THE IMPACT OF MODERN TECHNOLOGY ON PORT ADMINISTRATION IN NIGERIA

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Abstract

This study examined the prospects which the deployment of modern technology for the management of Ports can bring to the growth and development economic activities of Nigeria. The motivation of this study was informed by the observed lingering challenges and bottlenecks such as infrastructure shortcomings at Nigerian Ports. These challenges, among others were reasoned to be the cause of the country's poor performance in the 2016 World Bank's Annual Ease of Doing Business ranking. The objectives of this study were to assess the impact of port equipment and infrastructure on turnaround time in Onne Port and to suggest measures for the enhancement of effective and efficient Port administration. The survey design was adopted to enable the researcher elicit information from a sub-set of the population. This method required the use of both primary and secondary sources to generate data. Findings from the data analysis revealed that Port equipment and infrastructures had a significant positive impact on the turnaround time. That the availability of consistent reform policies has a positive impact on cargo throughput in Onne port. Based on the above findings, the study recommended, among others, that the government should minimise its undue intervention and give independence to the concessionaire to operate in an atmosphere of freedom from all forms of interference from politicians. More so, intermodal and intelligent transport systems with facilities such as Vessel Traffic Information System (VTIS) should be deployed by the port terminal operators for effective service delivery that will align with best global practices.

Keywords: Cargo throughput, concessionaries; Onne Ports; port administration

Introduction

Nigeria was commonly regarded as a country with enormous potential to become one of the world's top 20 economies in the year 2020, as forecasted by major international indexes (International Monetary Fund-IMF, World Bank). Artificial hurdles like lack of cargo handling equipment, equipment rental by the Nigerian Ports Authority at exorbitant rates, excessive charges and a challenging working environment, on the other hand, are suffocating Nigeria's growth ambitions and discouraging investors from taking advantage of trade and investment opportunities. Growth and development of trade and economic activity can only be practical if economies seek to create a pleasant and welcoming atmosphere. Unfortunately, customers of Nigerian maritime ports continue to face rising issues of

exorbitant and arbitrary charges, poor investment conditions and dwindling inefficiencies. The Nigerian port remains the gateway to the world economy and its operations affect, to varying degrees, the cost of doing business.

Nigeria is ranked 169th out of 189 nations in the World Bank's Report (2016), with Mauritius ranked 32nd in terms of Ease of Doing Business. The ranking is based on good government policy, stable power supply, availability of raw materials, political stability, availability of labour, cost of starting a business, tax breaks for small businesses, infrastructural development, providing hassle free and investor friendly environment, infrastructural development, etc. This emphasizes the necessity to restructure Nigeria's port operations as quickly as possible. The necessity for economic diversification is becoming increasingly apparent at a time when the country's oil income has depleted owing to low worldwide prices and declining local output. Improving port administration for better efficiency has immediate consequences for non-oil sector development. Nonetheless, the country's ports have long been seen as a barrier for the rest of the Nigerian economy, due to their inadequacy for demand, poor physical condition, corruption, and, most importantly, bad administration (World Bank, 2016).

In the early 2000s, significant efforts to reform Nigeria‘s maritime transport sector were made when the Nigerian ports system was partially privatized under President Olusegun Obasanjo‘s government. The reform programme was implemented to make the ports run more efficiently. As a result, for the time being, roughly 24 terminals will be made available to private operators. Private companies would handle cargo loading and unloading, with the Nigerian Ports Authority serving as landlord and providing other marine services. In addition to the Ministry of Transport, there are around 20 public organisations, private terminal operators, and a wide range of freight forwarding, logistics, and trade firms involved in the regulatory environment. Laws governing this public-private partnership model are, however, disjointed and overlapped. Port governance is prone to inefficiency and corruption if there is no clear regulation in place. Because of this, firms operating in Nigerian ports, such as Intels, BRAWAL and WACT, complain about bureaucratic red tape, ongoing delays, exorbitant prices and frequent harassment.

Nigerians pay a price for these governance shortfalls. According to the World Bank (2016), Nigerian ports have the longest processing delays in Africa. Legal ambiguity is a significant impediment to infrastructural investment on a macro level, deterring both domestic and foreign investors. Nigeria's non-oil economy must grow in order to break the country's political leaders' dependency on oil money. Small companies at Nigeria's ports are particularly vulnerable to attacks by public authorities because of the high cost of exploitation, which is exacerbated by the country's poor condition of governance in the ports.

Statement of the Problem

The port's ability to operate efficiently is a key factor in international trade and economic activity. In Nigerian ports, users and operators have had to deal with a number of persistent problems, including infrastructure deficiencies, policy and regulatory inconsistencies, overlaps and duplication of roles among Ministries, Departments and Agencies (MDAs) operating in Nigerian ports, and a high incidence of MDA infractions against the laws guiding their operations at the port. A close look has revealed that the causes of port operations distortions go well beyond shoddy infrastructure or the moral duplicity of a few rogue MDAs personnel. The Nigerian society faces obstacles at all levels, involving both governmental and private players. Most frequently, artificial obstacles are linked with MDAs and their officials, but private sector participants are also at fault since they demand unofficial payments for personal benefit.

Successive reforms throughout the world show how critical a sound regulatory framework is in ensuring a smooth and orderly transition and maintaining high levels of efficiency while also protecting the public interest. Port reforms in nations where they have an influence aim to promote global commerce by speeding up cargo clearance, reducing waiting times for ships waiting to berth, and removing redundancy in the duties of several port regulatory bodies. Research conducted by the World Bank shows that inefficiencies and inherent inadequacies of Nigeria's marine ports result in billions of Naira in income being wasted each year. In addition, a more efficient and productive port in Nigeria may be created by creating around 10,000 new employments in the marine port sector and around 800,000 new jobs in the industry during the same timeframe. These projections are doable if the port's non-oil volume of 1.1 million Twenty-Foot Equivalent Units (TEUs) in 2014 can be doubled within the next 24 months and then grows at steady 15-25 percent each year (World Bank, 2016).

Without doubt, the Nigerian government's infrastructure concessioning programmes, which began in September 2004, were designed to address some of the above-mentioned problems that the Nigerian Ports Authority (NPA) was experiencing in terms of efficiency and effectiveness due to the poor state of port equipment and infrastructure, which made it difficult to administer the port in accordance with the accepted International Maritime Organisation‘s (IMO) standard.

Research Questions

1. What challenges the absence of modern technology hold for effective port administration in Nigeria?
2. What is the impact of port equipment and infrastructures on turnaround time in Onne port?
3. What measures can be taken to enhance effective and efficient administration of Onne port?

Objectives of the Study

1. To examine the challenges that the absence of modern technology hold for effective port administration in Nigeria.
2. To assess the impact of port equipment and infrastructure on turnaround time in Onne port.
3. To suggest measures that can be taken to enhance effective and efficient administration of Onne port.

Research Hypothesis

1. Quality Port equipment and infrastructure tend to have a positive impact on the level of turnaround time in Onne Port.

Review of Related Literature

The Concept of Port and Port Administration

A port is a place on the coast or coastline with one or more harbours where ships may dock and transport passengers or cargo to or from land. Port sites are chosen based on factors such as ease of access to land and sea, business need, and protection from the elements such as waves and wind. It was in the 15th century (1485) that the Portuguese first went into Lagos with their ships, mostly to trade in Benin City's treasures. The maritime sector of the country has been dominated by foreign ships and/or carriers from the established market economies of Western Europe and America since before independence. To deal with this situation, the Nigerian Ports Authority (NPA) was established under the Ports Act 1954 to handle loading and unloading, as well as maintaining and developing the

ports. The NPA was created to help regulate future growth in the Nigerian ports industry (Njoku, 2009).

An international port connects a country's commercial partners and is the hub of the logistical supply chain. Even more so for Africa, whose major means of transit for both raw materials and export-ready products is marine shipping. Using ports, products may be loaded/unloaded, stored, and moved to other transport modes like trucks, railroads, or inland waterway boats for delivery inside the country. A port's cargo handling capacity and the types and capacities of vessels it may accommodate are both determined by the port's deepwater channels or berths and storage facilities. Except for a few Export Processing Zones (EPZs) near ports, freight and goods departing ports are transported by infrastructures from the hinterland. Links between ports and the hinterland must act as entrepots and reduce dwell periods if they are to be effective. The physical infrastructure and related services quality of a port is a key factor in determining the port's overall efficiency (World Bank, 2009).

To put it simply, a port is an organization that offers ship turnaround services and facilities (Trujillo & Nombela, 1999). To put it another way, it is a place where ships may load and unload cargo. Despite the fact that this pedestrian perspective of ports may not be up to date, it reflects the vital role of a port that has not been underestimated. Ports and the services they offer are extremely popular because of the ease with which cargo can be loaded and unloaded. In today's world, the role of contemporary ports is defined by UNCTAD as follows: "Seaports are interfaces between various forms of transport and so serve as centers for integrated transport." These marketplaces and industrial zones serve several purposes, since commodities are sorted, manufactured, and dispersed in addition to being in transit.

Notteboom and Winkelmans (2001) emphasized the importance of logistic networks in their definitions, whereas De Langen (2002) included ports in his concept. It is clear from later definitions that modern ports have evolved into hubs of economic agglomeration with more complex and diverse roles. Though cargo loading and unloading remain the core purpose of seaports, additional services such as warehousing are considered value-adding rather than primary. As a result, the economic relevance of seaports depends on their capacity to assist international trade flows, since the vast majority of domestic and international goods is transported by water. Because ports serve as a maritime/land transportation interface (through railroads, roads, or inland navigation), seaborne trade is reliant on ports to run well. In order for marine transportation to be efficient, ports must effectively raise and lower goods. Aside from cargo, ports also provide vessel services and infrastructure, marketing, administration and security despite the fact that today's ports are incredibly complicated and diverse.

Table 2.1: lists the many services and activities associated with each one.
Table 2.1: Port functions

Service	Activities
Cargo Services	Stevedoring, Long shoring, Equipment operations, Transit storage; Receiving and delivery, Cargo tracking, Assembly and processing (consolidation, bagging, packing, mixing); Storage and warehousing; Transfer to land transport.
Vessel Services	Navigational aids, Pilotage, Towage, Mooring, and Bunkering, Utilities, Reception facility (garbage removal), Stowage, Anchorage, Buoys, Launch services and Vessel repair.
Infrastructure	Hydrographical surveys, Dredging, Repair and maintenance, Engineering design, Port construction, Equipment procurement.
Marketing	Market research, Promotion and sales
Management	Billing accounting, Data processing, Staffing
Security	Security forces, Fire and rescue, Pollution control

Source: Cheon, (2007).

The functions indicate that the port area offers a variety of services. In the case of minor ports, these services are frequently supplied by independent businesses functioning in the port, although they can also be provided by a single firm. The number of viable operators within a port region is limited due to space constraints. In the event of tiny ports in distant areas, just a single operator may be able to operate (Trujillo & Nombela, 1999).

Port Administration/ Port Authorities

The term "port administration" refers to the process of organizing and supervising the flow of ships and cargo through a port. Customs facilities are included in the port assets when it handles international traffic. Consignee regulation, import/export paperwork and licenses, phytosanitary certifications, and tax administration are all part of the administration services. Information and communication technology, as part of port management, add to the speed with which products travel through ports. Information systems, electronic databases, and platform management software are all examples of this (World Bank, 2009).The governing body in-charge of ports is commonly referred to as a port authority, port management or port administration. The administration or governance of ports is of essential importance for the organisation, coordination and control of port activities. A commission of the European Communities in 2001, defined a port authority as the entity which, whether or not in conjunction with other activities, has the objective under national law or regulation of: the administration and management of port infrastructures; and the coordination and control of the activities of the different operations present in the port (Cullinane and Song, 2002).

De Monie (2004) observed that the term port authority connotes a public form of port management. However, it is used as a general word to designate the entity having the legislative obligation of administering a port_s water and landside domain. While Verhoeven (2010) claimed that, irrespective of the ownership and management entities to which port authorities belong, they are hybrid organizations that incorporate certain aspects of both public and private law. Therefore, they are bestowed with an exclusive power of administrative action and, in some circumstances, even criminal law competence, while at the same time; they are undertakings that compete (Verhoeven, 2010). These far-reaching

features arise from the fact that seaports possess both public utility and private enterprise characteristics (Meersman and Van de Voorde, 2002).

Port authority can exist at all stages of government, whether national, regional, provincial or local. Although the most prominent is the local port authority, that is an authority that exercises jurisdiction over the port area. National port authorities exist in countries such as Aruba, Nigeria, Sri Lanka and Tanzania (World Bank, 2007). The traditional duties or functions of port authority are categorized into three categories; landlord, regulator and operator (Baltazar and Brooks, 2001). These three broad classifications are in tandem with the legal status of port authorities (Van Hooydonk, 2002). Other classifications do exist, but they are still linked to the three major broad categories. Regardless of whether the port authority owns the property, or manages it on behalf of the national or local government, the functions of ports described earlier in Table 2.1 are carried out or coordinated by the port authorities. The landlord port authority, for example, executes the tasks of the port's landlord since the landlord port authority has administrative responsibility for the port (Baird, 2000; Baltazar and Brooks, 2001; Van Hooydonk, 2002).

Modern Technology and Port Development

The evolution of seaports has been classified into three categories: spatiotemporal evolution, traffic trends and patterns, and port administration trends (Ogunsanya and Olawepo, 2004). Gbadamosi (2004), on the other hand, divided it into generations. He explained that the first generation ports in Nigeria are Lagos and Port Harcourt seaports, which were built before 1960; the second generation ports are Warri, Sapele, Koko, Burutu, and Calabar, which were built between 1970 and 1976; the third generation ports are Tin Can Island, New Warri, and New Calabar, which were built between 1975 and 1980; and the fourth generation ports are Federal Ocean Terminal and Federal Lighter Terminal, which were built in 1980. The historical aspects of Nigerian seaport developments were examined by Badejo and Solaja (2017). Due to the problems of coastal rifts, siltation, and the difficulty of larger boats to access Lagos port during Colonial times, Apapa dock was built in Lagos Island in 1913. The Nigerian Railway Corporation's (NRC) Marine Department used to be in charge of port upkeep, but it was decommissioned in 1955 when the Nigerian Port Authority was established.

Because of the logistics requirements for certain commodities to be transferred out of the nation, port development in Nigeria has become a priority. It was used to transport products and mineral resources to the shore for export (Badejo and Solaja, 2017). The discovery and exploration of crude oil resulted in the overcrowding of Nigerian seaports, as well as the fast expansion of seaports without adequate understanding of the consequences and problems in the near future. Textiles, tobacco, Ajaokuta steel, tin, coal, bauxites, paper mills, drinks, cement, petrochemicals, and wheat are just a few of the items that require maritime transportation. The main items promoting maritime traffic at Port Harcourt were tin and aluminum products, as well as glass and paper. In 1982, the new Sapele was built. Because of the negative effects of the civil war in 1972, Port Harcourt seaport was closed, and Lagos seaport was overburdened, resulting in the acquisition of the privately run ports of Warri, Burutu, and Calabar. Apart from Jetties and other tiny seaports, there are other seaports such as Koko, Federal Lighter Terminals (FLT), and Federal Ocean Terminals (FOT), Bonny. The Calabar seaport is between 6 and 7 meters deep, whereas the Lagos, Apapa seaport is between 12 and 13.5 meters deep (NPA, 2018).

Seaports may not be able to provide all sorts of services. According to PwC and Panteia (2013), common complaints from shipping lines and other port users include insufficient water depth, a lack of quay space, which causes vessels to wait for a berth, a lack of storage space behind the quay, which is often caused by the "city centre" locations

of older ports, and insufficient (or outdated) mechanical equipment. The most prevalent issues for container ships are a lack of cranes (preventing the ship from operating as many holds as the operator desires) or the lack of ship-to-shore gantry cranes (resulting in slower handling rates). Yard congestion due to a lack of space can slow crane handling rates on the berth; for bulk ships, the most common issue is a lack of automation (ship loaders and pneumatic or screw discharge equipment linked to high-speed conveyor systems to the storage area or plant) and poor rail and inland waterway interface arrangements. Customers or shippers who want to reserve berthing windows so that scheduled services are not disrupted by unforeseen delays waiting for a berth; negotiate service contracts with the port authority or cargo handling company, giving them a guaranteed loading/discharge rate or ship turn-around time; dedicated storage areas within the port; and extended cargo collection and delivery times are all examples of the problem. These, of course, usually generate a ruckus and confusion at the ports.

Burns (2015), in an attempt to examine port architecture and ownership, highlighted an essential point: the growth of a seaport must be linked to the goal being sought, whether that goal is regional development, productivity, profitability, or a competitive advantage. The ownership structure must be specified in accordance with the goals, with options such as a completely public port, a privatized port, a landlord port, or tool-type port systems being considered. Feasibility studies and investment evaluations are required for port investment study, which must take into account legal, environmental, technological, operational, accessibility, and administrative factors.

Theoretical Framework

The foundation of this research is Osborne and Gaebler's New Public Management (NPM) Theory (1992). According to the notion, government should be catalytic by stressing ethical compliance, openness, equality, justice, responsibility, accountability, prudence, involvement, responsiveness to people's needs, and efficiency in the management of public resources. The NPM theory aims to promote a performance-oriented culture in a decentralized public sector that has the following characteristics: Results-oriented in terms of efficiency, effectiveness, and service quality; Decentralized management replaces highly centralized, hierarchical systems, allowing service companies to be brought closer to the point of delivery and get faster feedback. Flexibility to look into more cost-effective alternatives to government regulation and service; Insistence on efficiency in directly delivered public sector services, as well as strengthening strategic capacities at the center to manage the entire process in a cost-effective manner.

Instead of merely providing services, the government should focus on stimulating the public, commercial, and voluntary/non-governmental sectors into action to tackle social problems. As a result, the government should focus on steering rather than rowing. Community-Owned Government: The government should help people, families, and communities address their own issues by strengthening and empowering them. As a result, the government should free diverse services from bureaucratic supervision. Government that is competitive: There should be competition among service suppliers. This improves efficiency while lowering costs.

Goal-driven government: Rather than following rules and regulations, government should be motivated by goals. It entails the transition of a rule-driven government into a goal-driven one. Government that is focused on results: The government should encourage target attainment and mission directed efforts in order to achieve results. Government that is customer-driven: the government should treat its constituents like consumers. Instead of focusing on bureaucracy, it should focus on client pleasure. It entails giving people options, polling their opinions, making services accessible, and allowing them to make ideas. Government that is entrepreneurial: Instead of spending money, the government should

focus on earning it. It should focus its efforts on resource mobilization through fees, enterprise savings funds, and other means. Rather of treating issues after they exist, the government should detect them. Government Decentralization: The government should decentralize power from higher to lower levels. This fosters proactive management and collaboration. Government that is market-oriented rather than bureaucratic: The government should choose a market mechanism over a bureaucratic one. It should achieve its objectives not merely through command and control, but also through market reform. It should make use of market forces to effect change.

The new public management (NPM) idea is concerned with making governments more efficient (Kaboolian, 1998). According to Savoie (2003), the idea proposes using private sector practices and creating market conditions for service delivery to make governments more efficient and responsive. Furthermore, according to Osborne (2006), the NPM theory claims the superiority of private managing skills over public administration techniques and assumes that adopting private sector practices will increase the efficiency and effectiveness of government services.

The Onne Ports complex, which is a government-owned landlord port, is one of the assets with the potential to turn around the country's economic woes if properly managed. To this end, the theory emphasizes that effectiveness and efficiency are possible if the tenets advanced by proponents of this strand of the New Public Management Theory are applied to the operations and management of the seaport, which has the potential to generate revenue for the government as well as contribute to economic development if the public services delivered are up-to-date and in line with best global practices.

For the above to be possible, the government must reduce its interest and concerns in the ports, give concessionaires free rein in the proper administration, operation, and running of the ports, and ensure that, while providing services to the people on a competitive basis in accordance with international standards, they also turn around Nigerian society's economic fortunes in a way that benefits all parties involved (government, concessionaires, and the general public).

Methodology

The survey design was adopted for the study while a closed-ended questionnaire was used to elicit information from the respondents. In view of this, the researchers developed a 4 point Likert scale structured questionnaire with 19 items to get information from the employees of NPA, Intels, BRAWAL, WACT and other service providers at the Onne ports. The response options were strong agreement (SA), agreement (A), disagreement (D), and strongly disagreement (SA). Similarly, the researchers used personal interviews and discussions with staff from the NPA, Intels, BRAWAL, and WACT's management and non-management cadres to gather information for the study.The population of this study comprised the entire staff under the employ of Nigerian Ports Authority, Intels, BRAWAL, WACT serving at Onne ports and other port users that render one form of port services or the other. The total number of the population which cuts across the above mentioned organisations was 2751. The sample of 400 was drawn from this population.

Data Analysis

This work has focused on the challenges and prospects of ports administration in Nigeria. Thus this section of the paper is dedicated to the presentation of data gathered from the field. The statistical technique of analysis, test of hypotheses, and distribution of responses and discussion of findings based on the test are also presented here. The data from the questionnaires were presented and analysed using frequencies and percentages, while the hypothesis was tested using simple linear regression analysis.

Presented below is the demographic data of respondents:

Table 4.1: Demographic characteristics of respondents

Demographic Variables	Frequency (N=377)	Percentage
Sex		
Male	205	54.4
Female	172	45.6
Total	377	100.0
Age (years)		
18-27 yrs	20	5.3
28-37 yrs	128	34.0
38-47 yrs	189	50.1
48 yrs & above	40	10.6
Total	377	100.0
Educational level		
SSCE/OND	40	10.6
HND/B.Sc	158	41.9
Postgraduate	61	16.2
Others	118	31.3
Total	377	100.0
Organisation		
NPA	76	20.2
INTELS	75	19.9
BRAWAL	74	19.6
WACT	75	19.9
Other Port Users	77	20.4
Total	377	100.0

Source: Author's Field Survey.

The results of the analysis of the demographic characteristics of the 377 respondents showed that 205 (54.4%) were male and 172 (45.6%) female. Twenty respondents representing 5.3% of the respondents were between ages 18-27 years, 128 (34.0%), 189 (50.1%), 40 (10.6%) were between ages 28-37 years, 38-47 years, and 48 and above years respectively. Also, 40 (10.6%) of the respondents had SSCE/OND, 158 (41.9%) had a Higher National Diploma Certificate or Bachelor's degree, 61 (16.2%) had postgraduate certificates, while the remaining 118 (31.3%) had other types of educational qualifications. In terms of their organizational affiliation, 76 respondents representing 20.2% were staff of NPA; 75 respondents representing 19.9% were staff of INTELS; 74 respondents representing 19.6% were staff of BRAWAL; 75 respondents representing 19.9% were staff of WACT; while 77 respondents representing 20.4% were other port users.

Test of Hypothesis

Hypothesis 1:

H_O: The quality of port equipment and infrastructure is not likely to have a positive impact on the level of turnaround time in Onne port.

H_A: The quality of port equipment and infrastructure is likely to have a positive impact on the level of turnaround time in Onne port.

Table 4.2: Regression analysis for the impact of port equipment and infrastructure on turnaround time in Onne port

Groups	N	B	R	R Square	Df	t calculated	t critical	P value	Decision
Port equipments and infrastructure	377	0.114	0.149	.022	1 375	2.915	1.96	.004	H_O: rejected
Turnaround time					376				

β = regression coefficient

Source: Author's Field Survey.

Decision Rule: Reject null hypothesis if t calculated is greater than (>) t critical. Accordingly, if the p value is greater than (>) 0.05, then there is no significant contribution, but when the p value is less than (<) 0.05, there is a significant contribution of the independent variable on the dependent variable.

Interpretation: The regression output table for the first hypothesis presents the result of the impact of port equipment and infrastructure on turnaround time in Onne port. Based on the coefficient of determination (r-square), only 2.2% of the total variation in turnaround time in Onne port was explained by port equipment and infrastructure. The results of the regression also revealed a significant positive impact of port equipment and infrastructure on turnaround time in Onne port (β = 0.114, t calculated =2.915, t tabulated =1.96, p< 0.05). To this end, the null hypothesis that stated that the quality of port equipment and infrastructure is not likely to have a positive impact on the level of turnaround time in Onne port is rejected.

Discussion of Findings

Based on the above statistical analysis, the findings of the hypothesis showed that port equipment and infrastructure had a positive impact on turnaround time in Onne port. It was observed that a p-value of 0.004, which is less than p< 0.05, was obtained. This finding is in line with the views of Ducruet and Merk (2013), who observed that turnaround times in ports are a key indicator of efficiency. For these authors, there are various ways that could increase time efficiency, and these include: improved vessel queuing systems, updating equipment, using qualified personnel, improved intermodal connections with the hinterland, using systems for truck appointments, etc (Ducruet and Merk, 2013).

Accordingly, the benefits of investing in port infrastructure are not limited to travel-time saving. Moreso and Lakshmanan (2011) showed that improved freight services lead to growing trade, followed by improved labor supply and technical diffusion. Some port impact studies in the context of the USA (Yochum and Agarwal, 1987), European countries (Bottasso *et al.*, 2013; Bottasso *et al.*, 2014), China (Shan *et al.*, 2014) and South Africa (Chang *et al.*, 2014), which have observed the significant impact of port activity on regional and national economies, also support the finding of this study.

In the same vein, the above finding is also consistent with the view of Portugal-Perez and Wilson (2012) that investments in physical infrastructure create a better business environment and improve port efficiency, which facilitates export growth. The views of Yeo, Roe and Dinwoodie (2008), which found that quality of port service, logistics costs, regional connectivity, hinterland condition, and port accessibility contribute significantly to a port's competitiveness, also support the above finding. Similarly, the view of Notteboom *et al.*, (1997) that a combination of infrastructure quality, hinterland accessibility and productivity plays a vital role in strengthening a port's competitive position also supports the above finding. Finally, also in agreement with the above finding is the view of Gordon

et al., (2005) that a combination of port facilities, including sufficient investment, supportive government policies, excellence in operation and information technology, can help a port attain sustainable competitiveness, which will produce higher seaborne trade compared to the less competitive ports.

The data on the turnaround time of ships from 2013 to 2017 at the Onne seaports lends credence to the above findings (See Appendix). It must be observed that this may not be the situation in other seaports in the country, especially if heavy traffic is involved. Hence, this finding is context specific since the situations that have influenced the results obtained here may not be the same in Apapa and the Tin Can Island ports in Lagos state.

Conclusion

This study examined the challenges and prospects of ports administration in Nigeria from 2013 to 2017 using Onne seaports as a case study. In an attempt to achieve the objectives of the study, the survey research design was adopted. This led to the administration of a structured questionnaire to employees of NPA, the three concessionaires (INTELS, BRAWAL and WACT) and other port users to assess the impact of port equipment and infrastructures on turnaround time in Onne port as well as suggest measures that can be taken to enhance effective and efficient administration of Onne port. The findings of this study have shown during the years under review, there have been improvements in the level of turnaround time for ocean going vessels. This is an indication that the reforms of 2006 have paid off, with regards to Onne ports. However, this does not mean that there is no room for further improvement because what is obtainable in Onne ports today with regards to port performance indicators is yet to meet world standards and therefore does not stand the test of time when compared to what is obtainable in other ports globally.

Recommendations

Based on the findings emanating from this study, the following recommendations are hereby advanced towards the effective and efficient administration of Onne ports as well as other ports in Nigeria:

1. The government should minimise its interest and give more room for independence to the concessionaire to operate in an atmosphere of freedom from all forms of interference from politicians. This will bring about a sense of independence and therefore encourage more private investment especially in heavy port infrastructures for better service delivery capable of competing with other ports of the world.
2. Intermodal and intelligent transport systems should be deployed by the port terminal operators for effective service delivery that will align with best global practices.
3. Vessel Traffic Information System (VTIS) which has the capacity of handling up to 10,000 tracts at any one time should be deployed in Nigerian ports. This is the case with the Singapore strait monitored by the Maritime Port Authority‘s (MPA) port operations control centre. For instance, annually, more than 130,000 ships call at Singapore with at least 1,000 vessels in the port at any one time. Every 2-3 minutes, a ship arrives or leaves Singapore. Although Singapore does not produce any oil, it is the top ship re-fuelling port in the world. In 2015, more than 45 million tonnes of bunkers were lifted in Singapore. Today there are more than 5,000 maritime establishments contributing about 7% to Singapore‘s GDP, and employing more than 170,000 personnel.
4. Invoicing at the port should also follow best global practices by running 24 hours via online platform. This can be achieved by ensuring that all shipping lines open 8am to 5pm providing flexibility for key employees to work half-day on National

holidays invoicing and cargo release can also be done via an online portal like Single Window Platform (SWP) for 24 hours‘ operations.

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APPENDIX

TURN AROUND TIME OF VESSELS (IN DAYS) HANDLED AT ONNE PORT COMPLEX 2013

MONTH	NO. OF SHIPS	OCCUPIED		TOTAL	AVERAGE TIME		AVERAGE TURN ROUND TIME
		WAITING	AT BERTH		WAITING	AT BERTH	
January	76	4.47	190.46	194.93	0.1	2.5	2.6
February	59	1.53	159.44	160.97	0.0	2.7	2.7
March	62	8.8	129	137.8	0.1	2.1	2.2
April	68	1.85	166.13	167.98	0.0	2.4	2.5
May	67	1.54	174.68	176.22	0.0	2.6	2.6
June	59	1.53	169.42	170.95	0.0	2.9	2.9
July	60	29.67	115.97	145.64	0.5	1.9	2.4
August	80	16.67	189.06	205.73	0.2	2.4	2.6
September	69	16.67	189.06	205.73	0.2	2.7	3.0
October	79	4.47	169.93	174.4	0.1	2.2	2.2
November	72	16.67	189.06	205.73	0.2	2.6	2.9
December	75	16.67	189.06	205.73	0.2	2.5	2.7
Total (2013)	826	120.54	2031.27	2151.81	0.1	2.5	2.6
Total (2012)	873	35.87	2133.51	2169.38	0.0	2.4	2.5

TURN AROUND TIME OF VESSELS (IN DAYS) HANDLED AT ONNE PORT COMPLEX 2014

MONTH	**NO. OF SHIPS**	**NO. OF DAYS SPENT**		**TOTAL**	**AVERAGE TIME**		**AVERAGE TURN ROUND TIME**
		WAITING	**AT BERTH**		**WAITING**	**AT BERTH**	
January	76	3.92	123.45	127.37	0.1	1.6	1.7
February	64	20.06	148.27	168.33	0.3	2.3	2.6
March	69	13.72	161.8	175.52	0.2	2.3	2.5
April	73	8.07	142.97	151.04	0.1	2.0	2.1
May	73	14.71	173.71	188.42	0.2	2.4	2.6
June	75	13.54	162.65	176.19	0.2	2.2	2.3
July	74	45.42	160.86	206.28	0.6	2,2	2.8
August	76	18.79	198.99	217.78	0.2	2.6	2.9
September	59	18.79	198.99	217.78	0.3	3.4	3.7

October	74	18.79	198.99	217.78	0.3	2.7	2.9
November	69	18.79	198.99	217.78	0.3	2.9	3.2
December	80	28.6	257.18	285.78	0.4	3.2	3.6
Total (2014)	862	223.2	2126.85	2350.05	0.3	2.5	2.7
Total (2013)	826	120.54	2031.27	2151.81	0.1	2.5	2.6

TURN AROUND TIME OF SHIPS COMPLETED AT NIGERIAN PORTS: 2015

PORT / TERMINAL	NO. OF SHIPS COMPLETED	NUMBER OF DAYS SPENT			DAYS PER SHIP		
		AWAITING BERTH	AT BERTH	TOTAL	AVERAGE TIME SPENT AWAITING BERTH	AVERAGE TIME SPENT AT BERTH	AVERAGE TURN ROUND TIME
APAPA							
TIN-CAN ISLAND							
WARRI							
PORT-HARCOURT							
ONNE	704	171	1,651	1,821.26	0.24	2.34	2.59
CALABAR							
AVERAGE	704	170.66	1,650.60	1,821.26	0.24	2.34	2.59

TURN ROUND TIME OF SHIPS COMPLETED AT NIGERIAN PORTS: 2016

PORT / TERMINAL	NO. OF SHIPS COMPLETED	NUMBER OF DAYS SPENT			DAYS PER SHIP		
		AWAITING BERTH	AT BERTH	TOTAL	AVERAGE TIME SPENT AWAITING BERTH	AVERAGE TIME SPENT AT BERTH	AVERAGE TURN ROUND TIME
APAPA							
TIN-CAN ISLAND							
WARRI							
PORT-HARCOURT							
ONNE	663	183	1,402	1,585.27	0.28	2.11	2.39
CALABAR							
AVERAGE							

TURN ROUND TIME OF SHIPS COMPLETED AT NIGERIAN PORTS: 2017

MONTH	NO. OF SHIPS COMPLETED	NUMBER OF DAYS SPENT			DAYS PER SHIP		
		AWAITING BERTH	AT BERTH	TOTAL	AVERAGE TIME SPENT AWAITING BERTH	AVERAGE TIME SPENT AT BERTH	AVERAGE TURN ROUND TIME
JAN	53	29	181	209.98	0.54	3.42	3.96
FEB	52	24	100	124.68	0.47	1.93	2.40
MAR	49	34	85	119.66	0.70	1.74	2.44
APR	63	16	114	130.53	0.26	1.81	2.07
MAY	66	34	135	168.14	0.51	2.04	2.55
JUN	53	19	111	130.09	0.37	2.09	2.45
JUL	62	22	108	129.66	0.35	1.74	2.09
AUG	56	26	119	144.57	0.46	2.12	2.58
SEPT	58	20	118	138.09	0.35	2.03	2.38
OCT	57	27	118	145.55	0.48	2.07	2.55
NOV	56	17	133	150.31	0.31	2.38	2.68
DEC	59	30	121	150.39	**0.51**	2.04	2.55
AVERAGE	684	298.68	1,442.96	1,741.65	**0.44**	**2.11**	**2.55**