

Analysis of Landlord Administrative Model on the Ship Owners/ Nigeria Port Authority Relationship

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Abstract

The survival of any port administration is dependent on the relationship that exists between the ship owner and the port authority. To increase the productivity of the Nigerian Port Authority it is therefore imperative to adequately address the problem bedeviling the relationship between it and the ship owners.

The qualitative-descriptive method of data analysis called variance ratio test (F-test) was used to test for the null hypotheses. This was done by making comparison of the existence of significant difference between precision values of the period before and after the introduction of administrative model. Documentary data of outputs from operational statistics of the NPA before and after the introduction of the landlord administrative model was employed.

The effect of this model on the relationship between them was measure quantitatively from the number of vessels entering the port and the overall throughput by the NPA. There was an estimated increment of 6.71% and 26.1% in the number of vessels and Gross Registered Tonnage(GRT) from the six Nigerian ports between 2009 when there was no model, and 2011 when there was administrative model in place, to cater for a cordial relationship and obligation of the ship owners to the NPA and vice versa. From the statistical test of hypothesis, it is apparent that the two null hypotheses (H_{01} and H_{02}) are to be rejected.

It is therefore concluded that an increase in the number of vessels is a corresponding improvement in the relationship between the two parties as the ship owner will not use the NPA if there is no cordial relationship between them.

Keywords: Ship owners; Nigerian Port Authority; Administration and landlord model; Gross Registered Tonnage (GRT).

Introduction

The development of any country to a very large extent hinges on the performance of its international trade, as this is the principal generator of an overall economic growth. Economic growth is evident in an atmosphere of a vibrant trade balance. The afore mentioned is typical of a developing country like Nigeria who cannot manufacture most of her goods resulting in direct importation from other countries, with raw materials exported in exchange for these capital goods, equipment and technological skills. Hence local and foreign trade is therefore impossible without an efficient mode of transportation to convey these goods. An effective transportation therefore bridges the regional gap between areas of surplus and area of lack [1].

Both local and foreign trade could take place by road, rail, air or maritime transport. However of all modes of transportation maritime transport offers a more convenient in transportation of large volume of cargo when handled well [2]. These mode mentioned put together is very insignificant compared to the maritime transport. With 80% of the volume of international trade transported by sea and with an annual growth rate of 4% over the last twenty years [3], maritime transport industry plays a crucial role in international supply chains. The increase in business complexity resulting from companies diverting into foreign markets and globalize their supply chains and material sources has led into many ship owners specializing in value-adding activities [4]. This is prevalent for activities related to ship management.

Due to these many individuals, corporate bodies with financial muscles are venturing into the business of maritime transportation. And this has necessitated the establishment of more seaports to handle the emergence ship company coming to being. There is therefore a

need to development a guiding legislation that will ensure a cordial relationship between the seaports and the ship owners.

According to the British Wikipedia, a ship owner is regarded as the owner of a merchant vessel (commercial ship). He is simply the owner of the ship that carries cargo and will often be the carrier of the cargo and he is liable to any loss or damage. He is therefore the one to equip and exploit a ship for the delivery of cargo at a given price for the transport of a certain cargo between two given ports [2].

This price is called the freight rate. It is his responsibility to hire a licensed crew and captain rather than take charge of the vessel himself. Because sailing vessels were expensive items and subject to unexpected loss, they were not usually owned by just one person. It is therefore advisable to quarter share in four ships, than to have all their capital tied up in one vessel. A ship can be owned either by a company, a people or through an investment fund. If owned by a ship company, the technical management of the vessel is usually performed by the ship owner through the ship company.

This research work is centralized on the procedure of ship ownership

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in Nigeria and the liability of the ship owners and the Nigeria port Authority and vice-versa while considering the factors that might affect a smooth relationship between them. The study therefore addresses the existing legislations on ship ownership in Nigeria and how this affects the ship owners and to identifies the obligation of the Nigeria Port Authority to the ship owners. The study also highlighted some of the problem of ship ownership in Nigeria. The acquisition of ships is very complex and highly capital intensive. It takes a lot of time and money to build and acquire a vessel. There are various types of ocean going vessels and their cost vary, usually depending on the physical condition of the ship, the type of cargo it is designed to lift, rate of interest, the ship-owners expectation of future market development and quality of cargo it normally lifts. Bearing cost alone in mind, it is not surprising that not many developing nations can afford to acquire these ocean going vessels. The cost of some of these vessels is equivalent to the total annual budget of some of the developing countries. Cost alone is one of the main reasons why most developing countries including Nigeria have not been able to expand their national fleet. In the developed countries of the world, the way and manner in which vessels are acquired are many and not as complicated as it is in the under developed world. It is not surprising that fleet expansion and capacity building is the order of the day in these countries. But that does not mean they do not have problems of finance at all. But the magnitude is not as it is in the developing countries. The level of economic development also plays a vital role here. Hence, the study addresses the factor that affects the cordial relationship between the ship owners and the Nigerian Port Authority. This research work beams light into the process of ship ownership in Nigeria maritime industry and the obligation of the ship owners to the Nigeria Port Authority and vice versa that ensures a cordial relationship between the two parties.

Literature Review

Preamble

A seaport is a place where intermodal transfer of passengers and cargo takes place. It is therefore a place of transfer between the land and the sea transport which acts as an entry point for goods coming or out of a country from or to other parts of the world [5]. It is a knot where ocean and inland transport lines meets with the main obligation of providing a resting place from the ships as well as the facilities and equipment for the safe transfer of cargo and passengers from ocean to land and vice versa.

According to Esra [6], a cordial relationship must exist between the ship owner and the seaports; this relationship is referring to as master/servant relationship. For a port to survive economically, it must be able to provide a quality service to her customers [7,8] Opined that the efficient and high performance value of a port is a measure of the viability of services rendered to the entire international trade of a nation. Hence the overall productivity of ship management depends largely on the volume of ship and cargo traffic attracted to it over a period of time.

Eligibility for ship ownership in nigeria maritime industry

According to the Merchant Shipping act enacted by the Federal Republic of Nigeria [9], the following categories are qualified to own a ship in Nigeria.

- A Nigerian citizen
- A corporate body
- A foreign company

An individual is eligible to own a ship in Nigeria if he/she is a Nigerian citizen, a commonwealth citizen or a company established under and is subject to the law of the Commonwealth of Nations. Hence an individual or corporate business with the above has their place of business in the Nigerian Maritime transport.

A ship owned by a foreign company can also be accorded the right to own Nigerian shipping right provided it abides by the Nigerian Company law and Immigration regulations. The Nigerian law requires that every non-Nigerian who wishes to enter or reside in Nigeria and every company that employs or intends to employ non-Nigerian must comply with the regulations made under the Immigration act (1990).

These include the procurement of the following documents:
Business Permit: A business or work permit is granted by the Nigerian Investment Promotion Council (NIPC) foreign businesses with foreign equity holding.

Residential Permit: This will enable the ship crew and administrative staff of the foreign company to work in Nigeria.

Expatriate Quota Approval Document: This is obtained from the Ministry of Internal Affairs as this is the first step of obtaining a work permit in Nigeria

Procedure into ship ownership in Nigeria

The Merchant Act [10] provided the guidelines for ship registration in Nigeria. The Port Registry in the Nigeria Port Authority Lagos is saddled with this responsibility. An application is made by an individual or by corporation. This can also be made by the representative of the ship owner known as the ship agent or a ship manager. The Nigerian Registry of Ships makes a distinction between provisional and permanent registration. Provision Registration may be granted to a ship to enable it to sail and operate within territorial waters, pending the issuance of a permanent certificate of registration [11]. The following information is provided at the point of registering a Nigerian ship in Nigerian maritime transport.

- a. Full names, address and occupation of the owner of the ship
- b. Evidence showing the ability of the ship owner to operate and maintain the vessel
- c. The ownership of shares in the company applying to register the ship
- d. Share apportionment in the vessel
- e. Ship log-book for inspection by the registrar
- f. Evidence showing the financial resources to maintain and operate the vessel
- g. Certificate of incorporation and articles of association of the company.

Duties of a ship owner

According to Fonasba [12], it is the responsibility of the ship owner to ensure that a ship is designed and built in a manner that poses no threat to the passenger or the crew member. This is taken into consideration when constructing the layout of the ship in ensuring the ship is made suitable for its intended purpose. He decides how a vessel is being used and who are the ultimate beneficiaries of the revenue generated by vessel they own. The duties of a ship owners among others include the following:

- a. Provision and maintenance of ships equipment
- b. Provision of a seaworthy ship
- c. Timely delivery of cargo without delay
- d. Appointment of the crew members and administrative staff.

The duties of a ship owners was buttress by [13] who further exemplified the role of a ship owner in maritime transport as shown below:

- i. To provide a seaworthy ship: Seaworthiness is relative to the nature of the ship, the particular voyage, and the cargo to be carried. This is one of the major undertakings of a ship owner through the ship agent to the respective port authority. And this undertaking demands that be fit and suitable in all respects to carry cargo safely to her destination. Christopher [13] opined that for a ship to be seaworthy it must be the one with a firm hull and having competent crew member that are rightly furnished with all that is needed for a successful voyage. According to the requirement of Nigeria maritime act (1999) a ship is said not to be seaworthy when it is not properly cleaned, having insufficient bunkers with an inefficient crew, poor stowage, inadequate equipment, and when maps and charts are either not on board or outdated.
- ii. Protection of Cargo from Damage: A ship owner must ensure the delivery of the cargo with the goods delivered in a right condition without damage or loss. This is not without exception as in the case of damage or loss arising from the part of the shipper when there is an insufficient packaging or when there is an unavoidable circumstance on the part of the carrier of the said cargo.
- iii. Ensuring a Timely Delivery: A carrier must also take cognizance to minimize delay in the timely delivery of a cargo in her care. In this case he is strictly liable for any failure to deliver the cargo on time if the date of delivery has been agreed upon with the shipper. He is however not liable to any penalty if the delay is caused by an unavoidable circumstances.
- iv. A Carrier must not deviate from the agreement: The carrier is obliged to prosecute the voyage without unreasonable deviation or unreasonable delay. He must use either the agreed route, if one has been agreed, or the usual route. Deviations to save life or to preserve the ship and cargo are justified. Deviations to save property are not.
- v. To share in general average: A general average situation arises where part of the cargo is jettisoned to save the ship and the balance of the cargo. The saved cargo and the ship are obliged to jointly compensate the owner of the jettisoned cargo.

Legal provisions and obligations of Nigerian Port Authority

The act establishing the Nigeria Port Authority is regarded as the Nigeria Port Authority Act. This was enacted on May, 1999 by the Federal Republic of Nigeria with the function of providing and operating necessary facilities in ports and maintaining, improving and regulating the use of the ports [14].

According to the act, the governing body of the Nigerian Port Authority is composing of the following individuals:

- The chairman of the board.

- A representative of the Federal Ministry of Transport.
- A five panel experienced in shipping and commercial matters.
- The managing director of the authority.
- The executive director of the authority.

The following Nigerian Ports are the designated pilot age districts:

- Tin Can Island Port
- Warri Port
- Sapele Port
- Rivers port - Port Harcourt, Okrika and Bonny
- Calabar Port - Available on application

Functions of the Nigerian Port Authority

The functions of the Nigerian Port Authority among others as provided by the law of Federal Republic of Nigeria [9] include:

- Maintenance, improvement and regulation of Port operations.
- Ensuring an efficient management of port operations.
- Resource allocation, diversification of revenue sources, and guaranteeing an adequate return of investment.
- Provisions of facilities for berthing, towing, mooring or dry docking of ships on entering or leaving a port and its approaches.
- Provision of approaches to all ports and territorial waters of Nigeria such as pilot age services, light, marks, and other navigational services such as cleaning, deepening, and improvement of all waterways.
- Ensuring the loading and unloading of goods.
- Ensuring the embarking and disembarking of passengers in and from ships.
- Helps in sorting, weighing, warehousing, and handling of goods.
- Supply of water to shipping vessels.
- Control of pollution arising from oil or any other substances.
- Provision of towage and protection of life and property on the high sea.

Power of Nigeria Port Authority: The Nigeria Port Authority was empowered under the Nigeria constitution [9] to carry out the following regulations:

- Regulation, declaration, and defining the wharves, docks, piers, and places in possession of the Nigeria Port Authority.
- Regulation of the manner and the condition under which loading and discharging of ship cargo and a passenger is carried out.
- Regulation of the use of warehouse, shed and railway in possession of the authority.
- Exclusion and removal from the port premises any idle or disorderly person or trespassers.

- Regulation of ferry services maintained by the Authority.
- Regulating the conduct of employee on the Nigeria Port Authority.
- Management of the lighthouse of the port authority.
- Appointment, licensing and management of pilot of vessels.
- Erecting, constructing and maintenance of all the buildings in the port.
- Insurance of all goods and consignment under the custody of the port authority.
- Provision and regulation of meters necessary for the measurement of goods in any port in Nigeria.
- Setting of pollution control guidelines and monitoring of the oil spillage, waste dumping by ships at the ports, wharves, and jetties.

Analysing the Nigerian Port Authority administrative model

The authority is charged with the major responsibility of providing cargo handling and other ancillary services to cargo owners and ships that call at its terminals. The Nigeria government deregulated the ports to improve productivity through the injection of private sectors resources in the management of ports. Specifically, it adopted the Landlord Port Model in which the port authority collects rents on existing infra and superstructure under concession to private operators while the concessionaires provide cargo handling and warehousing services to the port users. Ancillary services like towage, pilot age and dredging are retained by the port authority. However, where additional infrastructure is required, the private operator can access it through contract agreement with the port authority. Thus, while the port concessionaires concentrate on cargo handling services, data collection and collation on vessel and cargo traffic is the responsibility of ports custodian authority. The NPA generally overseas the activities of the private operator.

The Nigerian Ports Authority (NPA) is the custodian of Nigeria's coastal ports. Established by the ports Acts of 1955. The authority was charged with the major responsibility of providing cargo handling and other ancillary services to cargo owners and ships that call at its terminals. The Nigeria government deregulated the ports to improve productivity through injection of private sectors resources in the management of ports. Specifically, it adopted the Landlord Port Model in which the port authority collects rents on existing infra and superstructure under concession to private operators while the concessionaires provide cargo handling and warehousing services to the port users. Ancillary services like towage, pilot age and dredging are retained by the port authority. However, where additional infrastructure is required, the private operator can access it through contract agreement with the port authority. Thus, while the port concessionaires concentrate on cargo handling services, data collection and collation on vessel and cargo traffic is the responsibility of ports custodian authority. The NPA generally overseas the activities of the private operator.

The United Nations Conference on Trade and Development (UNCTAD) Handbook for Port Planners [3] in Developing Countries lists the statutory powers of a national port authority as follows (on the assumption that operational decisions will be taken locally):

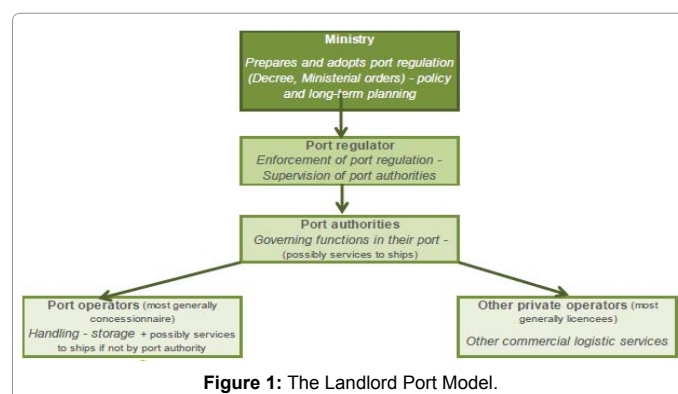
- Investment: Power to approve proposals for port investments in amounts above a certain figure. The criterion for approval

would be that the proposal was broadly in accordance with a national plan, which the authority would maintain.

- Financial policy: Power to set common financial objectives for ports (for example, required return on investment defined on a common basis), with a common policy on what infrastructure will be funded centrally versus locally, and advising the government on loan applications.
- Tariff policy: Power to regulate rates and charges as required protecting the public interest.
- Labour policy: Power to set common recruitment standards, a common wage structure, and common qualifications for promotion; and the power to approve common labour union procedures.
- Licensing: When appropriate, power to establish principles for licensing of port employees or agents.
- Information and research: Power to collect, collates, analyse, and disseminate statistical information on port activity for general use, and to sponsor research into port matters as required.
- Legal: Power to act as legal advisor to local port authorities.

Strength and weakness of the landlord model administrative model on the ship owners/NPA relationship: In the landlord port model, infrastructure is leased to private operating companies or to industries such as refineries, tank terminals, and chemical plants. The lease to be paid to the port authority is usually a fixed sum per square meter per year, typically indexed to some measure of inflation. The level of the lease amount is related to the initial preparation and construction costs (for example, land reclamation and quay wall construction). The private port operators provide and maintain their own superstructure including buildings (offices, sheds, warehouses, container freight stations, workshops). They also purchase and install their own equipment on the terminal grounds as required by their business. In landlord ports, dock labour is employed by private terminal operators, although in some ports part of the labour may be provided through a port wide labour pool system.

In landlord port model (Figure 1) a single entity (the private sector) executes cargo handling operations and owns and operates cargo handling equipment. The terminal operators are more loyal to the port and more likely to make needed investments as a consequence of their long-term contracts. This will enable a smooth working relationship between the ship owners and the Nigeria Port Authority, as cargo handling will be perfectly executed due to the input of the private port



operators. Also the private terminal handling companies generally are better able to cope with market requirements than the public enterprises. There is a synergy between the since over congestion of container is greatly reduced and there is timely delivery of goods. The only weakness of this model is the risk of overcapacity as a result of pressure from various private operators and the risk of misjudging the proper timing of capacity additions.

Material and Method

Study area and research objectives

The Nigerian Ports Authority (NPA) is a federal government agency that controls and operates the ports of Nigeria. The major ports under the control and management of the NPA include: the Lagos Port Complex and Tin Can Island Port in Lagos; Calabar Port, Delta Port, Rivers Port at Port Harcourt, and Onne Port. Operations of the NPA are carried out in affiliation with the Ministry of Transport and the Nigerian Shippers' Council. The main offices of the Nigerian Ports Authority are located in Lagos. However, with the concessioning programme of the federal government, which is aimed at promoting efficiency through, public and private partnership, the Nigerian Ports, has since 2005, being concessioner. This landlord arrangement as they call it, has fostered better relationship and high turn-out of goods and services in and around the Nigerian Port system either in the Eastern or the ever-busy Western zone.

Lagos Port Complex: The Lagos Port Complex is located at Apapa in Lagos. Together with the Tin Can Island Port, it serves Lagos and western Nigeria. The economic door to the nation is Lagos Port Complex.

Tin Can Island Port: Tin Can Island Port at Lagos was formed by a merger of the port facilities at Roro and Tin Can Island in 2006.

Calabar Port: This is located in the southeast corner of the country in Cross River State, Calabar is the home of the Eastern Naval Command of the Nigerian Navy. Port facilities are located 55 nautical miles up the Calabar River.

Delta Port: The Delta Port, Rivers Port and Onne Port are located in the petroleum and natural gas producing Niger River Delta region of Nigeria. Delta Port in Delta State includes the ports of Warri, Burutu, Sapele and petroleum terminals at Escravos, Forcados and Pennington.

Rivers Port/Port Harcourt: The Rivers Port Complex in coastal Rivers State comprises Port Harcourt Port, Okrika Refined Petroleum Oil Jetty, Haastrup/Eagle Bulk Cement Jetty, Kidney Island Jetty, Ibeto Jetty, Macobar Jetty and Bitumen Jetty. Management of port operations at Port Harcourt itself has been commissioned out to two port operators, Ports and Terminal Operators and BUA Ports and Terminal, it is not operated by the NPA. Like Delta State, Rivers State is a principal petroleum-producing region of Nigeria.

Onne Port: The Onne is located in Rivers State on Ogu Creek near the Bonny River, 19 km from Port Harcourt; the port area is located in three Local Government Areas of Rivers State, Eleme LGA, Ogu-Bolo LGA and Bonny LGA. The port consists of two major facilities, the Federal Ocean Terminal and the Federal Lighter Terminal. Onne Port has been designated as an Oil and Gas Free Zone by the government of Nigeria; currently over 100 companies have licenses to work at Onne Port; as an economic free zone it serves as a hub port for oil and gas operations throughout West Africa and Central Africa.

Considering the above study areas, the following objectives were set for this research work.

- To identify the policies and legislation for ship ownership in

Nigeria

- To analyse the responsibilities of the ship owners to the Nigeria Port Authority
- To ascertain the level of relationship between the Nigeria Port Authority and the ship owners

Study population and the main hypotheses

The study population was made up of the following ports under the Nigeria Port Authority:

- Lagos Port Complex
- Tin Can Port Complex
- Rivers Port
- Onne Port Complex
- Calabar Port Delta Ports

Research questions and hypotheses

This study should be able to provide solution to the following research questions:

- What are the policies and legislation for ship ownership in Nigeria?
- What are the responsibilities of the Nigeria Port Authority to the ship owners?
- What is the level of relationship between the Nigerian Port Authority and the ship owner?

With a consideration of the above research hypothesis, the main hypotheses was formulated as shown as follows

Hypothesis 1 (H_{01}): *The Nigeria Port Authority does not have any responsibility to the ship owner.*

Hypothesis 2 (H_{02}): *There is no relationship between the ship owner and the Nigerian Port Authority.*

Sources of data

We rely on documentary secondary sources of data collection for this study. In other words, documentary method is a secondary source of data or an indirect method of data. The data obtained shows the documented operational statistics from the output of the Nigerian Port Authority before and after the introduction of the landlord administrative model. The model is therefore an important factor in analyzing the relationship between the ship owners and the Nigerian Port Authority. It is characterized by a mixture of public private orientation. Under this model, the port authority acts as regulatory body and as landlord, while port operations (especially cargo handling) are carried out by private companies.

Methods of data analysis

The methods of data analysis employed under this study were:

- Percentage averages and mean of the study population.
- Graphical Descriptions (histogram, pie chart and scattered diagrams) to make comparison in different ports under study.
- Statistical Test: The method of data analysis for this study is qualitative-descriptive analysis using the variance ratio test (F-test). The first step for comparison is to find any existence

of significant difference between the precision values i.e the period before and after the introduction of administrative model. Here we make assumption that there is no significant difference between the precision values of the two periods. This hypothesis is represented as follows:

Null Hypothesis: $F_0: \sigma_1^2 = \sigma_2^2$, where σ^2 represents the variance of the two methods.

To test the hypothesis we calculate *F-ratio*, given by the formula below,

$$F_{\text{calculated}} = S_1^2 / S_2^2 \quad (1)$$

S_1 and S_2 are the sample standard deviations before and after the introduction of the administrative model respectively. The larger value of S is to be used as numerator so that the value of F is always greater than unity.

The value obtained for F is then compared with the values in the *F-table* corresponding to the numbers of degree of freedom for the two sets of data at a probability level. If the calculated value of F is lesser than the tabulated value, the null hypothesis cannot be rejected.

Analytical procedure

The secondary data from Tables 2 and 3, will be quantitatively analyzed, graphically visualized and interpreted to provide an answer to the research problem and the hypothesis formulated. The following analytical procedure for each of the stated objectives is stated as follows:

Objective 1: This involves the identification of policies that surrounds the ownership of ship in Nigerian Maritime industry. This was highlighted under the section 2.2 and 2.3 in our literature review.

Objective 2: The analyses of the relationship between the ship owners and the Nigerian Port Authority was done by comparing the gross registered tonnage of vessel before and after the introduction of the administrative model in year 2011. The administrative model was employed as a pointer in analyzing the relationship between the ship owner and the NPA, before and after its introduction with the difference in value of GRT between these two periods. This relationship shall be visualized using some statistical graphical tools such histogram, pie chart and percentage chart.

Objective 3: Bearing in mind that the level of relationship between the ship owner and the NPA can only be explained with a qualitative-descriptive method as highlighted in objective 3. It is worthy to note that the level of relationship between the two parties can only be explained in term of the variation in throughput and the volume of cargo received by the NPA. The cordiality of the relationship between the two will only be measured by obtaining and comparing the data from two period as this will enable us know if the ship owners are really patronizing the Nigerian Port or have found an easy or affordable alternative.

Statistical test employed: The variance ration test (F-test) is the statistical tool to be used in testing either to accept or reject the hypotheses (H_{01} and H_{02}).

Results and Analysis

Description of the data source

The data obtained shows the documented operational statistics from the output of the Nigerian Port Authority before and after the introduction of the landlord administrative model. The landlord administrative model was introduced in April, 2011 to help in

the smooth running of the port operation and to enable a stable and cordial relationship between the ship owner and the Nigeria port Authority. There is therefore no better way of assessing and analyzing the relationship between these two parties without recourse to the output between the period of introduction of the administrative model and after its introduction. The effect of this model on the relationship between them can only be measure quantitatively from the number of vessels entering the port and the overall throughput of the NPA. As the ship owner will not use the NPA if there is no cordial relationship between them. The assumption to this hypothesis is that the quantitative measures of the relationship between the ship owner and the Nigerian Port Authority. The Table 1 is the documented annual throughputs of the Nigerian Port Authority for a period of four years while Table 2 shows the number and the gross registered tonnage of vessels that entered all the Nigerian ports for a period of four years.

Graphical analysis of data and discussion

From the secondary data obtained in Table 2, Figure 2 shows the graphical description of the number of vessel that entered the Nigerian Ports over a period of four years.

From Table 2 and Figure 2: In 2011 a higher number of vessels were recorded, showing that many ship owners made use of the ports in Nigerian that year. This shows a calculated percentage increment of 6.71% in the number of vessels which plied the six Nigerian ports between 2009 when there was no model and 2011 when there was administrative model in place to cater for a cordial relationship and obligation of the ship owners to the Nigerian Port Authority and vice versa as shown from equation (1).

$$\frac{(\text{Number of Vessels, 2011}) - (\text{Number of Vessels, 2009})}{\text{Number of Vessels, 2011}} * 100\% \quad (1)$$

Port	2009	2010	2011	2012
Lagos P. Complex	1,471	1,563	1,578	1,421
Tin Can Complex	1,488	1,607	1,753	1,609
Rivers Port	465	471	566	461
Onne P. Complex	670	785	884	861
Calabar Port	198	199	188	159
Delta Ports	328	337	358	357
Grand Total	4,620	4,962	5,327	4,868

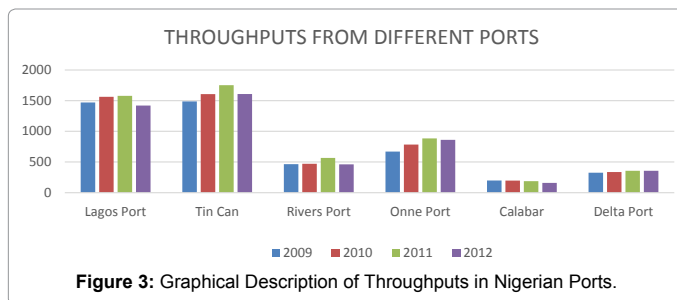
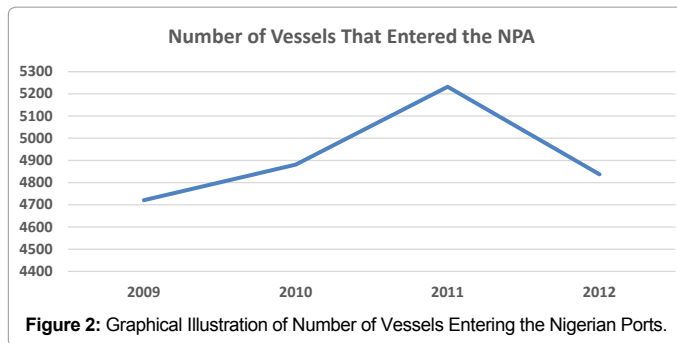
Table 1: Breakdown of Throughput from Different Port Terminals in Nigeria.

Year	No of vessels	Gross registered tonnage
2009	4,881	90,603,611
2010	4,721	106,689,553
2011	5,232	122,614,716
2012	4,837	120,818,683

Table 2: Number and Gross Registered Tonnage (GRT) of Vessels That Entered All Nigerian Ports.

Ports	X_{2009}	Deviation ₂₀₀₉	(Deviation) ₂₀₀₉ ²	X_{2011}	Deviation ₂₀₁₁	(Deviation) ₂₀₁₁ ²
Lagos Port	1,471	438	191,401	1,579	691.17	877,715.97
Tin Can	1,488	340	115,524	1,753	865.17	948,519.13
Rivers	465	-305	93,025	576	-321.83	103,574.55
Onne	670	-100	10,000	884	-3.830	14.6689
Calabar	198	-348	121,184	188	-699.83	789,762.03
Delta	328	-309	95,364	358	-529.83	480,719.83
			626,498			3,200,306.180

Table 3: To calculate the standard deviation between two years (2009 and 2011).



$$\frac{5,232 - 4,881}{5,232} * 100\% = 6.71\%$$

Similarly, equation(2) shows the analysis of the Gross Registered Tonnage(GRT) over a period between 2009 and 2011. The analysis shows a remarkable **26.1%** percentage increase in the GRT as estimated below:

$$\frac{(GRT \text{ from } 2011) - (GRT \text{ from } 2009)}{GRT \text{ in } 2011} * 100\% \dots \dots \dots (2)$$

$$\frac{122,614,716 - 90,603,611}{122,614,716} * 100\% = 26.1\%$$

Statistical tests of hypothesis and discussions

The test of hypothesis for this study can be best understood quantitatively in terms of the total throughputs accrued before and after the introduction of the administration landlord model (Figure 3 and Table 3). It therefore provided a basis for the description and analysis of the relationship that exists between the ship owners and NPA. The proposed hypotheses here is a null hypothesis and an F-distribution was employed to know either to reject or accept the hypotheses (H_{01}, H_{02}). To test the hypothesis we calculate *F-ratio*, given by the equation(1),

$$F_{\text{calculated}} = S_1^2 / S_2^2 \quad (3)$$

S_1 and S_2 are the sample standard deviations before and after the introduction of the administrative model respectively. The larger value of S is to be used as numerator so that the value of F is always greater than unity.

$$\text{Sum of square of deviation} = \sum_{i=1}^{k-6} (xi - X)^2 \quad (4)$$

$$\text{Degree of freedom} = \text{Number of replications} - 1 = k - 1 \quad (5)$$

$$S_{2009}^2, S_{2009}^2 = \frac{\sum_{i=1}^{n=6} (xi - x)^2}{k1 - 1} = \frac{(\text{Deviation})^2}{\text{Degree of freedom}} \quad (6)$$

Where S_{2009}^2 is the variance of 2009 data which is calculated as follows:

$$S_{2009}^2 = \frac{1,626,498}{6-1} = \frac{626,498}{5} = 125,299.600$$

The variance of data after the introduction of the administrative model = $S_{2009}^2 = 125,299.600$

$$S_{2011}^2 = \frac{\sum_{i=1}^{n=6} (xi - x)^2}{k2 - 1} = \frac{(\text{Deviation})^2}{\text{Degree of freedom}} = \frac{3,200,306.180}{5} = 640,061.24$$

The variance of data after the introduction of the administrative model = $S_{2011}^2 = 640,061.24$

$$\text{From equation (3) for variance test } F_{\text{calculated}} = F = S_{2011}^2 / S_{2009}^2 = \frac{640,061.24}{125,299.600} = 5.1082$$

Assumption: The level of significance(α) is the maximum probability with which we would be willing to risk a Type I error is given as 5%. Meaning that there is about 5 chances in 100 that we would reject the null hypothesis(i.e 95% confidence that we have made the right decision).

For comparison the precision of the degree of freedom for two periods 2009 and 2011(df_{2009} and df_{2011}) with the one obtained from the F-distribution table we obtain a $F_{\text{table-value}} = 5.05$. Now comparing this with the $F_{\text{calculated}} = 5.1082$.

Hence, since the $F_{\text{table-value}}$ is less than $F_{\text{calculated}}$ the null hypotheses (H_{01} and H_{02}) are to be rejected.

Conclusions

The effect of this model on the relationship between them was measure quantitatively from the number of vessels entering the port and the overall throughput by the NPA. There was an estimated increment of 6.71% and 26.1% in the number of vessels and Gross Registered Tonnage (GRT) from the six Nigerian ports between 2009 when there was no model and 2011 when there was administrative model in place to cater for a cordial relationship and obligation of the ship owners to the Nigerian Port Authority and vice versa. It is therefore assumed that an increase in the number of vessels is a corresponding improvement in the relationship between the two parties as the ship owner will not use the NPA if there is no cordial relationship between them.

From the statistical test of hypothesis, it is therefore apparent that the two null hypotheses (H_{01} and H_{02}) are to be rejected. The study is therefore concluded as follows:

- The Nigeria Port Authority does have any responsibility to the ship owner.

There is relationship between the ship owner and the Nigerian Port Authority.

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