



Port Users' Choice Assessment in a Competitive Region, Using Apapa Ports Complex and Cotonou Port Complex as a Study



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ABSTRACT

The paper appraised factors responsible for port users' choice in a competitive environment such as an economic region like West Africa. Using Lagos Ports Complex with Apapa Port as a representative and Cotonou Port in Benin Republic, the study exposes in details the challenges and inefficiencies inherent in Apapa Ports Complex in Nigeria that make Nigerian shippers move their cargoes through Cotonou Port to Lagos market. Cargo diversion to neighbouring ports had always been a language in use in Nigerian shipping sector. The study was carried out to find out how significant this phenomenon is. Consequently, the study in an attempt to model port performance improvement in Nigeria through ensuring that quality services for the retainment of customers or capturing of more customers is maintained by port service providers in Nigeria. Using twelve (12) quality service variables such as Tangibility, Reliability, Responsiveness, Assurance and Empathy, etc the results revealed that Nigerian shippers prefer Cotonou Port to Apapa Port closer to them as a result of seven quality variables out of twelve quality service variables used. Out of the twelve quality service variables Nigerian Port of Apapa was favoured in only five. This research revealed that though Apapa Port in Nigeria had been concessioned, the Nigerian Port regulatory body had failed in her duty to monitor and control the daily operation of the port. Increase port charges without knowing that it boomerangs, as shippers abandon their patronage for Nigerian Ports in preference for neighbouring port of Cotonou.

Keywords: Cargo diversion, Patronage, Quality service variables, Concessionaries, Port choice.

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1. INTRODUCTION

The world population has been on the increase since the 21st century. The desire to sustain the population increment has led to increment in global economic activities such as agricultural and manufacturing productions which also led to increase in international trade among nations. There is no doubt that maritime trade which is the prime mover or mode in the movement of goods across nations had blossomed over the years. The increase in shipping trade had also lead to an increase in Port services since a ship can hardly do without the services rendered by the Port thus there is a master/servant relationship between the ship and the Port. The demand for Port services increment has also led to stiff Ports competition at national, regional and global levels. [Jane and Lobo \(2002\)](#) are of the opinion that

competition among regional Ports has led to the construction of trans-shipment Ports along the busy shipping routes. Trans-shipment Ports are very big Ports with deep drafts to accommodate large ships. They are also very busy as smaller vessels call at the trans-shipment Ports to load cargoes meant for smaller coastal and regional Ports. The reverse is the case as the smaller vessels in return carry cargoes which they discharge at the trans-shipment Ports for export. [Yeo \(2004\)](#) opined that trans-shipment Ports play significant role in building a coastal nation's with hence each nation in a competitive environment strive to build a trans-shipment Ports in its domain. The presence of a trans-shipment Port becomes one of the criteria that influence choice of Port among shippers. However, there are other features of a Port that determine the acceptance of a Port by users. Understanding these Port choice determinants is very crucial to Port developers and operators if their investment in Port be viable as well as lead to national development. All these Port choice features could be summarized as quality services.

1.1 Research Objectives

Nigerian Port industry has witnessed many challenges relative to Port performances e.g. under government port ownership and operational arrangement, Nigerian Ports lacked most operational facilities. To ameliorate this ugly condition led the government to concession the Ports so as to attract the much needed funds for expansion as well as efficient Port operation. However, despite the concession arrangement, statistics still show that Nigeria shippers patronize the neighbouring Port of Cotonou than the nearest Nigeria Port in Lagos.

1.1.1. Specific Objectives Include

- ❖ To understand what constitute quality services in the Port industry.
- ❖ To compare service rendered to shippers at Lagos Ports Complex with services rendered to shippers at Cotonou Ports Complex.
- ❖ To compare turnaround time of vessels at Lagos Ports to that of Cotonou Port.

2. REVIEW OF RELATED LITERATURES

The main purpose of a Port is the provision of all necessary facilities for the comfortable stay of a ship in a Port as well as provision of equipment for loading and offloading of cargoes from the ship to the quays. [Lazarus and Wilfred \(2011\)](#) is of the view that if the maritime sector of a nation is properly managed by provision of an efficient Port system, it should have an overwhelming positive impact on the economy of the state in question. An efficient Port influences economic growth and development of a nation through market expansion opportunities for foreign trade, competition and foreign exchange earnings

[Amiwero \(2005\)](#) is of the opinion that the capacity of Nigerian maritime sector to make positive contributions to the national economy is often thwarted by some serious challenges in the Port industry. This is why most Nigerian shippers prefer to patronize the more efficient Cotonou Ports Complex in a competitive zone with Apapa Ports Complex in Lagos. In others words, massive improvement in Ports' infrastructures is very necessary for the present and future economic growth of the country.

[Emeghara \(2008\)](#) specifically pointed some challenges which includes insufficient berths, reduced channel depth, lack of night operation, lack of proper dredging, privacy etc., in his opinion recognized the above port challenges as the major causes of ship delays at Nigeria Ports where so much money are wasted on payment of demurrage for calling vessels. This development no doubt has created unpleasant

consequences for the Nigerian economy. [Jane and Lobo \(2002\)](#) are of the opinion that Ports in the same economic region as Lagos Ports complex and Cotonou Ports are in serious competition hence Port management are in constant search for ways to attract customers (vessels and shippers) to their port. This is to encourage customers' loyalty. In other words, understanding Port users' expectation and perceptions of service quality is very important in the light of its importance to national development. [Hayes \(1997\)](#) opined that the knowledge of Port users' requirement is very essential as it helps the service provider or Port operator to understand customers' idea of quality services and products. This will help in building a good customer service provider relationship which also will encourage continuous patronage of the Port user. [Ndikom \(2006\)](#) recognizes customers' satisfaction as a factor that leads to improve market share, return on capital investments as well as cost reduction. On the other hand, [Lovelock \(2005\)](#) recognizes three important factors that helps a service provider deliver quality services to customers. These are:

- ❖ The way of offering the service to the consumers.
- ❖ The application of technology in providing the services
- ❖ Personal contact with customers.

Quality service incorporates the following factors: reliability, responsiveness, assurance and empathy. According to [Song and Yeo \(2004\)](#) convenient or conducive location is a criteria factor influencing the information of performance expectations of a customer e.g. a shipper looking at a congested Port may just concluded that performance here will be very low. Also a Port that is accessible means that customers can easily go into the Port and do business with ease at low cost. [Nigerian Customs Service Reforms \(2012\)](#) posits that Nigerian Ports performance rates measure below average in African continents, for instance, vessels dwell time at Lagos Ports Complex average 12 days just below Tema Port in Ghana which is 25 days. For Dakar Senegal, it is 7 days whereas it is 6 days in Cape Town and Durban South Africa and in Mombasa Kenya, it is just 5 days. It is very important to know that Lagos Ports Complex dwelling time is 6 days longer than that of Cotonou close to Nigeria. Consequently Nigerian shippers prefer routing their cargoes through Cotonou Port and use trucks to convey the goods into Lagos through the same border. According to NCS, the scale of this diversion via Cotonou is estimated to be equivalent of 15-30% of Nigerians' total import volume. It is also estimated that 75% of the total containers unloaded in Cotonou Port is destined for Nigeria.

3. METHODOLOGY

The study tried to appraise factors responsible for cargo diversion to neighbouring Ports by shippers in Nigeria using West African Ports of Cotonou in republic of Benin and Apapa Port in Lagos, Nigeria as study. The two Ports were chosen as case study. The two ports were chosen due to their closeness to each other in the same competitive region. Data collected was from both primary and secondary sources. To obtain the primary data, we conducted first a pilot survey in both port of Cotonou and Apapa ports. The pilot survey was very necessary to indentify several factors that influence stakeholders/shippers choice of port for patronage

3.1. Analytical Methods Used

The questionnaires used as instrument for data gathering were developed to suit the purpose of the study i.e. to test the ratings of expectations and perception of the port users based or service attributes of the two ports under survey. This is on the assumption that customers port users' proposal to use a

particular port depend on his ability to obtain a better service and satisfaction from the chosen port. Consequently, one of the analytical tools depends the stated preference technique or concept”

The second analytical tool used for this study is the cumulating of ranked votes approach, at aggregate level. The study is designed to determine why port users prefer a particular port out see their domain than a port within their domain. In other words why does a Nigeria slipper prefer to divert his shipment to Cotonou port in republic of Benin as against using Apapa port complex?

4. DATA PRESENTATION AND ANALYSIS

Table-1. The Turnaround time of Ships in Certain African Ports 2010.

Ports	Ship Dwelling Time in Days
Dakar (Senegal)	7
Cape town (south African)	6
Durban (south Africa)	6
Mombasa (Kenya)	5
Tem (Ghana)	15
Apapa (Nigeria)	12
Cotonou (Benin)	6
Total	57
Average	8.1 days

Source: Nigeria Customs Reform 2012.

Table-2. Freight Rates on Containerized Cargo from far-east Korea to Nigeria and Benin republic Ports (Lagos and Cotonou) in 2012

Container Size	Freight Rate to Lagos	Freight Rate to Cotonou
1 x 20	89, 000	87, 500
1 x 40	816, 000	814, 000

Source: Tom Shipping Company Lagos

Table-3. Freight Rates on Containerized Cargo from USA to Nigeria and Republic of Benin in 2012.

Container Size	Freight Rate to Lagos Port	Freight Rate to Cotonou Port
1 x 20	84, 600	83, 000
1 x 40	88, 000	86, 000

Source: Tom Shipping Line, Lagos

Table-4. Service Quality Factors Expectation for Apapa and Cotonou Ports.

Quality Factors	Apapa Cumulative	Port Cotonou Cumulative	Port Above Grand Mean 175.25
Staff appearance	177	107	Apapa
Cargo handling equipment	162	183	Cotonou
Deliver on promise	150	170	None
Transit time	95	103	None
Frequency of sailing	76	197	Cotonou
Little waiting time	203	350	Both
Settlement of claims	150	210	Cotonou
Efficiency of claims	120	166	None
Trustworthy	110	168	None
Skills of employees	240	200	Both
Value added service	200	240	Both
Prompt information	180	250	Both
Total	1862	2344	
Mean Score	155.17	195.33	

Source: Field Work Calculations

AM + CM/2

Apapa port mean

$$= 1862/12 = 155.17, 155.17 + 195.33 = \frac{350.50}{2}$$

Cotonou port mean = 175.25

$$= 12344/12 = 195.33$$

Grand mean = AM+ CM/2

$$\text{ie } 155.17 + 195.33/2 = 350.50/2 = 175.25$$

Where AM = Apapa port mean

CM = Cotonou mean

4.1. Interpretation of Results

From table 4, the cumulative ranked score for Apapa ports complex is 1862 while that of Cotonou is 2344. Realizing that the assignment of values and cumulating them into absolute figures e.g X1 = 1862 and X2 = 234 shows level of perception of the port choice factor alone but could not stand as a basis for decision making calls for modification. This led to the adoption of the grand mean approach. Here the cumulative rankings of both ports were each divided by twelve (12) the number of choice variable factored to get the mean of each port the two means of the study were then added to get the grand mean score.

The decision rule is that the dependent variable whose total score is equal or greater than the grand mean is significant. Consequently the mean score of Apapa port stand at 155.17 while the mean score for Cotonou port stands at 195.33, the grand mean for the two competitive ports stands at 175.25, hence any choice factor score equal or greater than 175. 25 is significant.

4.2. Discussion on Using the Cumulative Ranking of Votes Approach

4.2.1. Staff Appearance

Empirical evidence suggests that the tangible and physical surrounding of a service environment can have a significant influence on customer's effective response and their behavioral pattern relative to choice or patronage. Here the total score of Apapa and Cotonou ports stood at 177 and 107 respectively while the grand mean score is 175.25. This translates that 177 is higher than 175.25 and therefore in favour of Apapa whereas for Cotonou port, it is 107 which is lower than average mean of 175.25. The interpretation of this scenario is that port users patronize Apapa ports complex as against the Cotonou port due to the appurtenance of the working environment especially staff appearance.

Availability of cargo handling equipment the total scores for Apapa and Cotonou ports stand at 162 and 183 respectively. Since 1837 175.25 customers chose Cotonou port against the Apapa port in Nigeria hence they score Cotonou port higher relative to cargo handling equipment availability.

Availability of cargo handling equipment in ports had been a criterion by customer in forming their opinion on performance expectation hence choice of port.

Delivery of shipment on promise. The issue of prompt delivery of service has been taken seriously by customers in the service industry, the port industry inclusive. Consequently, customers are likely to patronize a port which delivers service quickly as promised. Hence, according to the study Apapa port scored 150 whereas Cotonou scored 170. Though none of this means that customers were indifferent in

choosing either of them. However, the choice of the two ports tilted towards Cotonou port which scores 170 closer to the grand mean score of 175.25 against Apapa port which scored 150. This shows that Cotonou port is still preferable than Apapa port in terms delivery on promise.

4.2.2. Transit Time

In terms of transit time of cargo, the Cotonou port was still ranked higher than the Apapa port. While the Cotonou port scored 103, the Apapa port scored 94 only. Though the two ports scored below the grand mean score of 175,25, the scored service quality expectation tilted in favour of Cotonou port for instance the dwelling time of cargo in Cotonou port is 6 days against 12 days in Apapa port see table I, assuming it takes a day to move cargo from Cotonou port to any destination in Lagos, it will take $6+1 = 7$ days to make such delivery as against $12 + X$ hours, to make delivery from Apapa port to any destination in Lagos.

4.2.3. Frequency of Sailing

Empirical evidence has also shown that port users will prefer ports whose sailing frequency is high. Here frequency of sailing includes the availability of night sailing. Consequently, whereas there are night sailing opportunities and facilities at Cotonou port, Nigeria ports are yet to commence night sailing despite recommendation from studies in port operations that lack of night sailing had been a hindrance to prompt delivery of goods/service. For instance, a vessel came calling before 8pm has to wait upstream till the next day. This causes ship to sail to the neighbouring of port of Cotonou.

In terms of frequency of sailing, the total score for Cotonou port is 197 which is above the grand mean score of 175.25 whereas the total score for Apapa ports complex is 76 hence port customer patronize Cotonou port more than Apapa port or divert their cargo to Cotonou port due to higher frequency of sailing at Cotonou port

4.2.4. Little Waiting Time

Port customers scored both Cotonou and Apapa port high relative to little waiting time for service. This means that there are improvements in the availability of both spaces in the two ports. For Apapa port this variable scored 203 whereas it scored 350 for Cotonou port. For Apapa port, the early nineteen seventies port congestion problem led to the construction of more berths at Apapa as well as construction of more berths at Tin can Island port, Kirikiri terminal, the container terminal and the Ro-Ro terminal. All these had led to the decongestion of the port, hence calling ship nowadays waste little or no time to be served. However, since little waiting time scored 350 in Cotonou as against 203 for Apapa it means that shippers still prefer Cotonou port to Apapa port and can subsequently divert their shipments. Efficiency in settlement of claims. Claim settlement is another service quality factor used by customers scored Cotonou port 201 as against Apapa that scored 150. In analysis, 210 is greater than the grand means score of 175.25 whereas Apapa port scored 150 lower than 175.25 consequently, in terms of settlement of claims, port user rated Cotonou port scored higher than Apapa port complex.

4.2.5. Trustworthy

Another important attributes of a performing service provider is the ability of the staff to render trustworthy service or the ability of its staff to be trustworthy. When the staff of the service provider is honest, sincere and trustworthy, customers are likely to patronize the firm always. Consequently,

trustworthiness is a quality service attribute. In this regard, whereas, Cotonou port scored 168, Apapa port scored 110. Though both port were unable to gather total score greater than the grand mean score of 175.25, the choice feature tends towards Cotonou port.

4.2.6. Skill of Employees

Relative to the skill of employees as a variable, shippers were unable to show remarkable preference to any of the two ports for example; whereas the Cotonou port complex scored 200 greater than the grand means score of 175.25 Apapa port complex pooled a total score of 240. The presence of the concessionaries had brought in skilled labour by flushing out numerous unskilled labour in the system. Most of the unskilled labourers inherited from the old system have been retired and some sent to intensive skills and improved performances.

4.2.7. Value Added Services

Value added services involve the ability of the service provider to add other services which will improve the value of service rendered to customers in the port industry. These value added service includes packaging breaking down of bulky goods cargo consolidation, warehousing etc. relative to these quality service expectations from port users, both port were ranked very high. Whereas Cotonou port scored 240, Apapa ports complex score 200, both of which are above the grand mean score of 175.25.

4.2.8. Prompt Information

Every service provider must be capable of acquiring useful information as well as passing such information to his customer. With such information at the disposal of the port users, pro-active decision could be taken by the customers. Consequently, the ability of giving prompt information to customers is a quality service feature as perceived by customer hence can encourage improved patronage. The Cotonou port scored 250 whereas the Apapa port complex scored 180 both which are above the grand mean score 175.25.

5. CONCLUSION

The study tried systematically to appraise the performances of the two ports Cotonou and Apapa complex operating in the same competitive environment. In other words the two ports compete relative to the attraction of port users from Nigeria. The study using some quality service as perceived by the ports customers as their expectation from the port that will command their patronage. The port users were able to rank the various attributes of the quality service factors differently service profile as stated by the stated preference technique reviewed earlier of all the twelve (12) service quality factors the study concludes that the choice of port by users tilted in favour of Cotonou port in seven (7) attributes. As regards Apapa port complex, quality service factors in favour were only five (5) attributes. The seven quality service factors in favour of Cotonou port includes viz cargo handling equipment availability, frequency of sailing, little waiting time for service, prompt and efficiency in settlement of claims skills of the employees, value added service provision and prompt information delivery and dissemination. Apart from these quality service delivery factors in favour of Cotonou port, cost of doing business in Cotonou in dollar term. Favours Cotonou port relative to Apapa port see table 1-4 just turnaround time of ship and cargo dwelling time for Cotonou are better compared to the figures for Apapa ports complex. These are the reasons why shippers

in Nigeria divert their shipments to Cotonou port and later through the economics of west African trade agreement or protocols transship the cargoes to Nigeria as they pay no custom duties at the entry border to Nigeria and where not possible smuggle then into Nigeria. This goes to explain that about 35% of container traffic volume discharged in Cotonou port complex yearly is Nigeria shippers prefer to ship their cargoes through neighbouring countries like Republic of Benin, Ghana, Cote d Voire, Togo etc as diverted goods.

REFERENCES

- Amiwero, L.E., 2005. A leaf from the United States of America's maritime industry. Lagos: Nigerian Chamber of Shipping Maritime Digest.
- Emeghara, G.C., 2008. Delay factors evaluation of Nigeria seaports (A Case Study of Apapa Port Complex Lagos). General Journal of Physical Science, 2(3): 97-106.
- Hayes, B.H., 1997. Measuring customer satisfaction. Survey, design, use and statistical analysis, and methods. 2nd Edn., Milwaukee WI: ASQ Quality Press.
- Jane, T. and N. Lobo, 2002. Port selection factors by shipping lines, different perspective between trunk lines and feeder service providers. Marine Policy, 32: 877-885.
- Lazarus, O. and I.U. Wilfred, 2011. .A strategic reposition of the maritime industry for economic recovery and sustainability:" The Cabotage Act". African Journal of Business Management, 5(14): 5658-5663.
- Lovelock, C., 2005. Future directions for service management concepts, research, teaching, practice. SerSIG Service Research Conference, NUS, Singapore, 4th June.
- Ndikom, O., 2006. The kernel of concept of shipping operation, policies and strategies the industry overview. Lagos: Bunmico Publishers.
- Nigerian Customs Service Reforms, 2012. Performance Scorecard of August, 2009- August, 2011.
- Song, D. and K. Yeo, 2004. A competitive analysis of Chinese container ports using the analytic hierarchy process. Maritime Economics and Logistics, 6(1): 34-52.
- Yeo, K., 2004. Port efficiency. Maritime Transport Costs and Bilateral Trade Journal of Development Economics, 75: 417-450.

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