



Landlord Ports Model and Operational Performance of Seaports in Nigeria

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ABSTRACT

This study investigated the relationship between landlord ports model and operational performance of seaports in Nigeria. The study was conceptualized using landlord ports model as predictor to ship traffic, cargo throughput and port infrastructure components of operational performance. The study adopted the descriptive survey research design with a correlational type of investigation. The questionnaire method was used to collect relevant data to the study. The population of this study comprised of six seaports operating within the geographical boundaries of Nigeria. Specifically, the seaports include Lagos Apapa Port, Tincan Island Port, Calabar Port, Onne Port, Port Harcourt Warlf and Port of Warri, which are also enlisted on Nigerian Ports Authority (NPA) Annual Report (2022). The sample size for this study was the same as the population since the population was not too large. However, the researcher adopted a Census Method and administered 80 copies of structured questionnaire to management staff from each of the six (6) seaports in Nigeria, this means that a total of 80 respondents were used for the study. After data cleaning only 76 copies of the questionnaire were used for the data analysis. Pearson Product Moment Correlation was used in testing the various hypotheses with the help of the Statistical Packages for Social Sciences (SPSS) version 23.0. Findings from the study revealed existence of significant and positive relationship between landlord ports model and operational performance of seaports in Nigeria. The study, therefore, concluded that landlord ports model significantly relates with operational performance of seaports in Nigeria. The study recommended that managers of seaports should adopt tool port model strategies to mitigate threats within the maritime environment, this will impact on operational performance; managers of seaports should implement landlord ports model as part of measures to ensure operational performance.

Keywords: Landlord Ports model, Port Operational Performance, Ship Traffic, Cargo Throughput, Port Infrastructure

INTRODUCTION

Nigeria, with its extensive coastline along the Atlantic Ocean, relies heavily on sea ports to facilitate international trade and economic growth. Over the years, the operational performance of Nigerian sea ports faced numerous challenges, including congestion, inefficiencies, and inadequate infrastructure. In response to these issues, the Nigerian government introduced the landlord ports model to address key concerns and enhance operational performance. Landlord port models have gained prominence in the global maritime industry as a strategy to enhance the operational efficiency and overall performance of seaports. Nigeria, as a country with a significant coastline and substantial maritime activities, has also embraced this model to revamp its sea port operations. Landlord port model according to Lacoste and Douet (2013), represents a fundamental shift in the management and governance of seaports. Traditionally, seaports were operated as public entities under direct government control. However, the landlord port model involves the transfer of port management responsibilities to private entities or port authorities while the government retains ownership of the port infrastructure (Abayomi *et al.*, 2015). This model aims to improve efficiency, attract private investment, and facilitate competition among port operators, ultimately benefiting port users and the economy at large.

The landlord ports model represents a significant shift in the management of seaports in Nigeria, with the aim of improving operational performance, attracting private investment, and fostering competition. As Nigeria continues to grow its maritime sector, this model holds the potential to address historical challenges and position the country as a hub for regional and international trade. However, successful implementation will require ongoing collaboration between public and private entities, effective regulation, and sustained efforts to modernize port infrastructure and operations (Okpara & Enyioko, 2022). Also, implementation cannot be successful without an adequate knowledge of the import role of landlord ports model by both government, private organizations and individuals, especially, as it relates to improvement of operational performance (Chikere, 2014). Regrettably, there is paucity of both theoretical and empirical studies to help government and private organizations to understand the relationship between landlord ports model and operational performance, specifically in the context of sea ports in Nigeria (Ndikom, 2010). The present paper was motivated by this dearth of literature, as it attempted to fill the existing gap by examining the theoretical nexus between landlord ports model and operational performance of sea ports in Nigeria.

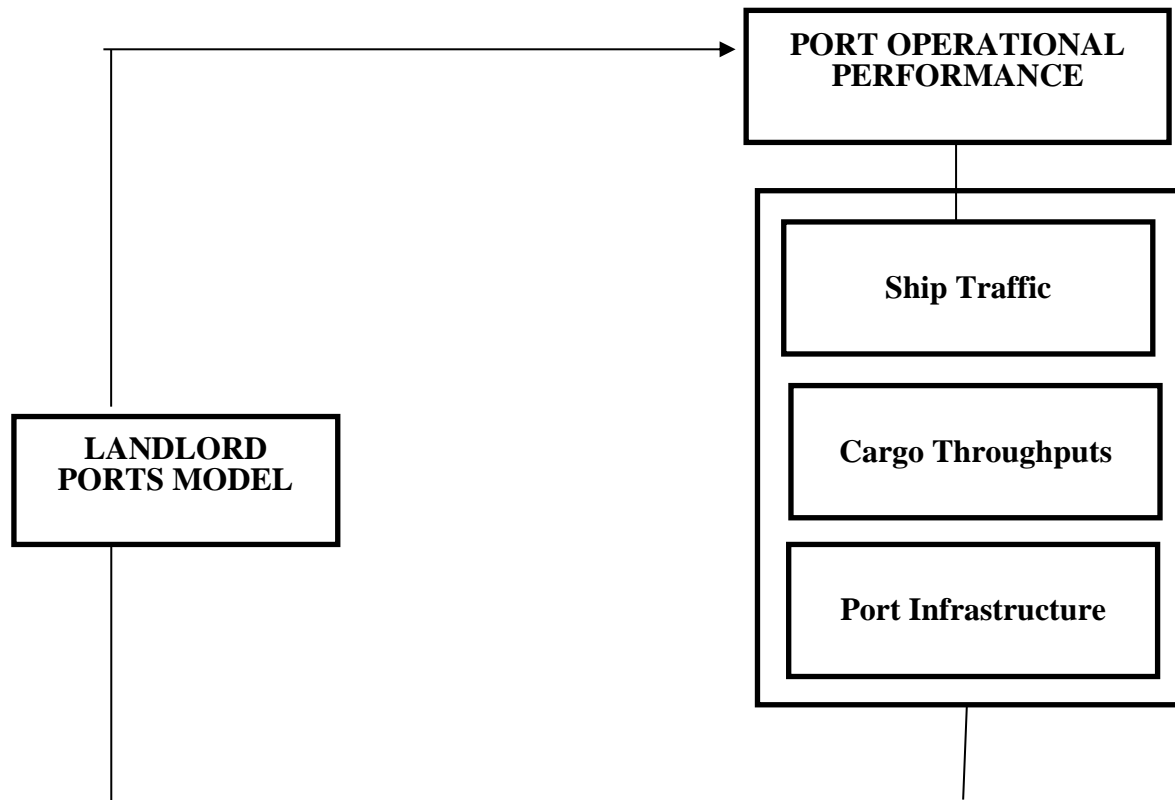


Figure 1: Conceptual framework of the relationship between landlord ports model and operational performance of seaports in Nigeria.

Kareem, W.A. (2010). An assessment of Nigeria's seaport reforms. An economic policy and financial market publication of the Fronteira Post.

THEORETICAL FOUNDATION OF THE STUDY: THEORY OF RELATIVE AUTONOMY.

The Theory of Relative Autonomy, often associated with the field of sociology, is a concept developed by British sociologist Anthony Giddens (Ndikom, 2010). This theory seeks to understand the relationship between individual actions and social structures within the context of agency and structure in society. The Theory of Relative Autonomy suggests that individuals are not entirely determined by social structures nor are they entirely free to act independently; rather, their actions and choices are shaped by a combination of social structures and individual agency. Applying the Theory of Relative Autonomy to the current paper, the Theory of Relative Autonomy provides a framework for understanding the dynamics at play within the landlord ports model and the operational performance of sea ports in Nigeria. It highlights the coexistence of individual agency and structural constraints in shaping how port operators and stakeholders interact with and influence the sea port system. Recognizing this interplay can inform policy decisions, regulatory frameworks, and strategic choices to enhance the efficiency and effectiveness of sea port operations within the landlord ports model.

CONCEPT OF LANDLORD PORT MODEL

A landlord port, also known as a landlord model port or landlord port authority, is a specific approach to port management and operation. In a landlord port, the port authority, often a government agency or entity, retains ownership and control of the port's land, infrastructure, and superstructure (such as quays and berths). However, the actual cargo handling and terminal operations within the port are typically leased or licensed to private terminal operators or tenants (Chikere, 2014). Characteristics and features of a landlord port are that the port authority owns and maintains the physical infrastructure of the port, including the land, quays, piers, and terminal facilities. Private terminal operators or tenants enter into lease agreements with the port authority to use specific areas or facilities within the port. These agreements typically specify the terms, duration, and conditions of use (Kareem, 2010). Private operators are responsible for cargo handling, storage, and other operational activities within their designated areas or terminals. This can include container handling, bulk cargo operations, and general cargo services (Chikere, 2014).

OPERATIONAL PERFORMANCE

Operational performance refers to the evaluation of how effectively and efficiently an organization's processes, systems, and resources are utilized to achieve its objectives and deliver value to its stakeholders. Operational performance encompasses various dimensions, including efficiency, effectiveness, quality, flexibility, cost control, and customer satisfaction, among others (Nwaogbe *et al.*, 2020). It involves measuring, managing, and optimizing an organization's processes and resources to achieve its strategic objectives while delivering value to stakeholders. According to Munim and Saeed (2016), operational performance relates to the extent to which an organization's operations are effective, efficient, and successful in achieving its goals and objectives. It explains how well a company uses its resources to deliver its products or services to customers. It involves assessing efficiency, productivity, quality, and other factors critical to the organization's success. This study measures sea port operational performance with ship traffic, cargo throughput and port infrastructure facilities.

SHIP TRAFFIC: Ship traffic refers to the movement and navigation of ships or vessels, including cargo ships, container ships, tankers, passenger ships, and other types of waterborne vessels, within a specific area, such as a port, harbor, waterway, or shipping lane. According to Barros and Peypoch (2012), ship traffic is not defined explicitly by the IMO, but the organization is responsible for regulating and managing safe and efficient shipping worldwide. The IMO's work includes establishing rules and guidelines to ensure the safety, security, and environmental protection of ship traffic on international waters. The U.S. Army Corps of Engineers defines "ship traffic" in the context of navigation on U.S. waterways as "the movement of vessels, including towed vessels and structures, through locks and other navigation facilities (Chioma, 2011).

CARGO THROUGHPUT: Cargo throughput is a term used in logistics, shipping, and port management to describe the total volume or quantity of cargo (goods and merchandise) that passes through a specific point, facility, or transportation system during a specific period, often measured in terms of weight or TEUs (Twenty-foot Equivalent Units). Chioma (2011) views cargo throughput as that which represents the total quantity of goods transported through a specific transportation network, such as a railway, airport, or shipping route, within a defined period.

PORT INFRASTRUCTURE FACILITIES: Port infrastructure refers to the integration of permanent physical assets and long-lasting operational facilities that support the internal nautical and terminal activities within a seaport. Furthermore, it enables the efficient conveyance of commodities into the port premises and their subsequent transfer from the immediate vicinity around the port (Pallis *et al.*, 2011). The establishment of connectivity between ports and their surrounding areas necessitates the inclusion of several components, including access roads, railway networks, and inland waterways.

EMPIRICAL REVIEW

The research conducted by Joseph (2014) demonstrated that landlord ports model yields diverse values for ports. These values can mutually reinforce one another, thereby enhancing the operational performance of the port. In a study conducted by Jia *et al.* (2017), it was discovered that the landlord ports model, when implemented without a harnessed concession, exhibits a detrimental impact on ship traffic. The research discovered that the intensifying rivalry among ports has resulted in a global trend towards the consolidation and integration of port governance. This is achieved by adopting and implementing the most effective port governance models into port management frameworks, with the aim of enhancing port performance. This aligns with the perspective put forth by De Langen and Van de Lugt (2017), which asserts that the landlord ports model is the prevailing management model. Under this model, infrastructures, specifically terminals, are leased to private operating companies, while the port authority maintains control over the land where the port is developed. This control is achieved either through ownership of the land or by retaining exclusive exploitation rights granted by the relevant public authority.

According to the findings of Brooks (2017), the main resource possessed by the port authority acting as a landlord is the land it possesses, which grants it access to both maritime and hinterland areas. In the majority of instances, port authorities assume ownership of the land encompassed within the boundaries of the port region. The property is leased to various firms that find a port to be a desirable site, such as container terminals, dry and liquid bulk terminals, oil refining companies, and energy companies. The revenue streams of port authorities consist mostly of land rent and port dues. The primary objective of port authorities is to optimise land rental revenues and facilitate the inclusion of a maximum number of enterprises within their premises. This function is very prevalent among the majority of port authorities and is intricately linked to their role as landlords. The research discovered that a significant number of port authorities are reevaluating their involvement in activities beyond their primary role as landlords. They are exploring the possibility of expanding their commercial operations or contemplating the development of such activities. This expansion would involve entering the realm of private firms and markets.

Upon doing a thorough analysis of the findings, it becomes evident that a robust, affirmative, and statistically significant correlation can be observed between the landlord ports model and cargo throughput. This correlation serves as an indicator of the operational effectiveness of seaports in Nigeria. The calculated r-value of 0.831 further supports this link. The finding is supported by Bivbere (2019) posits that landlord ports model is characterized by its mixed public-private orientation and that the landlord model has a clear separation of functions where the port authority acts only as regulatory body and also as landlord of the port, while port operations; cargo handling to be specific are carried out by private companies authorized by the port authority to carryout those functions. Blonigen and Wilson (2007) classify ports of Rotterdam, Antwerp and New York among others as landlord ports models. Alderton (2013) revealed that landlord ports model allows for the release of port infrastructure through lease arrangement to private operating companies or to industries such as refineries, tank terminals, and chemical plants where the money to be paid to the port authority is usually affixed sum per square meter per year which is worked to take in to consideration inflation and other economic variables to be agreed by both parties before commencement.

The calculation is also to be worked to commensurate the cost involved in preparing the structures put in place. Examples of such activities include land reclamation and quay wall construction.

According to Ha (2017), there has been a notable transition in global port management structures towards the adoption of the landlord port model. This model involves the transfer of most operational responsibilities, excluding physical infrastructure, to private sector entities. Africa is gradually adopting the practise of concessioning in its ports, following a global trend of increased concessioning. Simultaneously, the level of private investment in physical port infrastructures has been limited, principally due to factors such as the relatively modest market size and inadequate institutional support. According to the research conducted by Ahmodu and Okeudo (2021), it was observed that numerous ports are frequented by small regional vessels that engage in transshipment activities towards the ultimate oceanic segment. Both of these reasons contribute to increased transportation expenses in the African region. The available evidence indicates that the inclusion of regulatory reform and the establishment of an independent regulatory body, free from government intervention, in reform packages can enhance the likelihood of success for other concurrent policy improvements. These measures are expected to incentivize private shipping companies to engage in port activities within the African region.

An in-depth analysis of the findings reveals a robust, favourable, and statistically significant correlation between the landlord ports model and port infrastructure as an indicator of operational success of seaports in Nigeria, with an r-value of 0.809. The research additionally revealed that the prevailing type of lease arrangement is a concession agreement, wherein a private enterprise is provided with a lengthy lease term in return for payment of rent that is determined based on the dimensions of the facility and the capital investment necessary for constructing, refurbishing, or extending the terminals, resulting in a subsequent expansion of port infrastructure. The results of this study are consistent with the findings of Nyema's (2014) research, which demonstrated a favourable correlation between the landlord ports model and the presence of high-quality port infrastructure. The study conducted by Havenga *et al.* (2017) aimed to examine the correlation between the landlord ports model and the operational performance of ports in Belgium. The findings of the study revealed a favourable association between the implementation of the landlord ports model and the development of port infrastructure. The study additionally demonstrated that the landlord port model is the prevailing paradigm at bigger and medium-sized ports, particularly in Europe and the Americas, without a doubt. According to Hanaa (2016), the process of port reform has been identified as a significant factor that can result in substantial financial implications for ports, amounting to billions of dollars annually. The effectiveness and prosperity of ports are contingent upon the strategic decisions made by key stakeholders involved in the port operations, given the substantial capital investments required for port infrastructure. The results of this investigation are consistent with the aforementioned assertions. The present paper proposed the following hypotheses:

HO₁: There is no significant relationship between landlord ports model and ship traffic of sea ports in Nigeria

HO₂: There is no significant relationship between landlord ports model and cargo throughput of seaports in Nigeria

HO₃: There is no significant relationship between landlord ports model and infrastructural facilities of seaports in Nigeria.

METHODOLOGY

This study adopted the descriptive survey research design with a correlational investigation type.

The population of this study comprised of six seaports operating within the geographical boundaries of Nigeria. Specifically, the seaports include Lagos Apapa Port, Tincan Island Port, Calabar Port, Onne Port, Port Harcourt Warlf and Port of Warri, which are also enlisted on Nigerian Ports Authority (NPA) Annual Report (2022). The sample size for this study was the same as the population since the population was not too large. However, the researcher adopted a Census Method and administered 80 copies of structured questionnaire to management staff from each of the six (6) seaports in Nigeria, this means that a total of 80 respondents were used for the study. After data cleaning only 76 copies of the questionnaire were used for the data analysis. Pearson Product Moment I Correlation was used in testing the various hypotheses with the help of the Statistical Packages for Social Sciences (SPSS) version 23.0. Table 1 depicts the instrument reliability values.

Table 1: Results of Instrument Reliability Test

S/No	Dimension/Measures Of The Study	Number Of Item	Cronbach's Alpha
1	Landlord Ports Model	5	0.912
2	Ship Traffic	5	0.779
3	Cargo Throughput	5	0.814
4	Port Infrastructure	5	0.700

Source: Research Data Output, 2023.

The instrument reliability results as shown in Table 1 depicts that the four constructs used for the study had high reliability values of 0.912, 0.779, 0.814 and 0.700 respectively. This therefore, this entails that the research instruments used for the study have satisfactory constructs reliability.

DATA ANALYSIS
Table 2: Responses on Landlord Ports Model

	Question Items on Landlord ports model	Mean	STD
1	Because of rising rivalry, port administrations around the world are increasingly merging and collaborating with one another. This entails taking steps to improve port efficiency, such as adopting and putting into best practices in port governance.	3.672	0.510
2	The public sector takes charge of the port's development, regulatory oversight, and property and infrastructure ownership in the landlord port model. Private running firms or industries, such as terminals, are then able to lease these assets. Concession agreements are the most common type of lease arrangement, where a private company is granted a long-term lease in exchange for a rental fee that is based on the size of the business and the investment required to build, renovate, or expand the terminals.	3.133	0.642
3	The public sector takes charge of the port's development, regulatory oversight, and property and infrastructure ownership in the landlord port model. Private running firms or industries, such as terminals, are then able to lease these assets. Concession agreements are the most common type of lease arrangement, where a private company is granted a long-term lease in exchange for a rental fee that is based on the size of the business and the investment required to build, renovate, or expand the terminals.	3.200	0.997
4	The landlord port model is widely recognized as the prevailing port model at bigger and medium-sized ports, mainly in Europe and the Americas. The concept of landlord port encompasses various forms, which are contingent upon the degree of decentralization and autonomy exhibited by the respective port.	3.110	0.929
	Valid N listwise	76	

Source: SPSS Output, 2023.

Table 2 shows that one of the first questions asked was on how increased port competition would affect the ongoing effort to re-centralize and integrate port governance around the world. By adopting and adapting successful port governance methods from port management kits, we were able to achieve our goal of improving port efficiency. A consensus appears to have formed about the role that intense port competition has played in the global re-centralization and integration of port governance. By incorporating and enforcing effective port governance concepts into port management frameworks, port performance can be improved. The numbers 3.6720.510 (the mean and standard deviation) are used to illustrate these phenomena. The second part of the questionnaire was to learn more about the roles that the government plays in the landlord port system. The study set out to determine how much public sector involvement there is in port development, how much of a role it plays as a regulatory authority, and how much port-related property and critical infrastructure is owned by the public sector and leased out to private operating enterprises or industries, such as terminals. With a mean and standard deviation of 3.133 and 0.642, respectively, participants showed a high degree of agreement with the landlord port model. The government in this model would be in charge of port development, would serve as a regulatory body, and would own title to any land or vital infrastructure associated with the port; this would then be leased out to private operating firms or industries, such as terminals. For the third question, we're interested in learning how common concession agreements are. Long-term leases are granted to private companies in exchange for rent payments that are proportional to the terminals' square footage and the cost of any renovations or additions. With a high degree of confidence, we may infer from the supplied response that the participants expressed agreement on concession agreements being the primary way of leasing. In these arrangements, private companies are granted long-term leases and are responsible for making rental payments based on the terminal's square footage and the cost of any necessary renovations or additions. The mean score of 3.200 and the standard deviation of 0.997 both lend credence to the hypothesis. The fourth question seeks to identify the extent to which the landlord port model is used by large and medium-sized ports across the world, with a focus on Europe and the Americas. Its preeminence in these areas is well-established and widely acknowledged. Different landlord ports can take on a variety of forms, depending on their degree of decentralisation and independence. Based on the comments, it is clear that the landlord port model is most prevalent in ports of a specific scale, especially in Europe and the Americas. The mean score was 3.110, with a standard deviation of 0.929, supporting the aforementioned finding. The degree of decentralisation and independence shown by a given port determines the specific expressions of the concept of landlord port.

TABLE 3: Responses on Ship Traffic

	Question Items on Ship traffic	Mean	STD
1	Ship traffic refers to the quantification of various categories of maritime vessels, including cargo and passenger ships, that arrive at a specific port within a designated timeframe.	3.808	0.373

2	The behaviour of ship traffic in coastal locations is typically characterised by rational decision-making. Numerous paths exhibit linearity, as they establish connections between waypoints in close proximity to coastal regions. In the event that traffic limits are imposed on these routes, it is expected that ships will therefore alter their course to circumvent the restricted zones.	3.190	0.588
3	Ship traffic refers to the range of nautical activities encompassing the docking and transit of vessels at seaports.	3.352	0.770
4	Ship traffic monitoring encompasses more than simply tracking the total number of vessel arrivals or the specific types of cargo boats that visit a port. The monitoring of the average and maximum size of ships that visit the port is also conducted.	3.761	0.808
Valid N listwise		76	

Source: SPSS Output, 2023.

Table 3 displays descriptive statistics related to maritime transportation. These results were attained by using a 4-point rating scale across a set of four questions. The major goal of the inquiry was to ascertain if the word "ship traffic" includes the total number of various types of maritime vessels, including cargo and passenger ships, that arrive at the port during a given time frame. According to the data presented, the average score was 3.808 and the standard deviation was 0.373. This indicates that there was a common understanding among the participants that "ship traffic" is the sum of all ships (including cargo and passenger ships) that enter the port within a given time frame.

The second study set out to quantify the extent to which rational decision-making characterises maritime traffic patterns in coastal regions. Several routes can be traced that are linear since they link coastal landmarks. When shipping lanes are restricted, vessels will get around the restricted locations by taking longer and more circuitous routes. A high level of agreement was reached by the participants, as measured by the mean score of 3.1900.588 and the standard deviation. The third time this has happened According to the results, the average score was 3.352, with a standard deviation of 0.770, indicating that respondents agreed that there is a connection between ship traffic and maritime activities. This includes many things, including moorings and the flow of traffic in harbours. The fourth group of questions targeted whether or not the monitoring of maritime traffic goes beyond the simple counting of vessel arrivals to include the classification of the various types of cargo ships using the port for their operations. Respondents reported using a mean and standard deviation of 3.7610.808 to keep tabs on the typical and largest dimensions of visiting ships.

TABLE 4: Responses Cargo Throughput

	Question Items on Cargo Throughput	Mean	STD
1	The assessment of cargo throughputs at ports holds significant importance for port authorities in devising port development strategies aimed at enhancing operational performance.	3.605	0.765
2	Cargo throughput measurements are used to quantify the volume of cargo or the number of vessels that a port manages within a certain period. These metrics are influenced by numerous variables that extend beyond physical capabilities.	3.605	0.826
3	Cargo throughput refers to the quantified measure of cargo that is processed and managed at a certain terminal within the duration of a single fiscal year.	3.457	0.771
4	Cargo throughput refers to the comprehensive measurement of the overall volume of cargo that is processed or loaded and unloaded at a certain port location during a designated time of evaluation.	3.576	0.495
Valid N listwise		76	

Source: SPSS Output, 2023.

Cargo throughput was used as a metric in a research to evaluate the efficiency of seaport operations. Table 4 shows the data gathered throughout this study. The following table displays empirical data collected from the ports of inquiry. In order to assess this indicator, we developed four unique test items. The first question underlines the need for an accurate assessment of the volume of cargo handled by a port. The gathering of such knowledge is crucial for port authorities because it allows for the creation of effective strategies for the growth of ports, which in turn improves operational effectiveness. The significance of accurately assessing cargo throughputs to port authorities is supported by the statistical metrics of mean and standard deviation, notably 3.6050.765. This data is essential for the development of port plans that boost operational efficiency and allow ports to prosper in their respective fields. The average and standard deviation for the second question are 3.605 and 0.826, respectively. The results show that the respondents agreed that the port's ability to handle a certain volume of cargo or number of boats is directly related to the measures used to measure cargo throughput. The relevant metrics can be affected by a wide range of factors beyond merely physical capacities. The mean and standard deviation scores are shown for the third question item: 3.4570.771. These findings suggest that respondents leaned towards agreeing with the claim that cargo throughput refers to the total volume of cargo processed through the Terminal in a given fiscal year. The fourth item was designed to determine whether or not the term "cargo throughput" refers to the whole volume of goods entering and leaving a port, as well as those being handled there, or loaded and unloaded. Cargo throughput includes

the total volume of imported and exported goods handled at a given port during the evaluation period (3.5760.495), as indicated by the mean score and standard deviation.

Table 5: Responses on Port Infrastructure

	Question Items on Port infrastructure	Mean	STD
1	Operational performance measurements primarily centre around productivity and pertain to the tangible quantities of objects	3.338	0.709
2	Port infrastructure refers to the collection of physical assets and operational facilities that facilitate the maritime and terminal activities of a seaport. This includes the transportation of goods into and out of the port premises	3.933	0.872
3	Port infrastructures encompass a diverse array of components such as quays	3.295	0.823
4	Port infrastructures are essential facilities that facilitate the movement of ships between the harbour and the open sea. These infrastructures consist of several components such as channels	3.262	0.832
	Valid N listwise	76	

Source: SPSS Output, 2023.

Table 5 displays the results of an analysis of port infrastructure as a metric for evaluating the efficiency of seaport operations. Empirical data on this metric for the ports under consideration are provided in the table, and four questions have been formulated to go along with the data. The first question shows that evaluations of operational performance are focused on productivity in terms of output (in the form of products or services), input (in the form of effort or time spent), output (in the form of volume or scope of activities), and resource conversion efficiency. According to the data analysis, the average score is 3.33 with a standard deviation of 0.709%. These facts provide credence to the claim being made. The mean and standard deviation scores of 3.933/0.872 on the second question item indicate that respondents agreed on how to define port infrastructure. In particular, they recognised that a port's infrastructure consists of more than just the buildings and equipment that are used to run the terminal and handle marine traffic. It also involves moving freight into and out of the port area, with an eye towards the exterior environment. Data from the third question item shows that respondents agreed that diverse components should be included in port infrastructures, with a mean and standard deviation of 3.295/0.823, respectively. Quays, sheds, warehouses, canals, navigational aids, roads, trains, docks, locks, land, and superstructures like cranes and forklifts are all part of the picture. The respondents also noted that complementary services were provided. Port infrastructures are the tangible facilities that allow ships to go from the harbour to the open sea, which brings us to the fourth question item. To allow ship entry and minimise floods, these facilities include channels, berth depth, breakwaters for vessel protection, and locks that regulate water levels. A mean and standard deviation of 3.262 and 0.832 for port infrastructures, respectively, indicate that many different types of infrastructures are involved in the process of transporting ships from the harbour to the open sea. Channels, enough berthing depth, protective breakwaters, and locks for adjusting water levels to permit ship access and prevent flooding are all examples of such infrastructure.

TEST OF HYPOTHESES

HO₁: There is no significant relationship between landlord ports model and ship traffic of seaports in Nigeria.

HO₂: There is no significant relationship between landlord ports model and cargo throughput of seaports in Nigeria.

HO₃: There is no significant relationship between landlord ports model and infrastructural facilities of seaports in Nigeria.

Table 6: Test Result Of Landlord Ports Model and Operational Performance of Seaports

Statistics	HO₄ LPM (ST)	HO₅ LPM (CT)	HO₆ LPM (PIT)
Pearson correlation	0.857**	0.831**	0.809*
Sig(2-tailed)	.000	.000	.000
N	76	76	76

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

Source: SPSS Output, 2023.

The results of the tests of hypotheses Ho₄, Ho₅, and Ho₆ (described in Table 6) are presented as inferential findings concerning the nature of the link among the variables. Evidence for the nature of relationships is provided by the statistics. A favourable association between the landlord ports model and vessel traffic was found ($r = 0.857$, $p = 0.000$ 0.01) for the hypothesis testing hypothesis H₀₄. This leads us to conclude that alternative hypothesis 4 is more likely to be correct than the null. Ho₅'s results show a positive correlation of 0.831 ($p = 0.01$), which is statistically significant. As a result, we can conclude that the landlord ports model's hypothesized lack of a connection to cargo throughput is false. The purpose of the Ho₆ study was to look at links between the landlord ports concept and port facilities. A moderate and statistically significant correlation was found between the variables ($r = 0.809$, $p = 0.000$ 0.01). Furthermore, this indicates that alternative hypothesis 6 should be adopted and the null hypothesis should be rejected.

The following claims can be made based on the results of the inferential analysis:

Port reforms that take landlord ports into account have been found to have a positive and statistically significant association with increased ship traffic. There is a positive and statistically significant association between landlord ports and cargo throughput, which is a good measure of a seaport's efficiency. There is a small but statistically significant positive link between landlord ports and port infrastructure, which is an indicator of seaports' operational success.

DISCUSSION

The research findings pertaining to the correlation between the landlord ports model and the operational performance of seaports indicate that the adoption of the landlord ports model positively influences the operational performance of seaports. The existence of different variations of landlord ports is attributed to the varying degrees of decentralization and autonomy exhibited by the respective ports. The present study undertakes a rigorous examination of the findings, which indicate a robust, favourable, and statistically significant association between the landlord ports model and ship traffic as an indicator of operational efficacy in Nigerian seaports, with an r-value of 0.857. This finding is consistent with the research conducted by Joseph (2014), which demonstrated that the landlord ports model yields diverse values for ports. These values can mutually reinforce one another, thereby enhancing the operational performance of the port. In a study conducted by Jia *et al.* (2017), it was discovered that the landlord ports model, when implemented without a harnessed concession, exhibits a detrimental impact on ship traffic. The research discovered that the intensifying rivalry among ports has resulted in a global trend towards the consolidation and integration of port governance. This is achieved by adopting and implementing the most effective port governance models into port management frameworks, with the aim of enhancing port performance. This aligns with the perspective put forth by De Langen and Van de Lugt (2017), which asserts that the landlord ports model is the prevailing management model. Under this model, infrastructures, specifically terminals, are leased to private operating companies, while the port authority maintains control over the land where the port is developed. This control is achieved either through ownership of the land or by retaining exclusive exploitation rights granted by the relevant public authority (Okpara & Enyioko, 2022).

According to the findings of Brooks (2017), the main resource possessed by the port authority acting as a landlord is the land it possesses, which grants it access to both maritime and hinterland areas. In the majority of instances, port authorities assume ownership of the land encompassed within the boundaries of the port region. The property is leased to various firms that find a port to be a desirable site, such as container terminals, dry and liquid bulk terminals, oil refining companies, and energy companies. The revenue streams of port authorities consist mostly of land rent and port dues. The primary objective of port authorities is to optimise land rental revenues and facilitate the inclusion of a maximum number of enterprises within their premises. This function is very prevalent among the majority of port authorities and is intricately linked to their role as landlords. The research discovered that a significant number of port authorities are reevaluating their involvement in activities beyond their primary role as landlords. They are exploring the possibility of expanding their commercial operations or contemplating the development of such activities. This expansion would involve entering the realm of private firms and markets.

Upon doing a thorough analysis of the findings, it becomes evident that a robust, affirmative, and statistically significant correlation can be observed between the landlord ports model and cargo throughput. This correlation serves as an indicator of the operational effectiveness of seaports in Nigeria. The calculated r-value of 0.831 further supports this link. The finding is supported by Bivbere (2019) posits that landlord ports model is characterized by its mixed public-private orientation and that the landlord model has a clear separation of functions where the port authority acts only as regulatory body and also as landlord of the port, while port operations; cargo handling to be specific are carried out by private companies authorized by the port authority to carry out those functions. Blonigen and Wilson (2007) classify ports of Rotterdam, Antwerp and New York among others as landlord ports models. Alderton (2013) revealed that landlord ports model allows for the release of port infrastructure through lease arrangement to private operating companies or to industries such as refineries, tank terminals, and chemical plants where the money to be paid to the port authority is usually affixed sum per square meter per year which is worked to take in to consideration inflation and other economic variables to be agreed by both parties before commencement. The calculation is also to be worked to commensurate the cost involved in preparing the structures put in place. Examples of such activities include land reclamation and quay wall construction.

According to Ha (2017), there has been a notable transition in global port management structures towards the adoption of the landlord port model. This model involves the transfer of most operational responsibilities, excluding physical infrastructure, to private sector entities. Africa is gradually adopting the practise of concessioning in its ports, following a global trend of increased concessioning. Simultaneously, the level of private investment in physical port infrastructures has been limited, principally due to factors such as the relatively modest market size and inadequate institutional support. According to the research conducted by Ahmodu and Okeudo (2021), it was observed that numerous ports are frequented by small regional vessels that engage in transshipment activities towards the ultimate oceanic segment. Both of these reasons contribute to increased transportation expenses in the African region. The available evidence indicates that the inclusion of regulatory reform and the establishment of an independent regulatory body, free from government intervention, in reform packages can enhance the likelihood of success for other concurrent policy improvements. These measures are expected to incentivize private shipping companies to engage in port activities within the African region.

An in-depth analysis of the findings reveals a robust, favourable, and statistically significant correlation between the landlord ports model and port infrastructure as an indicator of operational success of seaports in Nigeria, with an r-value of 0.809. The research additionally revealed that the prevailing type of lease arrangement is a concession agreement, wherein a private enterprise is provided with a lengthy lease term in return for payment of rent that is determined based on the dimensions of the facility and the capital investment necessary for constructing, refurbishing, or extending the terminals. resulting in a subsequent expansion of port infrastructure. The results of this study are consistent with the findings of Nyema's (2014) research, which

demonstrated a favourable correlation between the landlord ports model and the presence of high-quality port infrastructure. The study conducted by Havenga *et al.* (2017) aimed to examine the correlation between the landlord ports model and the operational performance of ports in Belgium. The findings of the study revealed a favourable association between the implementation of the landlord ports model and the development of port infrastructure. The study additionally demonstrated that the landlord port model is the prevailing paradigm at bigger and medium-sized ports, particularly in Europe and the Americas, without a doubt. According to Hanaa (2016), the process of port reform has been identified as a significant factor that can result in substantial financial implications for ports, amounting to billions of dollars annually. The effectiveness and prosperity of ports are contingent upon the strategic decisions made by key stakeholders involved in the port operations, given the substantial capital investments required for port infrastructure.

CONCLUSION

Sequel to the results of this study and to the extent of its consistency with similar studies, this study concludes that landlord ports model significantly relates with operational performance of sea ports in Nigeria. Thus, landlord ports model helps seaports to identify to focus on activities that may pose threat to seaports in order to mitigate their impact aimed at achieving operational performance.

RECOMMENDATIONS

Based on the conclusion drawn from findings of the study, the researcher puts forward the following recommendations:

1. Managers of seaports should adopt tool port model strategies to mitigate threats within the maritime environment, this will impact on operational performance.
2. Managers of seaports should implement landlord ports model as part of measures to ensure operational performance.

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