a major role in this and most of these transactions are done through the sea. Due to the importance of the industry and to the globe, various ports and terminals that are involved in the maritime activities, there is need for study on how to manage the overall quality of service of the seaports. The evaluation of overall customer satisfaction at the ports is very vital since the Apapa port in question is experiencing serious congestion issues, thereby making several vessels and shipping companies to divert their vessels to eastern ports. Locally there are movement of goods which involves much logistics and planning. To this end, delivering quality service to port users is a must for success and survival in today's competitive port environment. The last decade of service quality research has reported that excellent service is a profitable strategy because it results in new customers, more business with existing customers, fewer lost customers, more insulation from price competition, and fewer mistakes requiring the performance of services. (Parasuraman, 1988).

Service touches our lives every day. Efficient and effective service delivery is essential for the economy to function and enhance the quality of human life. In general terms, customer satisfaction is seen as the essential determinant of business success. On the other hand, as the competition has increased, service quality has been identified as a determinant of market share, return on investment and cost reduction; thus, it is seen as critical to corporate success. Customer satisfaction leads to increased market share and more profit. Service organizations, ranging from small business owners to large corporations, existing throughout the business world, are constantly seeking unique ways of differentiating their offering. The port industry is no exception. With so many changes occurring in the Nigerian port industry as a result of globalization, liberalization and privatization programs, including expansion and intensification of competition from the neighbouring port of Cotonou and increasing customer sensitivity, the issue of service quality has gained considerable traction.

The demand for port service is a derived demand and ports must follow service quality trends otherwise they will be left behind, especially if there are alternative transport systems that provide quality services which do not require cargo to pass through ports. Within this context, evaluating service quality offered to customers in ports becomes very essential in the Nigerian port industry. The Nigerian economy has witnessed exponential rise in importation of goods in recent times, thus leading to acute cases of congestion at its ports. These congestions are partly attributed to a favorable business environment, occasioned by liberalization of trade in the country, stable political situation and, above all, the craze to import anything, even toothpicks.

The nature, characteristics, prospects and challenges of maritime logistics service and adminis-

tration in relation to efficiency, productivity and operational performance of the overall sector of the economy is of great concern that needs holistic and progressive government intervention. This is because, performance, productivity and clear-cut administrative agility, ability, management and competence of this all-important sector in Nigeria within the confines of international regulations and conventions, have been left to the whims and caprices of unprofessional managers, who know little or nothing about the challenges within the maritime sector. It is regrettable to state here that, within an African setting, it is believed and it is very obvious and evident to know that, amongst all the subsector of the enlarged operational economy, maritime transport seems to be the only industry that promotes mediocrity and unprofessional excellence in the way and manner the industry operations are run and managed as the case may be. However, little literature directly addresses the dimensions or determinants of service quality in transport. Such dimensions or determinants are reflected only through the service factors in the selection criteria of transport elements, such as carriers or modes.

A search of the related literature reveals that most of the literature address the issue indirectly through carrier or port selection decisions rather than directly through the attributes of quality dimensions of maritime transport-related services. Nevertheless, through the analysis and discussion of the selection variables based on groups of factors, one can identify the service- and performance-related attributes that are within the scope of dimensions of service quality. Pearson's (1980) finds that the most important criteria to be flexibility. On the quay, speed of transit, reliability and regularity greatly influenced customers' carrier choice. The issue of carrier selection decisions in liner shipping was examined by Brooks (1985, 1990), in which the carrier selection criteria are frequency of sailings, transit time, directness of sailings, on-time pick-up and delivery, cost of service, cooperation between personnel, carrier flexibility, fast claims response, tracing capability of the carrier, sales representative, carrier's reputation for reliability, past loss and damage experience, informational nature of advertising and carrier appropriateness.

Dracula et al. (1999) reveal that SERVQUAL may be better represented by a more parsimonious (i.e. three-dimensional) factor structure. Slack (1985) is probably the pioneer scholar who examined the criteria that shippers use in their port selection decisions, which include size of port, port equipment, proximity of port, port charges, port security and congestion. Studies by Murphy et al. (1989, 1991, 1992) show that equipment availability, shipment information and loss and damage performance are the three most important carrier selection factors among freight forwarders, while for international ports selection factors are equipment availability, loss and damage performance, large shipment capabilities and convenient pick-up and delivery time. Tongzon (2002) finds that port efficiency is the most important factor in port choice and performance. Meanwhile Lopez and Poole (1998) indicate three dimensions contributed to the quality of port services, namely, efficiency, timeliness and security. Ugboma et al. (2004) finds that all service quality in maritime transport SERVQUAL dimensions were valid. Meanwhile, Frankel (1993) reports that the following nine criteria indicate the major quality concerns with regards to liner shipping services: reliability of service, time of service and maintenance of delivery time, availability of promised or advertised capacity, cargo safety, security and maintenance, cargo flow control and tracking, documentation and information flows ef-

fectiveness (timeliness and accuracy), Cost control, billing and cost management, service status control and projection, intermodal management.

The notion of service quality in maritime transport nowadays has far exceeded the scope of selection criteria decisions on carriers or ports. In a range of literature on quality in shipping, or "quality shipping." Quality has a broader definition than purely providing quality services and contains many other elements. Quality shipping in practice is closely related to safety and environmental protection issues, as emphasized in Hawkins (2001), Bengtson (1992), MPA Singapore (2000). Botterill (1995) also stressed the important contribution that quality management can make to shipping where safety management is 85 percent of ship management and safety management is 85 percent of a quality management system. The critical importance of safety and environmental protection concerns also sheds light on a new and indispensable dimension of maritime transport services: corporate social responsibility.

The shipping community and society nowadays are very concerned with the safety and environmental protection awareness and responsible behaviour of service providers in maritime transport. Undeniably, when an accident such as an oil spill occurs, it is not only the company's shareholders who suffer with loss of property, but also other stakeholders, for instance fishery and tourism industries, who must bear the consequences of such an accident. It is no surprise then that in the shipping industry, corporate social responsibility is associated with the concept of quality, and quality services of maritime transport must incorporate this dimension. This viewpoint has been increasingly acknowledged by professionals, academia, international governing bodies and stakeholders in the maritime transport industry, as reflected in the works of Ruiter (1999), Gratsos (1998) and Eliades (1992), and by some initiatives such as the Green Award (Green Award, 2004) and the Eco ports port project (Eco ports, 2004).

It can be seen from the above that service quality in maritime transport means not only safe, reliable, efficient transport services, but also socially responsible behaviour and activities regarding safety and environmental protection concerns. Evidence in the literature indicates that service quality has become a major strategy for ports at improving its performance. The expected result of this project is to identify and assess the key determinants of port service quality and to determine the quality of service offered by Apapa port in Nigeria using SERVQUAL model and a Customer Index to measure port users' level of satisfaction at these ports. Relevant literatures in port service quality were reviewed to give relevance to the survey. Data for the study were collected via a well-structured questionnaire, analysed, and perception and expectation gap scores evaluated. Increasingly over past decades, there has been recognition from transport operators that improvement in transport service quality is critical in achieving a differential advantage over competition (Cotham et al., 1969).

Maritime transport in Nigeria deals mainly with the transportation or movement of goods, large cargo and other commodities from the shores of the country to their destination countries by sea. To this end, it is very glaring that the maritime sub-sector of the enlarged sector of the African nation's states suffers, like all other sectors, from the effects of limited resources, of which Nigeria is hard hit in this regard when compared with other African States (Ndikom, 2013). The problems and challenges facing this method of cargo transport ranges from quality of service, cost and pricing system by Seaports and shipping companies to overall customer

satisfaction. The understanding of customer's needs within a seeming competitive maritime industry has become an important factor for service providers' successes. Satisfaction has become of great interest to practitioners because it is important to customer retention (Patterson et al., 1997; Sedon, 1997). There are also various restrictions that make Maritime industry different from those in other parts of Africa and the world, where ports operate at established minimum levels of safety, security, operational performance and standards.

In contrast, as far as perception is concerned, the interest lies in how well the service provider plays his role. The sooner the service providers can improve their service quality, the more they are able to help customers to receive what they want (Cook, Macaulay & Coldicott, 2004). It is rational to focus on examining the relationship between perception about the service quality and service quality dimensions as a potentially important dimension of customer retention. Customer loyalty is the most common marketing strategy that companies attempt to implement in their businesses. It is less expensive to retain existing customers than to obtain new customers (Reichheld & Saccer, 1990). Researchers suggest that customer retention is a focus on the behavioral intention to repeat purchase behaviour (Hennig–Thurau & Klee, 1997). It improves service quality and customer relationship (Hanson et al., 1996). No research explicitly explored the relationship among preconception about the service, service quality and customer retention. Exploring the relationship among preconception, service quality and customer retention adds to the knowledge base.

Overtime, maritime transport has become a major means for import and export of goods and other forms of international trade by sea as well as provision of shipping services. Taking into consideration of service quality parameters for improved service performance, service quality and customer satisfaction, the SERVQUAL model measures the difference between customers' expectations and perceptions in terms of performance within the Nigerian maritime industry using various service quality dimensions.

The fundamental problems that have contributed to the harsh operating environment of our ports are: Inadequate berthing space, poor dredging problems, draft restriction/levels, sea piracy problems, reduced channel widths due to silting and unwholesome obstacles, absence of daylight hours (shifts), dock labor problems, advance prioritizing of vessel call, vessel delay problems and inadequate functioning plants and equipment. Improved service quality in the future is the critical factor that will determine whether the business will survive or fail (Thompson, Green & Bokma 2000). Better service quality typically helps to get higher market share and better returns (Slu & Mou 2003). The aim of this study is to assess maritime service quality and customer satisfaction using SERVQUAL model through the following objectives:

i. to identify various service indicators at the seaport;
ii. to examine the key determinants of port service quality;
iii. to examine the overall quality of service offered by shipping lines at Lagos Apapa port;
iv. to examine the overall quality of service;
v. to examine the safety of service; and
vi. to examine reliability of service.

Hypotheses

To achieve a good result from the study, hypothesis will be tasted as follow;

H_0: There is no statistical relationship between Overall quality of service and Tangibility perceived by port users

H_0: There is no statistical relationship between overall quality of service and responsiveness perceived by port users

H_0 There is no statistical relationship between overall quality of service and assurance perceived by port users

H_0: There is no statistical relationship between overall quality of service and communication perceived by port users

H_0: There is no statistical relationship between overall quality of service and security perceived by port users.

Study area: Apapa Port

Apapa Port Complex, also known as the Lagos Port Complex, is Nigeria's largest and busiest port complex. The complex consists of several facilities including Apapa quays, Third Apapa Wharf Extension, Apapa Dockyard, Apapa Petroleum Wharf, Bulk Vegetable Oil Wharf, Ijora Wharf, Kirikiri Lighter Terminal, and Lily pond inland container terminal. (Salisu & Raji, 2017). The port was financed and built by the colonial government of Nigeria, it became the nation's busiest port for exporting agricultural produce from the provinces of Western and Northern Nigeria in the late 1920s. Administration was transferred to the Nigerian government upon the granting of self-government and in 2005, the complex was divided into terminals and contracted out to private operators with NPA acting as the landlord and regulator. The Nigeria Ports Authority owned and administered operations in Lagos Port Complex from 1956 until it was concessioned in 2005. During this period most of the services within the port were performed by NPA except for stevedoring and manufacturing. In 2005, the complex was divided into multiple terminals and sold to private operators to manage for a set number of years (Salisu & Raji, 2017).

Fig 1: Lagos State showing Apapa port.

LITERATURE REVIEW

An analysis of port service quality and customer satisfaction (Yeo, Thai & Roh, 2015) the case of Korean container ports aimed at studying the significant influence on the satisfaction of port customers at the container port. The study used a model that was validated through a survey of 313 members of the Korean Port Logistics Association (KPLA). Partial least squares structural equation modeling (PLS-SEM) was conducted to confirm the PSQ dimensions and to examine their relationship with customer satisfaction using SmartPLS 3.2.1 software. Port Service Quality (PSQ) is found to be a five-factor construct, and its management, and image and social responsibility factors have significant positive effects on customer satisfaction. In addition to its academic contribution, this study also contributes to management practices because port managers can use the PSQ scale to measure their customers' satisfaction and justify investments in the quality management of port services.

Kolanović, Dundović and Jugović (2011) studied the customer-based port service quality model. This port service quality study is an important precondition for an efficient development of port industry and traffic system as a whole. It is due to the complexity of any port, as a system consisting of a large number of stakeholders rendering services to customers with various requirements that a unique set of port service quality indices has been still missing. For this reason, the paper explains the port service quality concept in compliance with stakeholders and their requirements within the context of port service quality. The aim of the paper is to present a proposal for a customer-based port service quality model based on empirical study and its reliability testing on a selected sample. The proposed model is defined by five factors and fits satisfactorily into the obtained poll questionnaire results. The statistical data processing package SPSS 16.0 and the LISREL 8.54 program were used in the study.

Duault, (2016) studied the Swedish container shipping industry to gain a greater understanding of the container shipping industry. This way the notion of service quality can be brought to the given industry and acknowledge the perceptions of various actors regarding the aspects of quality in seaports. This study aims to analyze the service quality in a container terminal as well as confronting the views of service providers and their customers. Methodology In order to complete the study, a qualitative approach have been used, composed of 11 interviews, completed by 1 focus group. The interviews could be assimilated as case studies due to the access of several documents, analyzed at a later stage. Findings show that the academia relates a globally accurate image of the industry practices within the container shipping industry. However, several components of the service quality could be evaluated differently, including a better understanding of the Swedish market specificities, and the application of some of the following factors to the named market. The factors concerned by the gap between the academia and the industry practices are the lack of insights on consistency, flexibility, service encounters and relationships, and an overdeveloped interest for security and safety, certifications and measuring scales.

Port service quality study of Nigerian seaports (Onyemechi, Amanze, Igboanusi & Sule, 2017), was focused on service quality assessment in the Western and Eastern port of Nigerian as the

study areas. The study discovered the level of satisfaction derived by port users by evaluating expectations and perceptions at the ports using some selected analytical tools to test hypothesis. This evaluation was based on the service quality model as developed by Parasuraman within the core dimensions of empathy, responsiveness, tangibles, reliability and assurance. The attributes of expectations and perceptions raised within these dimensions were addressed with two hypotheses. The hypothesis were addressed with the results of Factor Analysis which identified the significance port users attach to service quality dimensions and their respective attributes.

Ugboma, Ogwude, Ugboma & Nnadi (2007) studied service quality and satisfaction measurements in Nigerian ports, an exploration. The object of the paper was to identify and assess the key determinants of port service quality and to determine the quality of service offered by two ports in Nigeria using SERVQUAL model and a customer satisfaction index to measure port users' level of satisfaction at these ports relevant to the study. Data for the study were collected via a well-structured questionnaire, to analyze the perception and expectation gap scores. The findings of this study reveal that service offered at Port Harcourt port had a favourable influence on actual perceptions of quality of service and that there is an improved service at the port in comparison with Lagos. Also, the study reveals that there is a very strong relationship between the core and relational dimensions of service quality and satisfaction. The study also reveals that port managers should focus on those dimensions where customers perceive receiving a different service than expected, moreso, managers should be in regular contact with employees to assess their service experiences. The study shows how using SERVQUAL and customer satisfaction index to identify important attributes of port service quality that could be used as an early warning system for port, thus being an important tool for port managers.

Tuan, Vu, & Nhan (2018) studied customer satisfaction for the quality of sea transport services in Tan Cang shipping joint stock company, Da Nang branch. The objectives of this study was to indicate the factors that affect satisfaction when using ocean shipping services at Tan Cang Shipping Joint Stock Company Da Nang branch include: (1) resources; (2) results; (3) service process; (4) management; (5) brand. From then on, solutions to improve the quality of service delivery to customers.

Luo (2013) studied on the analysis of port competitiveness through user's perception measurement. The purpose of the study is to explore and distinguish the importance of relative factors which determine ports competitiveness from ports users' perspective. Port users were defined into three groups, that is, shipping liners, freight forwarders and shippers, and they will be investigated in this study. The results regarding to the importance of various factors relied on the questionnaire from professionals and staffs in this industry based on their different angles by using AHP (analytic hierarchy process) model. Then, the results of survey were used for measuring European Top 4 ports, port of Rotterdam, Hamburg, Antwerp and Bremerhaven were listed to be considered as the target ports. The potential influential factors are geographical location, physical infrastructure, hinterland connection, technological infrastructure, port management and administration and terminal cost. The importance of these factors are various from different users' requirements and expectations on port services. Hinterland connection is a common focus of all parties' concerns, port efficiency and infrastructure construction are

still the main targets that ports are struggling for and the exploration and usage of information technology is beneficial for improving operational efficiency of ports to some extent. Conclusions finally were drawn based on the analysis which can be used as benchmark to measure ports performance and their competitors as well, in order to realize which aspects should be put much attention for further improvement.

The impact of port service quality on customer satisfaction the case of Singapore, Thai (2015) the study investigates the concept of port service quality (PSQ) and examines its influence on customer satisfaction in the port sector. Following a literature review, a conceptual model of PSQ and its influence on customer satisfaction is proposed. The model is first checked for validity in an interview with senior executives working in various container shipping lines in Singapore, then validated through a survey of 175 members of the Singapore Shipping Association and Singapore Logistics Association. A confirmatory factor analysis, followed by multiple regression is conducted to confirm the PSQ construct and examine the relationship between PSQ and customer satisfaction. It is found that PSQ is a four-dimensional construct and that the relationship between PSQ and customer satisfaction is positively significant. Specifically, the PSQ dimensions of outcomes, management, process and image and social responsibility all have significant positive impact on customer satisfaction. This study contributes to management practice as port managers can use the PSQ scale to measure their customers' satisfaction, and justify investments in port service quality as a relational marketing instrument. This research also contributes to theory building, as it presents and validates the respective model of PSQ and customer satisfaction specifically for the port sector.

SERVQUAL represents service quality as the discrepancy between a customer's expectations for a service offering and the customer's perceptions of the service received, requiring respondents to answer questions about both their expectations and their perceptions Parasuraman et al. (1988). The use of perceived as opposed to actual service received makes the SERVQUAL measure an attitude measure that is related to, but not the same as, satisfaction (Parasuraman et. al., 1988). The difference between expectations and perceptions is called the gap which is the determinant of customers' perception of service quality as shown in Figure 2.

SERVQUAL dimensions

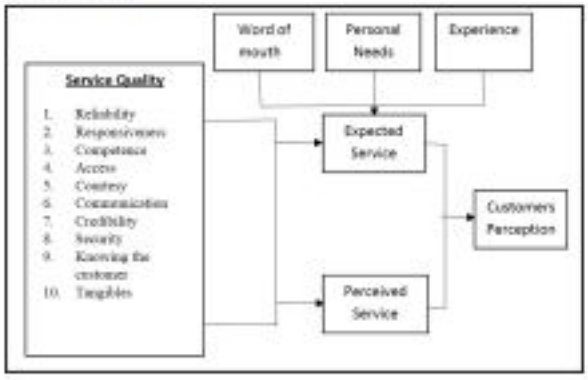

Fig. 2: Diagrammatic representation of SERVQUAL dimensions

The SERVPERF model developed by Cronin & Taylor, (1992), was derived from the SERVQUAL model by dropping the expectations and measuring service quality perceptions just by evaluating the customer's the overall feeling towards the service. In their study, they identified four important equations:

SERVQUAL = Performance – Expectations
Weighted SERVQUAL = importance x (performance – expectations)
SERVPERF = performance
Weighted SERFPERF = importance x (performance)

Implicitly the SERVPERF model assesses customers experience based on the same attributes as the SERVQUAL and conforms more closely on the implications of satisfaction and attitude literature, (Cronin et al., 1992). Later, (Teas, 1993) developed the evaluated performance model (EP) in order to overcome some of the problems associated with the gap in conceptualization of service quality (Grönroos, 1984; Parasuraman et al., 1985, 1988). This model measures the gap between perceived performance and the ideal amount of a feature not customers expectation.

He argues that an examination indicates that the P-E (perception – expectation) framework is of questionable validity because of conceptual and definitional problems involving the conceptual definition of expectations, theoretical justification of the expectation's component of the P-E framework, and measurement validity of the expectation. He then revised expectation measures specified in the published service quality literature to ideal amounts of the service attributes (Teas, 1993).

(Brady & Cronin, 2001), proposed a multidimensional and hierarchical construct, in which service quality is explained by three primary dimensions; interaction quality, physical environment quality and outcome quality. Each of these dimensions consists of three corresponding sub-dimensions. Interaction quality made up of attitude, behaviour and expertise; physical environment quality consisting of ambient conditions, design and social factors while the outcome quality consists of waiting time, tangibles and valence.

According to these authors, hierarchical and multidimensional model improves the understanding of three basic issues about service quality:

a. What defines service quality perceptions?
b. How service quality perceptions are formed
c. How important it is where the service experience takes place and this framework can help managers as they try to improve customers' service experiences (Brady & Cronin, 2001).

(Saravanan & Rao, 2007), outlined six critical factors that customer-perceived service quality is measured from after extensively reviewing literature and they include;

i. Human aspects of service delivery (reliability, responsiveness, assurance, empathy)
ii. Core service (content, features)
iii. Social responsibility (improving corporate image)

iv. Systematization of service delivery (processes, procedures, systems and technology)
v. Tangibles of service (Equipment's, machinery, signage, employee appearance)
vi. Service marketing

From their study, they found out that these factors all lead to improved perceived service quality, customer satisfaction and loyalty from the customer's perspective.

According to (Brady & Cronin, 2001), based on various studies, service quality is defined by either or all of a customer's perception regarding 1) an organization's technical and functional quality; 2) the service product, service delivery and service environment; or 3) the reliability, responsiveness, empathy, assurances, and tangibles associated with a service experience. Mittal and Lassar's SERVQUAL-P model reduces the original five dimensions down to four; Reliability, Responsiveness, Personalization and Tangibles. Importantly, SERVQUAL-P includes the Personalization dimension, which refers to the social content of interaction between service employees and their customers (Bougoure & Lee, 2009).

MATERIALS AND METHOD

This section gives a brief description on how this research was conducted. This include research design, research approach, sampling design, variables and measurement procedures, method of data collection and data analysis.

Research design

Research design is a plan or strategies to use to achieve the expected results. There are different types of research design depending on the nature of a study. This includes case study design survey study and experimental design study (Cooper et al., 1998). This study carried out using a Case Study Design. Case study involved when researchers want to gain a rich understanding of the context in the research. This method provides flexibility because it allows the use of different data collection methods such as interviews, questionnaires, observations and documentary review. (Saunders et al., 2009). Also, it is depth and breadth study of variables and maintains a unitary nature of the unity of inquiry over a range of variables. It allows the use of triangulation which is important in the process of validation data.

Sampling design and procedures

The sampling procedure involves was non probabilistic sampling because the research is Case study design. According to Saunder (2009), nonprobability sampling (or non-random sampling) provides a range of alternative techniques to select samples based on your subjective judgment to answer research questions and meet the objectives. Non-probability sampling techniques also provide researcher with the opportunity to select the sample purposively and to reach difficult-to-identify members of the population. The researcher followed appropriate procedure to avoid errors that may occur and cost the whole study.

Research approach

According to Saunders et al. (2009), there are two main research approaches: deduction and induction. With deduction a theory and hypothesis (or hypotheses) are developed and a research strategy designed to test the hypothesis. With induction, data are collected, and a theory devel-

oped as a result of the data analysis. At this study researcher used induction approach because there was no hypothesis testing and data was qualitative in nature.

Variables and measurement procedures

There are two types of variables which are dependent and independent variables. A dependent variable changes in response to changes in other variables. An independent variable causes changes in a dependent variable Saunder (2009). For this study dependent variable was customer satisfaction and independent variable was service quality dimensions where any change to any dimension resulted into change in satisfaction level. The SERVQUAL model is used to assess customers' expectations and perceptions regarding service quality in shipping. Both expectations and perceptions are measured using a 7-point scale to rate their level of agreement or disagreement (1- strongly disagree and 7- strongly agree), on which the higher numbers indicate higher level of expectation or perceptions. Perceptions are based on the actual service they receive in shipping while expectations are based on past experiences and information received about it. The quality score measures the service gap or the degree to which expectations exceed perceptions. The more positive scores, the higher the level of service quality leading to a higher level of customer satisfaction. Satisfaction and service quality are both treated together as functions of a customer's perceptions and expectations. In most cases, when expectation and perception are equal, service quality is satisfactory. In this study, we use the disconfirmation paradigm which is based on the discrepancy theories. According to this paradigm, consumer's satisfaction judgments are the result of consumer's perceptions of the difference between their perception of performance and their expectations. Positive disconfirmation leads to increased satisfaction while negative disconfirmation leads to decreased satisfaction. This theory has been used to develop questionnaire.

Population methods and sample size

To calculate the sample size, the following formula was used:

$$n = \frac{z^{2\alpha}/_{2}\delta^{2}}{\varepsilon^{2}} \quad \text{..........................(1)}$$

Where n is the number of sample size, because error is 5%.ε is the error term and also, is considered 0.1 and $\delta$is calculated from:

$$\delta \approx \frac{\max X_i - \mathrm{Min}X_i}{6} = \frac{5-1}{6} = 0.0667 \quad \text{.................(2)}$$

Consequently, the minimum number of sample size is:

$$n = \frac{(1.96)^2 * (.0667)^2}{(0.1)^2} \approx 171$$

METHOD OF DATA COLLECTION

Primary data are used for the analysis by answering the research questions. Primary data was mainly obtained by administering structured questionnaires to the port users and operators in the port. Questionnaire as a general term to include all techniques of data collection in which

each person asked to respond to the same set of questions in a predetermined order (deVaus 2002).

Data collection

The SERVQUAL model 10 dimensions (reliability, responsiveness, access, communication, assurance, credibility, tangibles, security, cost, and empathy) were used which are subdivided into 20 statements, which were directed to measuring service quality in shipping. As stipulated by the SERVQUAL model, the statements are divided into two parts, the first part seeks to measure the expectations of customers and the second part seeks to measure their perceptions. There was also a part which measure satisfaction level for the purpose of knowing factors that hinders satisfaction, the measures to be taken to improve customer satisfaction and the last party which is demographic part that provides general information about respondents on age, gender, and average monthly expenditures. Thus was to enable to get a better understanding of the type of respondents and relate it to how they perceive service quality in shipping. Convenience sampling technique was used, and 200 questionnaires were administered over a 2 weeks period. 171 valid and properly completed questionnaires were retrieved. This was because some respondents failed to return the questionnaires while others provided incomplete information, thus rendering them invalid.

DATA PROCESSING AND ANALYSIS

Data analysis was carried out examining what has been collected in survey or experiment and making deductions and inferences. Furthermore, data analysis is computation of certain measures along with searching for patterns of relationship that exist among data-groups. Whereas, data processing consists of several closely related operations: editing, classification, coding, and tabulation. Data collected from respondents and documents was processed, that was editing, classification, coding and tabulation. All completed questionnaires/schedules thoroughly checked for completeness, accuracy and uniformity. The raw data obtained from field was prepared for analysis by transforming all of them into codes and entering spreadsheet packages. The analysis based on quantitative data to be collected and some extent the qualitative information from questionnaires. The SERVQUAL model was used as the basis for the structured questionnaire because it provides information in research questions in which it trying to show how customers perceive service quality in shipping by assessing the difference between the expectation and perception of services experienced by customers in shipping. This enabled to know how perceived service quality by customers and identify which items in the SERVQUAL dimensions customers are satisfied with. Also factors that hinder customer satisfaction in shipping and what should be done to improve customer satisfaction. Structural Equation Model was used for the analysis to test the relationship that exist between factors and various service quality dimension.

Structural equation model

Structural equation modeling is a statistical method increasingly used in scientific studies in the field of social sciences in recent years. The most important reason of the spread of this statistical technique is that the direct and indirect relationships among causal variables can be measured with a single model (Meydan & Şen, 2011). Structural equation modeling is a statis-

tical method used to test the relationships between observed and latent variables. Observed variables are the measured variables in the data collection process and latent variables are the variables measured by connecting to the observed variables because they cannot be directly measured. Structural Equation Modeling consists of two basic components as structural model and measurement model. The widespread adoption of structural equation model is because of the fact that it do minimize the measurement error and taking it to account the relationship between the errors in the observed variables. Another difference from the regression models of structural equality models is that they are based on the covariance matrix. For this reason, in some sources, it is named as covariance structure modelling or analysis of covariance structure (Bayram, 2013). However, structural equation modelling confirms the correspondence of the data of the relations in the theoretical model. For this reason, it can be said that structural equation modelling is more suitable for testing the hypothesis than other methods (Karagöz, 2016). Structural equation modelling consists of a system of linear equations. The key in the regression analysis is to determine how much of the change in the dependent variable is explained by the independent variable or variables. Although multiple regression analysis can only be applied to observed variables, the basic principles can be applied to structural equation modelling (Kline, 2011).

$$Z = \beta_1.X + \beta_2.Y + 1.Res1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$W = \beta_3.X + 1.Res2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$T = \beta_4.Z + \beta_5.Y + \beta_6.W + 1.Res3 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The structural equation modeling equations dealt with in two groups: endogenous and exogenous variables. In structural equation modeling, the Endogenous distinction is used as a more accurate distinction because a variable can assume the role of both the dependent variable and the independent variable at the same time. Endogenous variables are dependent variables explained by other variables, the variables Z, W and T are endogenous variables. Exogenous variables are independent variables that are not explained by any variables, the variables X and Y are external variables. If there are more than one exogenous variable, covariance between these variables is required. The terms Res1, Res2 and Res3, which appear in equations represent the residuals of each endogenous variable. These residuals are also called as error terms of the structural model. Unlike regression models, structural equality models are based on the covariance matrix. But it mainly consists of the system of linear equations.

Therefore:

Z, W and T = Overall quality of service as an output (Dependent)

Against the following input index: X and Y (Independent)

Coding

The SERVQUAL dimensions/items are main variables used in this study and coded these dimensions/items in order to ease analysis of data collected. Also, demographic information was collected from respondents and these variables must be coded as well for analysis. Here is the coding of the variables for analysis.

DIMENSIONS

Tangibles (TA)

- TA1 Seaports and shipping companies have up to date equipment's/facilities
- TA2 Physical facilities are virtually appealing.
- TA3 Employees are well dressed and appear neat.
- TA4 Physical environment of the seaports and shipping companies is clean.

Reliability (RL)

- RL1 When they promise to do something by a certain time, they do it.
- RL2 When customer has a problem, they should show sincere interest in solving the problem.
- RL3 Seaports and Shipping companies perform the service right the first time.
- RL4 They provide their services at the time they promise to do so.
- RL5 Seaports and Shipping companies keep their records accurately.

Responsiveness (RN)

- RN1 Employees give prompt services to customers.
- RN2 Employees are always willing to help customers.
- RN3 Employees are never too busy to respond to customers' requests.

Assurance (AS)

- AS1 Behaviour of employees instil confidence in customers
- AS2 Customers feel safe in their transactions with the employees
- AS3 Employees are polite to customers.
- AS4 Employees of Seaports and Shipping companies have knowledge to answer customers' questions.

Empathy (EM)

- EM1 Seaports and Shipping companies give customers individual attention.
- EM2 operating hours of Seaports and Shipping companies is convenient to customers.
- EM3 Employees of Seaports and Shipping companies give customers personal service.
- EM4 Seaports and Shipping companies have their customers' interest at heart.
- EM5 Employees of Seaports and Shipping companies understand the specific needs of their customers.

Cost (CS)

- CS1 Operational charges by seaport to shipping companies and shippers in terms of clearance and other operations should be fair.
- CS2 Operational charges are fair to customers

Access (AC)

- AC1 Customers can access information, services as soon as they require it.
- AC2 Seaports/shipping companies have 24-hur toll free customer care line for ease of access by port users

Communication (CM)

- CM1 Employees make information easily obtainable by customers.
- CM2 Seaports/shipping companies should not use technical terms when relating with customers
- CM3 They should communicate with customers when there is delay or issues regarding shipment/cargo

Security (SC)

- SC1 Seaport/shipping companies should be able to provide adequate safety on cargo during loading and off loading at the port site and gang ways.
- SC2 Seaports/shipping companies can be visited at night.

Understanding/knowing the customer

- UC1 Seaports/shipping companies should recognize their regular customers
- UC2 Seaports/shipping companies try to accommodate customers' schedules

Re-coding

- TA- Average gap score for tangible items = (TA1+TA2+TA3+TA4)/4
- RL- Average gap score for reliability items = (RL1+RL2+RL3+RL4+RL5)/5
- RN- Average gap score for responsiveness items = (RN1+RN2+RN3+RN4)/3
- AS- Average gap score for assurance items = (AS1+AS2+AS3+AS4)/4
- EM- Average gap score for empathy items = (EM1+EM2+EM3+EM4+EM5)/5
- CS- Average gap score for cost items = (CS)/1
- AC- Average gap score for access items = (AC)/1
- CM- Average gap score for communication = (CM)/1
- SC- Average gap score for security = (SC)/1
- OSQ- Overall service quality = (TA+RL+RN+AS+EM+CS/AC/CM/SC)/10

RESULT AND DISCUSSION

This section presents and discusses result findings from the data analysis of assessing customer satisfaction and service quality using SERVQUAL model in shipping, The study was aimed at to determine overall service quality perceived by customer, service quality dimensions that brings satisfaction, factors hindering customer satisfaction in shipping and to determine what should be done to improve customer satisfaction. Data analysis for this study was done in two steps, the preliminary analysis and the main analysis. For preliminary analysis which involves mainly descriptive statistics to summarize data, the demographic characteristics of the respondents were outlined in order to simplify the understanding of the data. The main analysis involved the gap score analysis whereby descriptive statistics were applied to summarize means of perceptions and expectations of customers. We calculate the perception minus expectation SCORES for each item and dimension in order to identify the service quality gaps.

Demographic characteristics of the respondents

The demographic profile of the respondents is described as follows; males were 70.6% while fe-

males were 29.4% slightly higher than males. Shipping spending per month shows that, 52.3% claimed that they spend between N100,000 to N1,000,000 for Shipping services, followed by 25.8% who spend 0 to 100,000 Naira.17.2% spend N1,000,000 to N15,000,000 and 4.7% spend above N15, 000,000 for shipping services. This is presented in the Figure4.1.

Table 4: Profile of respondents

Characteristics	Description	Percentage (%)
Gender	Male	70.6
	Female	29.4
Shippers spending per month	0-100,000	25.8
	100,000-1,000,000	52.3
	1,000,000-15,000,000	17.2
	Above 15,000,000	4.7

Source: Field data (2019)

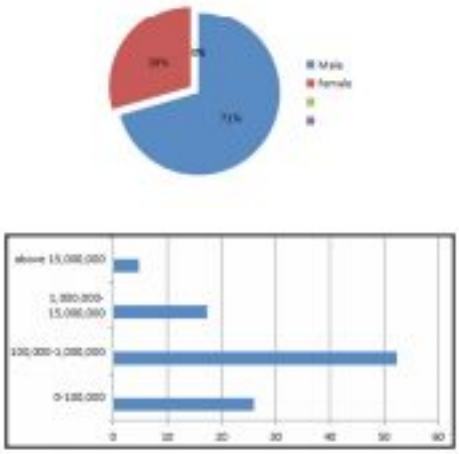

Fig. 4: Gender of respondents and income distribution. Source: Field data (2019)

Expectations and perceptions were both measured using the 7-point Likert scale whereby the higher numbers indicate higher level of expectation or perception. In general, customer expectation exceeded the perceived level of service shown by the perception scores. This resulted in a negative gap score (Perception – Expectation). According to (Parasuraman et al., 1988) it is however common for customer's expectation to exceed the actual service perceived and this signifies that there is always need for improvement. The items with the highest expectation scores were seaports and shipping companies have up-to-date equipment, physical facilities are virtually appealing, shipping companies and seaports perform the service right the first time, employees are always willing to help customers, and employees are never too busy to respond to customers' requests, Customers feel safe in their transactions with the employees, employees of seaports and shipping companies have knowledge to answer customers' ques-

tions, seaports and shipping companies give customers individual attention, operating hours of seaports and shipping companies are convenient to customers, employees of seaports and shipping companies give customers personal service, seaports and shipping companies have their customers' interest at heart and employees of seaports and shipping companies understand the specific needs of their customers.

However, these scores are not very different from scores of other items and this implies generally, customers expect very high from seaports and shipping companies. The items rated highest for actual service perceived were, seaports and shipping companies perform the service right the first time, employees are always willing to help customers, employees are never too busy to respond to customers' requests, employees of seaports and shipping companies have knowledge to answer customers' questions, seaports and shipping companies give customers individual attention, seaports and shipping companies have their customers' interest at heart and employees of seaports and shipping companies understand the specific needs of their customers.

There is no so much difference between the scores of perceptions but are generally lower than expectations. The gap scores are the difference between the perception and expectation scores, and these gap scores measure service quality and hence customer satisfaction. The more perceptions are close to expectations, the higher the perceived level of quality. The largest gaps scores were employees of seaports and shipping companies have knowledge to answer customers' questions and Employees of seaports and shipping companies give customers personal service.

Summarily, overall perceived service quality is low meaning the level of service they receive is lower than what they expect indicating there is no satisfaction. Parasuraman et al., (1985) suggested that when perceived service quality is high, then it will lead to increase in customer satisfaction. He supports the fact that service quality leads to customer satisfaction and this is in line with Saravana & Rao (2007) and Lee et al., (2000) acknowledge that customer satisfaction is based upon the level of service quality provided by the service provider. This is a good ground for asserting whether customers are satisfied with service quality in seaports and shipping companies or not since the average perception score is low. A higher perception also indicates higher satisfaction as service quality and satisfaction are positively related (Fen & Lian, 2005). This could be possibly because of either the under delivering of services to customers or the over promising of seaports and shipping companies to customers on their services.

Service quality dimensions that brings satisfaction to port users

Table 5: Summary of customer's expectations and gap scores

Dimensions	Perception scores in percentage	Expectation scores (%)	Gap scores	Average gap scores
Tangibles	-14.36	-16.88	-2.52	0.63
Reliability	-17.9	-21.5	-3.6	0.72
Responsiveness	-9.6	-12.39	-2.79	0.93
Assurance	-15.24	-17.16	-1.92	0.48
Empathy	-17.2	-20.95	-3.75	0.75

Dimensions	Perception scores in percentage	Expectation scores (%)	Gap scores	Average gap scores
Cost	-3.59	-4.22	-0.63	0.63
Access	-6.5	-8.12	1.6	0.80
Security	-6.92	-8.6	1.68	0.84
Communication	-10.74	-12.9	-2.16	0.73
Knowing/understanding customer	-7.16	-8.34	-1.18	0.59
Overall quality of service	-109.21	-126.56	36.23	7.10

The gap score analysis in table 4.2 enable us to find out how customers perceive service quality in seaports and shipping companies and try to identify what dimensions of service quality customers satisfied with. It also tries to show the overall Gap Score for Expectation (E) and perception (P) which are -109.21 and -126.56 respectively.

Table 6: Gap scores quality dimensions

Questions	Mean of perception (P)	Mean of expectation (E)	Mean of gap (P-E)	Std dev of gap
Tangible	3.59	4.22	-.62	.653
Up-to-date equipment and facilities	3.70	4.33	-.63	.784
Appealing physical environment and good signs.	3.25	4.06	-.81	1.077
Well-dressed and neat employees	3.96	4.34	-.38	.799
Reliability	3.58	4.30	-.71	.666
Doing the promised service on time	3.24	4.19	-.95	1.035
Interesting to solve your problems	3.32	4.20	-.88	1.024
Doing everything right at the first time	3.90	4.42	-.52	.865
Fulfilling the promised service at promised time	3.46	4.24	-.78	.933
Keeping accurate records and documents	4.01	4.45	-.44	.869
Responsiveness	3.12	4.13	-1.00	.834
Receiving prompt service from employees	3.25	4.23	-.98	1.126
Port and shipping company employees are willing to help	3.04	4.05	-1.01	1.182
Employees have enough time to respond to my request promptly	3.03	4.04	-1.01	1.028
Assurance	3.81	4.29	-.48	.660
Trust employees' behaviour	3.67	4.17	-.50	.952
Employees are polite	3.90	4.37	-.47	.846
Employees are knowledgeable enough to answer clients' questions	3.85	4.35	-.50	.852
Customers feel safe in their transactions with employees	3.58	4.30	-.71	.677
Empathy	3.44	4.19	-.75	.661
Individual attention to customers	3.28	4.19	-.91	1.045
Have convenient working hours	3.65	4.15	-.50	.827
Understanding the customer' specific needs	3.38	4.21	-.82	.931

Questions	Mean of perception (P)	Mean of expectation (E)	Mean of gap (P-E)	Std. dev. of gap
provide services in according to the interests of customers	3.35	4.15	-.80	.975
Cost	3.59	4.22	-.62	.657
Operational charges by seaports to shipping companies and shipper in terms of clearance and other operations should be fair.	3.70	4.33	-.63	.884
Access	3.25	4.06	-.81	1.056
Customers can access information, services as soon as they require it	3.96	4.34	-.52	.797
Seaports/shipping companies have a 24-hour toll-free customer care line	3.48	4.14	-.65	.978
Communication	3.58	4.30	-.71	.677
Employees make information easily obtainable by customers	3.24	4.19	-.95	1.035
Seaport and shipping ports do not use technical terms when relating with customers	3.32	4.20	-.88	1.024
They communicate or inform customers, clients when there is delay or other issues regarding cargo	3.90	4.42	-.36	.865
Security	3.46	4.24	-.78	.933
Seaports should be able to provide adequate safety on cargo during loading and offloading at the port sides and gangways	4.01	4.45	-.44	.689
Seaports and shipping companies cannot be visited at night	3.12	4.13	-1.03	.834
Knowing/understanding customer	3.58	4.17	-.60	.954
Seaport/shipping companies should be able to recognise their regular customer	3.35	4.15	-.80	.796
They try to accommodate customer schedules	3.52	4.26	-.74	1.098

Table 6 shows the results of the analysis of the patient satisfaction questionnaire. Patients had the most satisfaction in the question of "complaints or problems are addressed politely by employees" with the average of 4.19 in empathy, but they had the least satisfaction in the question of "seaports and shipping companies provide excellent service" with the average of 2.82 in responsiveness. Briefly, patients have the most satisfaction in access with the mean of 3.83, and then in knowing customer with the mean of 3.68 and they have the least satisfaction in communication with the mean of 3.53 (Pius, Nwaogbe & Mannian, 2017)

Table 7 below shows the average gap score, standard deviation, median, skewness and Kurtosis of the dimension. Skewness is a measure of the degree of lop-sidedness in the frequency distribution whereas Kurtosis is a degree of tailness or pointedness of a peak in the distribution. (Parasuraman et al., 1985, Pius et al., 2017) argue that the higher the scale of positive perception P, the lower the scale of minus expectation score.

Table 7: Descriptive statistics of gap score analysis for quality dimensions

	Average gap score Tangibles	Average gap score Reliability	Average gap score Responsiveness	Average gap score Assurance	Average gap score Empathy	Average gap score Cost	Average gap score Security	Average gap score Access	Average gap score Comm.	Average gap score Knowing client
Mean	-0.63	-0.72	-0.93	-0.48	-0.75	-0.63	-0.8	-0.84	-0.72	-0.59
Std. deviation	0.653	0.666	0.834	0.660	0.661	0.657	1.056	1.035	0.933	0.954
Median	-0.625	-0.78	-0.95	-0.5	-0.81	-0.63	-0.585	-0.88	-0.735	-0.77
Skewness	-0.6791	-0.617	-0.0146	-2.5961	-0.1563	0	-0.7941	-0.531	-0.2992	-0.07
Kurtosis	0.5378	-1.2337	-2.9536	7.2377	-2.2946	-5.13873	1.5	-1.861	-3.9219	-5.0795

Gap scores analysis for quality dimensions

Table 4.4 is the extension of table 4.3 which tried to show the mean score for each service quality dimensions. According to Parasuraman et al. (1985) the higher (more positive) the perception (P) minus expectation (E) score, the higher the perceived service quality and thereby leading to a higher level of customer satisfaction. In this regard, the gap scores were calculated based on the difference between the customers' perceptions and expectations of services offered by seaports and shipping companies. In general, it was found that, customers' perceptions of service quality offered by seaports and shipping companies do not meet expectations (all gaps score the dimensions are negative). Descriptions of dimensions reported as follows;

i) Tangibles (TA)

Average customers are unsatisfied with the level of services offered by ports and shipping companies. It was reported to have a gap score which is (-14.36) and mean gap score of (-.62). Customers are not satisfied with ports and shipping companies services, they should have up-to-date equipment's and physical facilities should visually appealing, employees should be well dressed and appear neat and physical environment of the ports and shipping companies should be clean.

ii) Responsiveness (RN)

Responsiveness obtained a gap score of (-3.6) with an average gap score of (-.71). Customers expect more in seaports and shipping companies in terms of Employees making information easily obtainable by customers, employees give prompt services to customers, employees are always willing to help customers and employees are never too busy to respond to customers' requests.

iii) Empathy (EM)

It had gap score of (-2.79) with smaller mean gap score of (-1.92).To this extent ports and shipping companies should give customers individual attention, operating hours of ports and shipping companies should be convenient to customers, employees of ports and shipping companies should give customers personal service and employees of ports and shipping companies should understand the specific needs of their customers.

iv) Reliability (RL)

Reliability obtained gap score of (-3.75) and it had a mean of gap score of (-1.00) which means that ports and shipping companies is expected to be more reliable to satisfy the customers in; when they promise to do something by a certain time, they do it, when customer has a problem, they should show sincere interest in solving the problem, ports and shipping companies perform the service right the first time, should provide their services at the time they promise to do so and keep their records accurately.

v) Assurance (AS)

Assurance obtained (-1.92) gap score and mean gap score of (-48).The findings reveal that customer are not satisfied with the behavior of employees instill confidence in customers, customers feel safe in their transactions with the employees, employees should be polite to customers and employees of ports and shipping companies should have knowledge to answer customers' questions.

vi) Cost (CS)

Cost obtained at (-0.63) gap score and a mean gap score of (-.75). This shows that Operational charges by seaport to shipping companies and shippers in terms of clearance and other operations are relatively fair and affordable to all especially their customers.

Access (AC)

The gap score for access was (-1.6) and the mean gap score was (-.81). This means that customers have access information, services as soon as they require it and Seaports/Shipping companies have 24-hour toll free customer care line but it does not provide the required ease of access by port users.

Communication (CM)

Communication obtained a gap score of (-1.68) and an average gap score of (-.71). Employees to an extent, do not make information easily obtainable by customers and Seaports/shipping companies should use of technical terms when relating with customers, clients. They often do not communicate or inform customers, clients effectively when there is delay or other issues regarding their cargo.

Security (SC)

Security at seaport or shipping companies, based on this research is poor. The gap score is (-2.16) and an average gap score of (-.78). This shows that seaport do not provide sufficient or adequate safety on cargo during loading and offloading at the port site and gangways. Cargo at seaports are prone to pilferation or damage and often at the expense of the shipper. Most seaports/shipping companies cannot be visited at night.

Knowing/Understanding the customer (UC)

As for knowing and understanding the customer, the gap score is (-1.18) with an average gap score of (-.60). This means that to an extent, seaports/shipping companies do not recognize their regular customers and do not try to accommodate customers' schedules. From results ob-

tained from in Table 4.4, it is seen that customers perceive service quality as poor in all dimensions meaning their expectations fall short of they experience in maritime. In this regard, customers are not satisfied with any dimension of service quality. All the dimensions show a gap between expected service and perceived service and this means that ports and shipping companies need to make improvements in all dimensions in order to close gaps that could lead to increased customer satisfaction. This result shows a relationship as argued by Pius, Nwaogbe & Mannian, 2017) in the study of overall quality of service of London Rail services in the UK.

ANALYSIS OF THE SERVICE QUALITY USING STRUCTURAL EQUATION MODEL (SEM).

From the analysis, the descriptive statistics to describe the sample characteristics and the gap analysis of the service quality and the questionnaires. In addition, structural equation modelling (SEM) was implemented to examine the proposed model by using analysis of moment structures (AMOS) software. Two-step approach were applied to estimate a measurement model predecessor to the structural model as Anderson and Gerbing (1988). From the analysis, results of the two measurement models analysis are presented as, structural model analysis and hypothesis testing.

Table 4.5 Goodness of fit indices for two measurement models and structural model

Goodness of fit measures	Criteria	Measurement perception	Expectation	Structural model
Absolute fit indices				
Distinct parameters	-	53	22	74
Degrees of freedom (DF)	-	200	23	422
Chi-square (CMIN)	-	254.401	32.438	586.94
Chi-square /degrees of freedom	≤ 3.0	1.272	1.410	1.391
Goodness of fit index (GFI)	≥ 0.90	0.894	0.963	0.884
Adjusted goodness of fit index (AGFI)	≥ 0.90	0.865	0.927	0.855
Root mean square residual (RMSR)	≤ 0.10	0.05	0.041	0.061
Comparative fit indices				
Non-normed fit index (NNFI)	≥ 0.90	0.949	0.979	0.911
Normed fit index (NFI)	≥ 0.90	0.925	0.957	0.866
Comparative fit index (CFI)	≥ 0.90	0.956	0.987	0.919
Incremental fit index (IFI) parsimonious fit indices	≥ 0.90	0.957	0.987	0.921
Parsimony ratio (PRATIO)	-	0.866	0.639	0.908
Parsimony adjustment to the NFI (PNFI)	≥ 0.50	0.714	0.611	0.696
Parsimony adjustment to the CFI (PCFI)	≥ 0.50	0.827	0.630	0.834
Parsimony goodness of fit index (PGFI)	≥ 0.50	0.706	0.592	0.710
Root mean square error of approximation (RMSEA)	<0.5	0.058	0.047	0.045

Table 4.5 shows the results of the goodness of fit measures for two measurement constructs (Perception and expectation) and the structural model. Fit indices have been categorized in three groups: Absolute fit indices (i.e. CMIN, chi-square/degrees of freedom, GFI, AGFI, RMSR), comparative fit indices (i.e. NNFI, NFI, CFI, IFI), and Parsimonious Fit indices (i.e. PRATIO, PNFI, PCFI, PGFI, RMSEA). All of the fit indices are more than criteria in measurement models and structure model. Consequently, proposed models are suitable.

Once all constructs in the measurement model were validated and satisfactory fit achieved (Hair et al., 2006, Holmes-Smith et al., 2006). As structural model can then be tested and presented as a second and main stage of the analysis. The structural model has been defined as "the portion of the model that specifies how the latent variables are related to each other" (Albright & Park, 2009). The structural model aims to specify which latent constructs directly or indirectly influence the values of other latent constructs in the model (Byrne & Johnson–Laird, 1989).

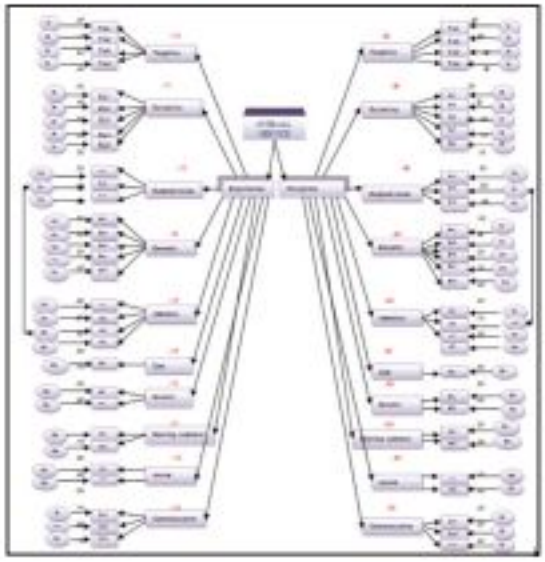

Fig. 4.2: Structural model and standardized factor loading

Figure 4.2 shows the relationship that exist between the dependent variables which is the overall quality of service and the independent variables, that is the ten dimensions used for the analysis. The diagram shows how each dimension is significantly having a relationship with these variables and the overall quality of service.

TEST OF HYPOTHESES

The hypotheses were related to the relationships between service quality perceptions and expectations and customer satisfaction. This hypothesized model was tested using SEM and the path diagram is presented in Table 4.6. Exogenous construct is service quality having no-single headed arrow pointing toward it. Endogenous constructs (customer expectations, perceptions and customer perception) have at least one single-headed arrow leading to them. Straight arrows (or single-headed arrow) indicate causal relationships or paths, whilst the absence of arrows linking constructs implies that no causal relationship has been hypothesized. In this case, service quality develops customer perceptions and these three variables all together influence customer satisfaction. Data was examined for outliers using Mahanolobis distance (D2) method whereby two cases were found outliers and deleted. Further, the data were detected for

normality through standardized z-score and those data found not normal were transformed using cdfnorm function.

Table 4.6: Analysis of hypothesis

Hypothesized Path	Hypothesis	The estimation of standardized regression weight (factor loadings)	The estimation of unstandardized regression weight (factor loadings)	Standard error (S.E.)	t-value (C.R.)	P-value
Overall service quality → Tangibles	H_o	0.463	0.572	0.127	4.516	***
Overall service quality → Responsiveness	H_o	0.784	0.660	0.135	4.904	***
Overall service quality → Assurance	H_o	0.858	1.000	Fixed	Fixed	
Overall service quality → reliability	H_o	0.848	0.729	0.167	4.360	***
Overall service quality → empathy	H_o	0.921	1.237	0.192	6.455	***

Table 4.6 above, shows the t-values calculated, standard error, the estimation of unstandardized regression weight, the estimation of standardized regression weight and the P-value. All of the t-values are higher than 1.96 and all of the P-values are less than 0.05 (*** means that P<0.001), which indicate that loading factors have statistically meaningful difference with zero. Consequently, all of the five hypotheses are accepted in this study.

Test of Hypothesis One

H_o: There is a statistical relationship between overall quality of service and tangibility perceived by port users.

H1: The results from the Table 4.6 show that there is a positive statistical significant relationship between overall service quality and Tangibles with p-value calculated of 0.023, so therefore alternative hypothesis is accepted since it less the p-value 0.05, which means the there is a statistically significant relationship between tangibles and overall quality of service. This implies that the higher perceived tangibles of service, the higher in customers/port users' satisfaction. Nwaogbe et al. (2019), Wanke et al. (2016), and Nwaogbe et al. (2017) state that various tangible services is the measurement of how port users/customers regards the quality of service provided by the ports and the shipping company; physical facilities, equipment. Personnel, and communication qualities are considered to be the tangible features of ports and shipping service by the port users/customers (Chen et al., 2005; Pius et al., 2017, Pius et al., 2018).

Test of Hypothesis Two

H_o: There is statistical relationship between Overall quality of service and Responsiveness perceived by port users.

H1: There is a positive statistical significant relationship between overall service quality and responsiveness with p-value calculated at 0.0384, which is less than the p-value tabulated. Therefore alternative hypothesis is accepted since the tabulated is less than p-value 0.05, which means that there is a statistically significant relationship between responsiveness perceived by

port users and overall quality of service. Moreso, there is positively significant relationship between port users/customer satisfaction and perceived responsiveness of service by the seaport and shipping companies since p-value< 0.05. This implies that the higher perceived responsiveness of service, the higher port users/customers satisfaction. This means that more port users will be attracted to use these seaports, thus giving them competitive edge over their competitors in the sector (Nwaogbe et al., 2017). Providing port users with different response (willingness to perform operation at the ports) like easy documentation of cargo clearance, cargo inspection which can enhance shipping companies and port users services, can encourage and promote customer loyalty and respect to such ports (Pius et al.,2018; Nwaogbe et al., 2018; Nwaogbe, Ogwude & Ibe, 2018 & Nwaogbe, Pius & Idoko, 2018). Therefore, responsiveness to various services needed at the seaport will encourage more port users or port calling by the shipping companies and the shippers to use these shipping companies and seaport (Apapa port).

Test of Hypothesis three

H_0 There is no statistical relationship between Overall quality of service and Assurance perceived by port users.

H1: There is a positive statistical significant relationship between overall service quality and assurance with p-value calculated at 0.03858, which is less than the p-value tabulated, therefore, alternative hypothesis is accepted since the tabulated value is less than p-value 0.05, which means that there is a statistically significant relationship between port users/customers assurance perspectives and overall quality of service of the seaport/shipping companies. In addition, there is a positively significant relationship between passenger satisfaction and perceived assurance of service of the seaports since ($p<0.05$). This suggests that the higher in perceived service assurance, the higher in customers/port user's satisfaction. As Parasuraman, Zeithaml and Berry (1985) note, customers expect the services of the ports to be on time, as scheduled, employees to be polite to customers and employees of ports and shipping companies should have knowledge to answer customers' questions.

Test of Hypothesis four

H_0: There is no statistical relationship between Overall quality of service and Reliability perceived by port users.

H1: There is a positive statistically significant relationship between overall service quality and reliability of service with p-value calculated 0.01848, so therefore, alternative hypothesis is accepted since tabulated value is less than p-value 0.05. This means that there is a statistically significant relationship between port users/customer' perspective on overall quality of service and reliability of the Apapa seaport. Moreso, there is positive significant relationship between port users satisfaction and perceived reliability of service of the Apapa seaport since p-value <0.05. This means that the higher in perceived service reliability, the higher in port users'/ customers' satisfaction. The customers prefers to see a seaport that have the ability to perform operationally well as they promised a good service dependably and accurately to satisfy their customers adequately and on timely. That once a vessel calls to the port, all the documentation, clearance of cargoes are accurately executed perfectly because it helps to increase turnaround time of a ship and the customers to take their cargoes to their various warehouse hurriedly

(Nwaogbe et al., 2017; Nwaogbe et al., 2018). As Parasuraman, Zeithaml, and Berry (1985) noted, customers expect their services to be on time, as scheduled on the flight timetable. The airline industry is duty-bound to carry passengers from destination A to B, without any delay and cancellation.

Test of Hypothesis five

H_0: There is a statistical significant relationship between Overall quality of service and empathy perceived by port users with p-value calculated 0.02921, so therefore alternative hypothesis is accepted since it is less than p-value tabulated 0.05. This means that there is a statistically significant relationship between port users/customers's perspective and empathy of the seaport and shipping company. Moreso, there is a positively significant relationship between port users satisfaction and perceived empathy of service of the seaport since p-value<0.05. This implies that the higher perceived empathy of service, the higher in port users/customers' satisfaction. Nwaogbe et al., (2018) states that service empathy is the measurement of how customers/port users' regards to quality of service provided by the seaports; operating hours of ports; convenient to customers; personal service and specific needs of their customers (Wanke et al., 2016).

Reliability and validity of the scale used

The most common measure of reliability is internal-consistency reliability that measured with Cronbach Alpha. In this study, as the results have been indicated in Table 4.4, Cronbach Alpha of communication was 0.948, tangibles was 0.779, Reliability was 0.889, Responsiveness was 0.800, Assurance was 0.743, and Empathy was 0.859 cost was 0.729, security was 0.750, access was 0.767 and knowing customer was 0.711.All of them were more than 0.7, indicate that the questionnaires are reliable. For testing the construct validity of the questionnaires, Exploratory Factor Analysis (EFA) and then Conformity Factor Analysis (CFA) were applied.

The results of expletory factor analysis have been shown in Table 4.5 for each dimension of service quality and Customer satisfaction. All 10 dimensions of service quality maintained in their initial structure and customer satisfaction was identified. KMO in all of the dimensions was high and the sampling adequacy was confirmed. Factor loading % of variance in all of the dimensions was more than 0.5 that confirmed the remaining of factors in the model. The result of the expletory factor analysis (EFA) has been explored in section 4-3- Measurement models result.

Table 4.7: Results of expletory factor analysis

Questionnaire	KMO	Factor loading % of variance	Cronbach Alpha
Communication	0.934	69.16	0.948
tangibles	0.761	60.22	0.779
Reliability	0.869	69.41	0.889
Responsiveness	0.780	62.54	0.800
Assurance	0.636	56.41	0.743
Empathy	0.849	64.15	0.859
Cost	0.906	63.97	0.884
Security	0.750	65.66	0.729
Access	0.777	66.70	0.750

Questionnaire	KMO	Factor loading % of variance	Cronbach Alpha
Knowing customer	0.740	62.65	0.711

DISCUSSION OF RESULTS

Service quality is to create value overall to achieve customer satisfaction. To achieve distinction, firms pay attention to customer/client's perception of service quality and put it in the priority of their activities, because the good quality of services impacts on customer satisfaction include profitability, Productivity, market share and reduces costs. By surveying overall service quality questionnaire, the maximum gap observed in communication with the mean of gap was -.71 and the minimum gap observed in assurance with the mean of gap was -.1.68 .After communication, maximum gap exists in empathy, and reliability. The overall condition in assurance and tangible were appropriate than others. Customers and port users were dissatisfied in responsiveness, because it was employees were not willing to help, they didn't have enough time to respond to clients' request promptly, and they didn't call with customers/clients in terms of delay of cargo. It is suggested that managers pay more attention to human resource issues generally. Employees should increase interpersonal skills so they can devote more time to clients' requirements. In this study, we have extended an instrument to measure the overall satisfaction with three dimensions extracted from exploratory factor analysis (EFA) by principle component analysis method and conformity factor analysis (CFA). The result confirmed the proposed models. Two measurement models were also adopted for measuring overall service quality and customer/clients' satisfaction and one structural model that showed the relationship between them. The result of this study showed that there is a positive and significant impact of overall service quality on customers/clients satisfaction (0.463). In addition, other hypothesis was tested and there was a positive and significant relationship between overall service quality and ten dimensions.

CONCLUSION

From the analysis carried out in order to answer research questions and hence fulfil the purpose of the study that include; finding out how customers perceive maritime service quality, factors hindering customer satisfaction, identifying what dimensions highly contribute to customer satisfaction and what should be done to improve customer satisfaction by ports and shipping companies. The findings from analysis reveal that the SERVQUAL model is not a better instrument to measure service quality for maritime working environment. The gap score analysis carried out, found that, the overall service quality is low as perceived by customers and hence unsatisfactory customer satisfaction. Customers have higher expectations than what they actually experience from even though the difference is not significant. To answer the main research question which is; how customers perceive service quality, the gap scores analysis carried out provided answers to these questions. The overall perceived service quality is low as expectations exceed perceptions; implying that customers demand more than what is being offered to them. Due to such prevailing gap, it is clear that customers are not satisfied. Further evaluation on the perceptions and expectations of the customers it has been observed that all dimension of service quality that contribute to customer satisfaction. The findings on the factors hindering customer satisfaction, it has been found that most of customers were not happy with ports

and shipping companies….customer care service, reliability, shipping companies' operational charges and flexibility. Evidence from the study shows that, ports and shipping companies have to improve performance on all dimensions of service quality in order to increase customer satisfaction as customers expect more than what is being offered by the port and shipping companies. By improving customer service quality means strengthening company competitive edge within the industry. Recommendations were made for ports and shipping companies should make use of the study on service quality and customer satisfaction to understand the changing customer's satisfaction on how to improve the level of service at the port. Moreso, the issue of congestion on the road to the port and the port itself affect operational service of the port, policy implication on how to improve those service levels at the port. Customer satisfaction strategy will help companies to compare their performances against customer standards against internal processes, industry benchmarks and identify opportunities for improvement. Ports and shipping companies' infrastructures like berths and dock yards should be improved. More investment should be made in new modern technologies. On the customer access levels fibre optic backbone networks are recommended for improved service and reliability.

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