

Analysis of Cargo Airline Services Quality in Cargo Delivery In Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEMT/2021/v27i630350

Editor(s):

(1) Kamarulzaman Ab. Aziz, Multimedia University, Malaysia.

Reviewers:

(1) Sun Shuai, Beijing Jiaotong University, China.

(2) Tao Li, Texas A&M university, USA.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/71597>

Review Article

Received 01 June 2021
Accepted 06 August 2021
Published 19 August 2021

ABSTRACT

This study analysed cargo airline services and cargo delivery in Nigeria. The focus was on identifying the disparity between expected and perceived airline service quality on cargo delivery. This study was carried out in Lagos State, Nigeria. Random sampling technique was used to select 239 freight forwarders agents that operate in the Cargo Terminal of Murtala Muhammed International Airport, Lagos State. SERVQUAL model and t-test were used to analyse the disparity between expectations and perceptions of airline service quality. SERVQUAL model average gap score is -0.126 which implies that customers are not satisfied with cargo airline service quality. Moreover, the findings revealed that there is a negative disparity between customer expectations and perceptions of airline service quality on air cargo delivery with Reliability having the lowest negative t-value of (-34.409), followed by Tangibles with a t-value of (-23.300), Responsiveness has a t-value of (-12.910), Assurance followed with t-value of (-13.572) while Empathy has a t-value of (-10.165). Conclusion is drawn that cargo airline customers' expectations about their service quality are more than they really perceived. Recommendation was made that cargo airline should make an assessment of service quality dimensions (Tangibles, Reliability, Responsiveness, Assurance and Empathy) and provide a means to improve upon them.

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Keywords: Air cargo; cargo airline; aviation; service quality; cargo delivery.

1. INTRODUCTION

Aviation industry refers to the transportation of individuals and goods through air from one place to the other [1]. One of the significant players in Aviation industry is the airline that conveys passengers and cargo. The airline industry assumes a noteworthy job in many nations' economies and helps in opening up the nations' market to nearby and remote areas [2]. Customers are the most significant factor in the airline industry, since airlines rely on their customers for profit; therefore, they need to comprehend the customers' need and improve their services [3].

Airline service is a significant issue for the aviation industry because of it impacts on business execution, level of profitability, consumer loyalty, conveyance and customer devotion which influence the expense and benefits of airline [4]. Giving a fantastic service to the customer is essential to many airlines because they are in existence because of their customer support. The continuous improvement of service quality is a significant issue for keeping up a competitive advantage in any industry. Quality in a service is a proportion of how a delivered service meets the customers' desires. [5] defined service quality as a consumer's overall impression of the organisation's efficiency and services. It is also a chain of services in which the entire service delivery is divided into a series of processes [6].

Considering the impetus of airline services, air cargo is not only a facilitator but a trade creator which contributes to the competitive advantages of nations through the establishment of a strong relationship between levels of air cargo volume and Gross Domestic Product (GDP) and GDP per capital [7]. It has been a great enabler to economic development because of air freight and integrated air express are critical to time-based competition, the frontier challenge for the world's most advanced industry. According to [8], air cargo has also facilitated specialisation, allowing developed countries' manufacturers and consumers to strengthen their relationship in terms of demands and supply due to air transportation speed and geographical reach.

Most airline executives see customer demands through their perspective; thus, their immediate focus is on cost savings in order to drive more efficient operations, putting customers last on

their strategic planning agenda [9]. However, considering the manager and airline management opinions about service delivery, customer perception should not be ignored. Moreso, the goal of cargo airline among other service industries, is to develop services which could attract and keep customers who are satisfied, loyal and speak well of their services. Thus, customer perception about expected airline service quality is paramount because if the quality is altered, the customer could defect to other competitors.

Service quality and customer satisfaction, which can be compared to cargo delivery in the airline industry, have become an interest for many scholars because the delivery of high service quality is essential for airlines' survival and competitiveness [10]. However, excellent customers' satisfaction should be one of the greatest assets for air businesses in today's competitive environment because frequent delivery experience is still something special for the air cargo customers, if the customer is not satisfied with the quality of service provided by the airline, they will reconsider the buying decision for further patronage and will probably switch to another airline [11,12].

However, many research carried out in Nigeria and beyond (such as [13,14,12,9,15]) in respect to air transportation revealed that not much attention had been accorded to air cargo delivery and airline service quality as much consideration had been given to the analysis of the flow of passengers, flight operations, aircraft movement, safety, and security, as well as issues on policy and bilateral agreements. Therefore, this study will analyse the difference between what customers expected and what they perceived from cargo airline service quality in Nigeria.

1.1 Research Questions

The following research questions were the focus of this study:

- i. Is there any disparity between expected and perceived airline service quality on cargo delivery in Nigeria?

1.2 Hypothesis of the Study

The hypothesis of this study is stated in a null form as follows:

H₀₁: There is no significant difference between expected and perceived service quality rendered by air cargo airline.

2. LITERATURE REVIEW

2.1 Concept of Service Quality in the Airline Industry

Service quality in the airline industry has to do with the ability of the airline providers to transport passengers to their required destinations while providing high standards of services [16]. Airlines in the competitive markets engaged a superior quality for differentiating their service products from each other. Service quality is one of the critical elements that influence the competitiveness of airlines all over the world. Delivering high-quality service to customers has become a key strategy to survive in competitive service industries such as an airline. An earlier definition of Service quality is that it has an evaluation process where customers compare their expectations about a service with their perception of the service to be received [17].

Customer dis/satisfaction may be used to measure quality and vice versa. Service quality is mainly a more enduring construct; meanwhile, satisfaction is a situation and experience specifically. Satisfaction has to be experienced, whereas customers may have views about an organisation's service quality without ever experiencing the service. Service quality is often seen as the consumer's overall impression of the relative inferiority or superiority of the firm and its services. At the same time, [18] posited that these judgments of satisfaction 'decay' into service quality- an overall attitude about the service.

Service quality is a significant attribute for maintaining customer satisfaction. [19] found out that there is a strong positive relationship between service quality attribute perception and customer satisfaction. Its attributes influence customer satisfaction. [20] posited that positive or negative satisfaction leads to customer retention, which finally influences customer loyalty.

[3] outline the five dimensions of service quality in the airline industry as follows:

- i. **Reliability:** this is the ability of airline employees and system to perform and maintain their functions in routine and

unexpected circumstances like punctuality, the efficiency of the check-in procedures, accuracy ticketing, and convenience reservation.

- ii. **Responsiveness:** This relates to the willingness to assist passengers in resolving service issues such as flight cancellation, baggage loss, emergency response, and proper baggage delivery.
- iii. **Tangibles:** This refers to the physical facilities of the aircraft and ground facilities which includes; seat space, seat comfort and legroom, in-flight entertainment services, appearance of the employees, airport services handling, catering service and communications materials.
- iv. **Empathy:** This focuses on individualised attention such as given the seat a passenger prefers or meals in advance and frequent flyer program.
- v. **Assurance:** This refers to passengers' individualised and caring attention by answering the passengers' questions, ensuring safe performance, and showing courtesy towards passengers. The significance of all service quality dimensions on customer satisfaction different according to industry [21].

2.2 Concept of Air Cargo and Air Cargo Operation

Air cargo can be defined as anything other than persons or personal baggage travelling by air. Compared with other freight transportation means, like ship, rail, and surface vehicles, air cargo becomes the newest addition to the freight sector. Since it started just after World War I, the air cargo industry has become an essential part of the world's global economy, holding an essential position in transporting lightweight and high-value commodities. By infrastructure largely provided by public agencies for air passenger travel like airports and air traffic control systems, air cargo services connect to almost every parts of the world [22].

Although limited air freight services tried prior to World War I, it was until the end of the war that air cargo services were first offered in any cogent way. Purposefully, due to the availability of more than enough airplanes and trained military pilots, the majority of those early commercial services were made possible through subsidies provided by national governments, most directly by postal services.

In the air cargo business, cargo transportation is normally started by agents once they received orders from customers [23]. Recently, businesses all over the world are being shaped by the expansion of e-commerce through the internet. The traditional supply chain which is from supplier to manufacturer then to customer, is still maintained but it has changed in details. One of the changes is freight transportation. Physical goods can be transported utilising ship, rail, surface transportation, and the most current player-air cargo. Air cargo industry has been assuming a huge job for transporting lightweight and high esteem goods since it started after World War I. Cargo carriers can be arranged into three sorts: cargo-only carrier, blend carrier, and integrator [24].

Cargo-only carrier regularly utilises freighters which are aircraft explicitly adjusted for cargo operation with no seat or windows in the principle cabin and for the most part have wide body. Most freighters are furnished with rollers so as to encourage the loading of huge shipments [23].

In respect to air cargo operation, [25] posited that international air cargo is divided into three main categories that is: air mail, air express, and air freight. The descriptions of each are as follows:

Airmail: The majority of airmail includes: important documents, small packages, and letters/documents being sent internationally, such as passports and gifts. In developed nations, most of these categories do not pass

through the airport freight station; instead, they are sent through a specialised air mail handling centre.

Air Express: Most commodities in this category are packages with standard dimensions, documents of high value such as bonds and certain mail and other products which may be transported simply by a convenient, comprehensive express service with clear standardised procedures.

Airfreight: This category consists of items that do not qualify under the previous two categories. These items are generally ordinary items that need to be transported by air, such as live animals, dangerous goods, sensitive machinery, and other goods that cannot be shipped easily or in a standardised form.

2.3 Summary and Gap in Empirical Review

Most of the existing studies on air cargo and customers satisfaction and loyalty have something in common with this study as they all focus on improving customer services in air cargo terminal around the world. However, the gap yet covered formed the basis for carrying out this research. Table 1 present the summary of the empirical review. It can be deduced that majority of the studies were not done in Nigeria and this shows that there is paucity of research in this area and this study bridged the identified gap.

Table 1. Summary of empirical review

S/N	Author's name	Title	Analytical tools	Findings
1	[26]	Improving the Sustainable Competitiveness of Service Quality within Air Cargo Terminals.	Decision-making trial and evaluation laboratory (DEMATEL) and Analytic Network Process (ANP).	Drafted different strategies were and provide a frame of reference for air cargo terminal operators
2	[27]	An investigation of customer satisfaction with low-cost and full-service airline companies	Descriptive statistics	Tangibles and personnel quality positively affect satisfaction, and satisfaction positively influences intentions for both repurchase and recommend
3	[13]	Effect of Royal Jordanian service quality on passengers' satisfaction with the relevant of service quality dimensions.	SERVQUAL Framework	Service quality dimensions have a positive relationship on passengers' satisfaction and service quality is an important factor effect of passengers' satisfaction.

S/N	Author's name	Title	Analytical tools	Findings
4	[28]	How do customers respond to increased service quality?	Descriptive statistics	Customers defect at a higher rate from the incumbent following increased service quality (price) competition only when the incumbent offers high (low) quality service relative to existing competitors in a local market
5	[29]	Service quality and customer satisfaction of a UAE-based airline: An empirical investigation	SERVQUAL framework	service quality, perceived value, and brand image have a positive significant impact on customer satisfaction, which can however lead to brand loyalty
6	[30]	Key factors that determine business traveler loyalty toward full-service airlines in China.	Literature reviewed and panel interview	Reputation, in-flight service, frequent flyer program, and aircraft have the greatest influence in driving airline loyalty
7	[31]	Effects of service quality, innovation capability and corporate image on customer's satisfaction and loyalty of Air Cargo Terminals	Descriptive statistics	Customer satisfaction has a statistical on loyalty, and service quality, innovation capability and corporate image have a positive effect on customer satisfaction.
8	[32]	A non-additive model for evaluating airline service quality	Ranking index	Managerial improvements needed by each Carrier in order to achieve the aspired level of customer satisfaction
9	[33]	Criteria for services of air cargo logistics providers: How do they relate to client satisfaction?	Descriptive statistics	There is a significant relationship between the service criteria of air cargo logistics providers and client satisfaction.
10	[34]	A non-additive model for evaluating airline service quality.	Pair-wise comparative approach	Grey relation analysis and simple additive weight methods are used to determine airline service quality.
11	[35]	Passenger expectations and airline services: a Hong Kong based study.	Descriptive statistics	passengers consistently rank 'assurance' as the most important service dimension and that passengers are more concerned about the safety and security aspect

Source: Author's compilation (2019)

2.4 Conceptual Framework

The SERVQUAL model of [17] was adapted as a determinant for service quality and the concept is depicted in Fig. 1. Five service quality dimensions were used to measure the expected and perceived service quality of the cargo airline. Tangibles was the first dimension and it was proxy by the provision of cargo handling equipment, physical facilities and airline personnel attitudes. The second dimension was Reliability which was proxy by the reassurance of quality, schedule integrity appropriation, airline dependability, regular and relevant information and provision of right first-time service to the customer. The third dimension was Responsiveness and this was proxy by the airline willingness to help customers and their promptness to service delivery. Furthermore, Assurance was the next dimension and this was proxy by Airline courtesy, trustworthiness and

confidence in their system, and the airline's knowledgeability. Lastly, Empathy was the last dimension and this was proxy by ability of the airline to understand customer needs, airline giving personalised attention, having customer's interest at heart and their hour of operation.

However, all these dimensions were independent variable while air cargo delivery was the dependent variable. Whenever the customer perceived (i.e. feel) all these dimensions as expected they will be satisfied. Also, when Expected Service (ES) > Perceived service (PS), perceived quality is less than satisfactory and tends toward totally unacceptable quality, with an increased discrepancy between ES and PS and lastly, when ES < PS, perceived quality is more than satisfactory and tends toward ideal quality, with an increased discrepancy between ES and PS.

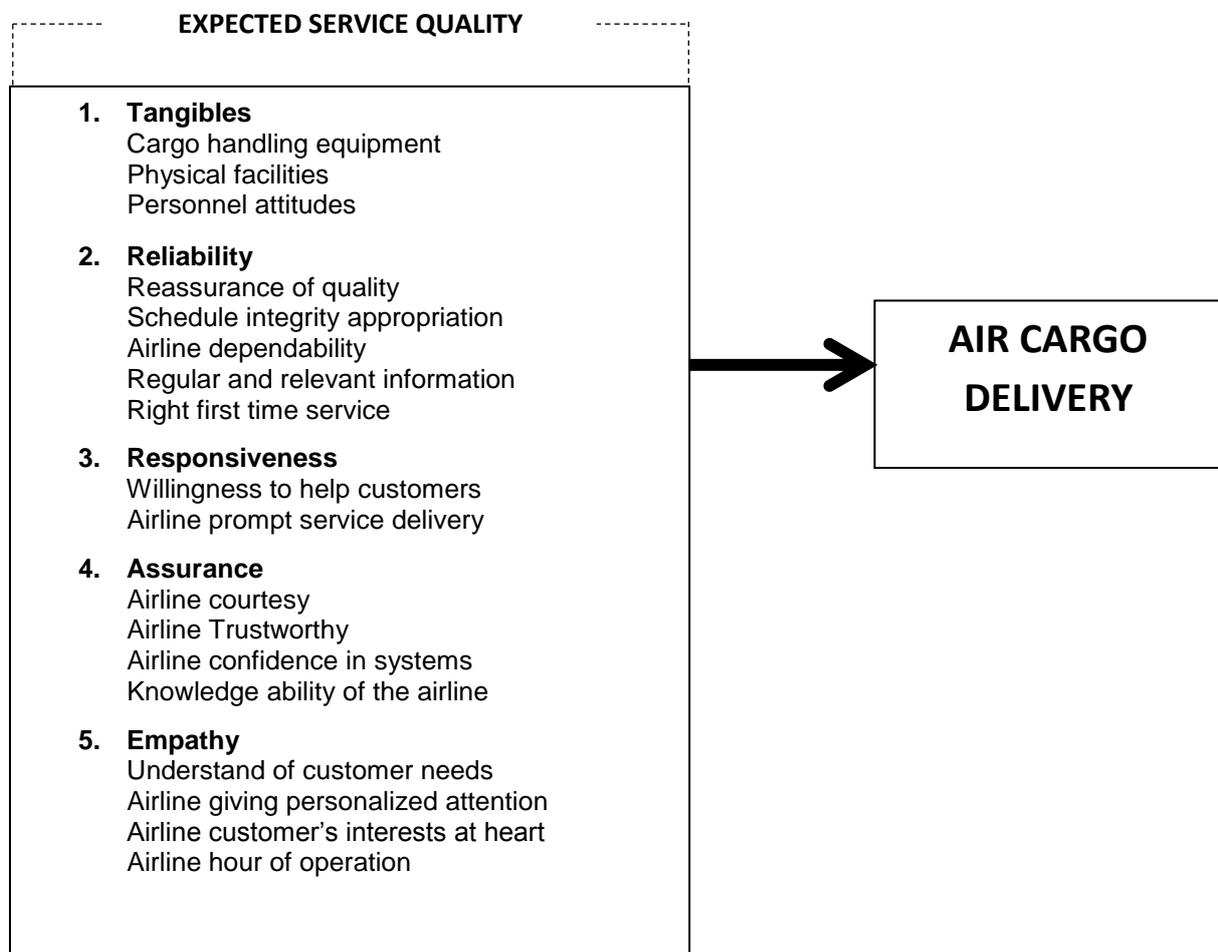


Fig. 1. Conceptual framework for SERVQUAL

Source: Author Compilation, (2019)

3. METHODOLOGY

This study was carried out in Lagos State, Nigeria. Lagos state hosted most of the oldest transportation systems in Nigeria due to her metropolitan and former federal capital territory attributes. The oldest and the busiest airport is located in Lagos State. This airport is Murtala Muhammed International Airport. The airport handles both domestic and international services for both passenger and cargo delivery in Nigeria.

This study considered freight forwarders as the party that has a direct relationship with the airline and not the end users. Therefore, the population of this study consist of 631 freight forwarders that registered with the Nigeria Shippers Council (NSC), National Association of Government Approved Freight Forwarders (NAGAFF) and operate at the cargo terminal of Murtala Muhammed International Airport, Lagos State. All the three criteria were used in selecting the population of the study. Using Cochran's formula, the sample size for this study was extracted with equation 3.1 and 3.2. The sample size therefore is 239 and random sampling technique by balloting was used to select 239 from the population. Thus, questionnaire was administered to the 239 respondents and a total of one hundred and eighty-eight (195) were completed and returned. This represented a response rate of 81.6%. The retrieved copies of questionnaire were further subjected to data screening and evaluation and a total of 188(78.7%) constituted the data used for the analysis.

SERVQUAL model and t-test were used to analyse the objective and hypothesis of the study respectively.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \quad (3.1)$$

Where:

- n = Sample size;
- n₀ = Cochran's sample size recommendation = 385;
- N = Population size for the study (631)

$$n = \frac{385}{1 + \frac{384}{631}} = \frac{385}{1 + 0.609} = \frac{385}{1.609} = 239 \quad (3.2)$$

3.1 Servsqual Model

Service quality model was used to answer the first research question. The study developed an instrument of service quality and examines the relationship between perceived service quality and customer satisfaction. SERVQUAL model appears to be a consistent and reliable scale to measure airline service quality. Service quality (the independent variable) measure is based on the adapted version of SERVQUAL as [17] proposed. Customer satisfaction (the dependent variable) about the services provided by the cargo airline was measured by six items and was based on a five-point Likert scale with anchors of strongly disagree to strongly agree.

3.2 T-test

T-test was used to analysed the hypothesis of the study. It is applicable in testing the difference between mean of two independent groups. Paired sample t-test was used to measure the difference between expected and perceived cargo airline service quality.

4. DATA ANALYSIS AND DISCUSSION

SERVQUAL model was used to test the third objective of the study. From Table 2, customer expectation exceeded the perceived level of service rendered by cargo airline as indicated by the perception scores, this means ES>PS and customer are not satisfied with the service rendered by the airline. This resulted in a negative gap score i.e. perception minus expectation and this also signifies that there is always a need for improvement.

The items with the highest expectation scores were: possession of modern air cargo terminals fully equipped, warehouse location favourable, provision of enough terminals, airline personnel should be professional, availability of suitable safety and security procedures, staff with a sense of trust and belonging, employee readiness to respond to customers' request, appropriate documentation, customer notification service, use of standard operating procedures, value customers right and provision of extra overtime services. The gap scores are the difference between the perception and expectation scores, and these gap scores measure service quality and hence satisfactory air cargo delivery. The higher the perceived level of service quality, the closer perceptions are to expectations. Furthermore, overall perceived

service quality is low (-1.90), indicating that freight forwarders are not satisfied with the level of service they are receiving. According to [36], when customers consider service quality to be excellent, they will be more satisfied. It is also a good means for asserting whether customers are satisfied with air cargo service delivery or not. In this case, freight forwarders are not satisfied with the quality of services rendered to them by cargo airlines as the average perception score is low. This could be as a result of under or over-delivering of services to the freight forwarders.

Generally, it was found that customers' perceptions of service quality offered by the airline did not meet their expectations because all gap scores in all dimensions are negative. This result is corroborated with the findings of [25] on Service quality of air cargo in China airline where it was concluded that service quality dimensions need improvement. Moreso, Tangibility (TA) gap score is (-0.3649) with an average gap score of (-0.07), this implies that customers expect more from cargo airline providing information and notification to

customers, appropriation of documentation, and their employee response to a customer.

As regards Reliability (RL), the gap score is (-3.0081) with an average gap score of (-0.60), this implies that customers expect more from cargo airline in terms of the spacious terminal, suitable safety and security procedures and professional staff. In Responsiveness (RS), the gap score is (-1.108) with an average gap score of (-0.28), this implies that customers expect more from cargo airline in terms: of cargo terminal equipment, operating space, cargo handling facility and favorably warehousing.

Furthermore, in Assurance (AS), the gap score is (-0.7459) with an average gap score of (-0.25), which implies that customers expect more from cargo airline as regards: compensation, and standard in-use. Lastly, the Empathy (EM) got a gap score of (-2.801) with an average gap score of (-0.70), thus indicating that the airline needs to improve on valuing customer's rights, their sincerity and less stressing the agents. This result is in line with the findings of [37].

Table 2. SERVQUAL scores for cargo airline services and air cargo delivery

Dimension	Statement	Mean expectations	Mean Perceptions	Gap Scores	Overall gap score	Average gap score
Tangibles	TA1	4.8081	2.5676	-2.2405		
	TA2	4.6243	4.0459	-0.5784		
	TA3	4.4784	3.9946	-0.4838		
	TA4	5.0000	3.8919	-1.1081	-0.277	-0.069
Reliability	RL1	4.8000	4.0486	-0.7514		
	RL1	4.8568	4.0324	-0.8244		
	RL1	5.0000	4.0000	-1.0000		
	RL1	4.7730	3.8054	-0.9676		
	RL1	5.0000	1.9919	-3.0081	-0.752	-0.188
Responsiveness	RS1	4.5946	4.0541	-0.5405		
	RS1	4.6973	4.0892	-0.6081		
	RS1	4.4432	4.3378	-0.1054		
	RS1	5.0000	4.3919	-0.6081		
	RS1	5.0000	4.6351	-0.3649	-0.091	-0.023
Assurance	AS1	4.3270	4.2351	-0.0919		
	AS1	4.4297	4.1027	-0.327		
	AS1	4.9270	4.1811	-0.7459	-0.186	-0.047
Empathy	EM1	5.0000	4.0703	-0.9297		
	EM1	4.2216	4.1297	-0.0919		
	EM1	4.4432	4.0000	-0.4432		
	EM1	4.2270	1.4189	-2.8081	-0.702	-0.176 -0.126

Source: Author's Field Survey (2019)

Table 3. Paired samples t-Test

Variables	Paired differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Tangibles	-1.101	0.805	0.0419	-1.183	-1.0186	-23.300	369	.000
Pair 2 Reliability	-0.848	0.473	0.025	-0.90	-0.799	-34.409	369	.000
Pair 3 Responsiveness	-0.418	0.596	0.031	-0.479	-0.357	-12.910	369	.000
Pair 4 Assurance	-0.388	0.508	0.026	-0.440	-0.336	-13.572	369	.000
Pair 5 Empathy	-0.231	0.427	0.022	-0.274	-0.187	-10.165	369	.000

Source: Author's Field Survey (2019)

4.1 Test of Hypothesis

Table 3 presents the results of Paired Samples *t*-Test, with mean differences, *t* values, degrees of freedom, and two tailed significances of these tests. This test was used to analyse the difference between the means of the expected and perceived service quality on air cargo delivery. The variables paired were Tangibles, Reliability, Responsiveness, Assurance and Empathy. The paired group were computed by pairing the: expected tangibles with perceived tangibles, expected Reliability with perceived Reliability, expected Responsiveness with perceived Responsiveness, expected Assurance with perceived Assurance and expected Empathy with perceived Empathy. The result revealed that all variables tested show negative mean differences. This means that respondents are expecting more quality of service from the airline than what they perceived. However, all the variables tested are significant at 0.05 significant level. Reliability has the lowest negative *t*-value of (-34.409), followed by Tangibles with *t*-value of (-23.300), Responsiveness has a *t*-value of (-12.910), Assurance followed with *t*-value of (-13.572) while Empathy has a *t*-value of (-10.165). These imply that the customers (freight forwarders) expected airline to improve more on their employee relationship with the customers and improved on their facility. Therefore, these findings negate the study's hypothesis that there is no significant difference between expected and perceived service quality on air cargo delivery. Hence, the null hypothesis was rejected. This corroborated with the findings of [37] on frequency of air cargo delivery in Nigeria.

5. CONCLUSION

This study concluded that there is disparity between expected service quality and the perceived service quality rendered by the cargo

airline on cargo delivery and this implies that customers' expectations are much more than what they perceived from the airline, which is in line with the findings of [24]. Moreso, there should be an improvement in air cargo handling during loading and unloading process for the betterment of service rendered. Lastly, safety and security of the warehouse should be improved on.

6. RECOMMENDATION

The service quality dimensions were shortfalls; therefore, cargo airlines are implored to do more in terms of cargo handling equipment provision, physical facilities like terminal and warehouse; provision of relevant and regular information, customer interest in heart, and understanding customer needs to satisfy their customers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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