ESTIMATION OF THE TREND OF SHIPPING IMPORT TRADE HAULED BETWEEN THE SOUTH EAST REGION AND THE MAJOR SEAPORTS.

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UGBOAJA, F.C.[1*], OKEUDO, G.N[2], IGBOANUSI, C[3].

1, 2 & 3: Department of Transport Management Technology.
Federal University of Technology Owerri, Imo State, Nigeria.
Corresponding Author: 1.festuschineye@gmail.com

Abstract

This study estimated the trend facilitating shipping import trade in the south-east region of Nigeria. The specific objective is to ascertain the trend of shipping import trade hauled between the major seaports of Onne, Lagos Apapa, Warri, Calabar and the Rivers port, in the South-east region of Nigeria; It used a mixed method design(qualitative and quantitative) which involved the use of secondary data and survey. Secondary data on the import shipping trade hauled in the south-east region and each of Lagos Apapa seaport, Onne seaport, Warri seaport, Calabar seaport and Rivers port were obtained from the National Inland Waterways Authority (NIWA), Nigeria Shippers Council (NSC) and Nigerian Ports Authority (NPA) statistical report. Primary data on the cost of trucking per TEU of shipping trade between the south-east Nigeria and the five major seaports were also obtained .The statistical methods of trend analysis, paired sample t-test, descriptive statistics and inferential statistics were used to analyze the data obtained. Excel software was used to implement the analysis. The findings of the study reveal that, the equation showing the trend of shipping import trade from Lagos Apapa port to South east region is: $IMPSTRDE_{LAG-ONIT}$ *=15331188 + 283543.9X_1(4.1).It is recommended that the significant increase in the trend of shipping import trade between the Lagos seaports and the South-east Nigeria should be sustained and improved upon in order to ensure the sustainable viability of the Onitsha port when fully operational.*

Keywords: South East Region, Import, shipping-trade, Trend, Seaports

Background Information

The development of River ports in Nigeria is seen as one of the strategies of Government aimed at decongesting the major seaports of Nigeria, particularly the Lagos ports and ushering economic growth and development in the regions where the river ports exist. For example, the Onitsha Port was built under the administration of President Shehu Shagari in 1983 and since then has been lying fallow and completely underutilized such that it failed the achieve the economic objectives for which it was set up. It was until the year 2012 that it was rehabilitated by the administration of former President Goodluck Jonathan (NIWA, 2022). According to the Nigerian Inland waterways Authority (NIWA), the newly rehabilitated Onitsha Inland Port is estimated to generate above 23billion naira in revenue in 30 years. This gives an average revenue

generating capacity of about 766.6million naira per annum. These revenues are expected receipts from cargo handling and port logistics services sold to importers and exporters from the South-East region that transit their consignments through the Onitsha river port.

The National Inland Waterways Authority (NIWA) is motivating investors that moving goods on the waterways is economically viable and safe, so that investors can key in and benefit the potentials of water transportation. It is believed that the full operation of the river port will boost economic activities in Anambra State and the South East, create jobs and wealth for our teaming youths, reduce bottle neck in clearing goods and save money wasted in transporting containers from different ports to the South East, decongest our ports in Lagos and reduce the pressure on our roads. NIWA (2022) notes the readiness and interest from potential investors with intention to take over this management of the project and delivery of trade between Onitsha port and the other seaports in Nigeria. According to NIWA(2022), the Onitsha port would reduce the volume of cargoes transported via roads to the South-east. The Universal Elysium Consortium is reported to have emerged as the preferred concessionaire for the concession of Onitsha River Port. Over the 30-year concession period, the concessionaire will be responsible for all the activities and maintenance of the port. "The asset along with the entire infrastructure will be returned to the authorities at the end of the concession period.

The redevelopment of Onitsha River Port is seen as a boost to commercial activities in the South-east. Shippers (importers, exporters and traders) from the commercial towns of Onitsha, Nnewi, Aba and Ogbete-Enugu view the revitalization of the Onitsha port as a welcome development from the federal government and gears towards benefiting maximally from the port when fully operationalized. However, a port is developed to facilitate and handle import and export trade. Therefore a zone with little or no import and export capacity may not be able to sustain the operations of a port system. The viability of the Onitsha port and the sustainability of the operations of the port now and future years depend to a large extent on the import and export capacity of the South Eastern state that the port will serve. For example, since the Onitsha port is linked to the Onne, Port-Harcourt and Lagos Apapa ports, an empirical knowledge of the quantum of import and export trade destined to the South East region and markets from each of the major ports of Onne, Port-Harcourt and Lagos Apapa is necessary in order to provide clear evidence of the trading capacity of the South East region to sustain the operations of the Onitsha port at the long run.

Chilaka (2015) for example established that the Lower River Niger which begins from the confluence at Lokoja with the River Benue and extended from Baro to the Niger Delta with major navigable channels stretching up to 890km from Jebba to Escravos in the 1940s, 1950s and 1960s witnessed commercial navigation by barges from July to November when water levels in the river were high enough to avoid grounding. Thus, river port towns such as Onitsha, Idah, Asaba, Aboh, Warri, Koko and Burutu are associated with the waterborne trade in the Lower River Niger. This extended to many Nigerian ancient towns and modern cities including Port Harcourt, Sapele, Lagos, Bonny, Opobo, Degema, Nembe, Yenagoa, Patani, Letugbene, Brass, Forcados and Ogidigben. During the colonial era, the River jetties in the Lower Niger was used by the communities living along its banks to sell export produce to the trading firms such as Messrs R & W King of Bristol, West African Merchants, John Holt Company, African Association Ltd and Niger Company Ltd; with the major products of their interest being palm oil, palm kernel, shea-butter nuts, groundnut, beni-seed, leather, tobacco, cotton, soya beans,

elephant tusk, snail shell and reed. In exchange, they offered imported goods at the same locations, such as textiles and cloth materials, salt, kerosene, building materials, corrugated iron sheets, iron beds, lead pan, bicycles, gun powder, head pans, drugs, mirrors and carpets. All water transport operators plied on the Niger to supply the transportation needs of the colonial economy, which was based on the evacuation of raw materials produced in the hinterland through the River Niger for export overseas through the Port-Harcourt, Bonny and Lagos ports. The advent of the lorry in the1920s led to a minimized usage of head porter age to convey goods from the hinterland to the river ports. The voyage from Onitsha to Lokoja, for example, took two days by engine boat because it pulled upstream and one-day on the return journey because of the easier southward flow downstream. The Onitsha market became an important commercial nerve centre because of its strategic location in the middle of both road and river transport networks between the north, south, east and west of the emerging Nigerian nation-state.

For the European trading companies, the location of their operational bases was very significant in their activities. They established trading stations in major towns along the route of the Niger such as Lokoja, Onitsha, Warri, Burutu and Koko. As this market developed, other firms joined the first wave of European merchants, such as Compagnie Francais Africa in Occidentale (CFAO), Elder Dempster and Company, Cornerstone, F. Lombardet of Lyon, G.L. Glaiser of Germany, African and Eastern Trade Corporation, D. Mcintosh, Joseph Flint, L.T. Palmer, Robert Southall, F.T.E Tailor, John McTarget, D.W. Sargent and the National African Company. Cargoes were discharged into them to facilitate duty evaluation and collection by the Customs Department. Between 1926 and 1930, for example, 37 foreign firms established not less than 62 trading stations in the Warri Province, spread along the five districts of Warri, Sapele, Forcados, Kwale and Brass. The centrality of the River Niger system was visible in all the trading decisions of firms, for reasons of goods distribution, business communication and cargo logistics. Consequently, there was a large volume of trade and transport between the port towns of Baro, Lokoja, Onitsha, Warri, Burutu and Koko as the traders moved their imported commodities inland and evacuated their purchases for export using the River Niger system.

As already noted above, Onitsha, in the Igbo heartland, was a major port town used by the colonial trading firms to very significant advantages beginning from 1910. Imported goods were usually ferried from warehouses as far away as Burutu, Akassa, Warri, Warri and Koko along the Niger to Onitsha for the markets in that vicinity. In 1917, a customs station was established at Onitsha to collect duties from traders, and perhaps, due to the discovery of lignite and carboniferous minerals in the province in 1911 also, river transportation was boosted. However, palm produce was the chief export of the area and the UAC agent in the town was reputed as the largest buyer of palm produce among the trading firms. Table 1 shows the rising trend of the trade in palm produce in Onitsha jetties during 1937-1939.

In recent times, there is increased interest in the revitalization of the Onitsha port and the trading activities in the Lower Niger region linked to the Onitsha seaport. This is associated with the challenges of road congestion and delay in delivery of Onitsha and South-East bound trade, from the major seaports in Lagos, Port-Harcourt, Warri and Calabar, coupled with the nonfunctioning of the rail infrastructure in the region. One major challenge to the development and revitalization of the trading and logistics operations in the Onitsha port is the seeming unavailability of empirical knowledge of the extent of participation on the South-East region in the Nigeria's shipping import and export trade handled through the major seaports as aforementioned. An

empirical knowledge of the shipping export and import capacity of the South East regions forms the basis for understanding the level viability and prospects of development expected in the Onitsha port. This will equal form the basis for the determination of the level of investment and commitment of resources needed to ensure the growth in operations in the ports and subsequently, the development expected of the port to deliver to the Onitsha City in particular and South East region in Nigeria.

Problem Statement

Nigeria as a maritime nation of worth endowed with vast coastlines and expansive inland waterway potentials in the maritime sector awaiting development. Part of the many factors that has led to the continued non-realization of the potentials of the Inland Waterway Transport (IWT) maritime sector in Nigeria is the lack inland port infrastructure such as River ports and poor policy framework needed to holistically identify the grass root developmental needs Nation in the IWT sector. One such areas of potential wealth in the IWT sector that has remained untapped over the years in the non-functionality of the Rivers ports such as the Onitsha port that is meant to address the maritime logistics challenges facing the South east region of Nigeria. As a result, container shipping trade destined for the South East states from the major seaports of Lagos, Port-Harcourt, Onne, Calabar and Warri, are delivered through the use of road trucks. This leads problems of delay in the delivery of the consignments as a result of traffic congestion problems that the consignments are exposed to on the roads. The implications is that multiple billions of naira is lost annually by the economy as a result of the nonuse of the Onitsha port and inland water routes for delivery cargo and consignment to and from the major seaports aforementioned. This equally breeds safety problems for the road transport sector in Nigeria.

To develop the Onitsha port for optimal contribution to the development of the South east economy and the Nigerian economy at large, there is need to for a robust policy to harness the shipping import capacity and the potentials of the region and position the Onitsha port to develop capacity to sustainably handle such trades. However, the empirical knowledge of the trend and extent of the shipping import and export capacities of the South Eastern states and region routed through the identified major seaports is lacking. Thus, the capacity of the Onitsha port to sustainably handled shipping trade destined to the region as well as export trade from the region cannot be planned in the absence of empirical knowledge of the trend and extent of shipping import and export trade capacities of the region. This is the major problem which this study is conceived to solve by providing an estimate of the shipping import and export capacities of the South east states and region. This is with a view to positioning the Onitsha port to develop capacity to sustainably handle the shipping trade capacity of the South East region, for the economic growth and development of the region and Nigeria.

Aim and Objectives of the Study

1. To estimate the trend of shipping import trade hauled between the South East region and the major seaports.

Research Questions.
1. What is the trend of shipping import trade hauled between the South East region and the major seaports?

Research Hypothesis

H_{01}: There is no significant increase in the trends of shipping import trade hauled between the South East region and the major seaports

Justification of Study

The contribution of this study would be of interest to researchers, maritime practitioners, providing them with fresh dimension of understanding on the impacts of the Onitsha River port in the facilitation of trade and economic development in Nigeria. It will also be of great importance to the National Inland waterways Authority (NIWA) in the development of IWT transport policy. Particularly, the harnessing of the Onitsha port and other River ports in Nigeria sustainable economic development in the South Eastern states and the Nigeria at large.. One reason for the sensitivity of this study is the scenario of transport cost saving associated with transporting shipping trade through the Onitsha River port rather than the continued haulage of container seaborne trade destined through the use of road trucks between the Onitsha port and the major seaports. Harnessing the potentials of the Onitsha will also create employment opportunities and boost trading with the Onitsha port corridor.

Scope of the Study

The scope of the study covers the three main areas of study to give a wider view of the study covered. These are as follows:

Theoretical Scope: The theoretical scope covered in the study include an a forecasting the trend of shipping import trade of the south Eastern region expected to be handled by the Onitsha port, determining the likely transport cost savings of routing the import and export trade of the South east region through the Onitsha port inland water transport route to the major seaport in Lagos, Port-Harcourt, Warri and Calabar Nigeria.

Time Scope: The time scope of the study covers a period of 18 years from 2003 to 2020. This is because the data used for the study on the shipping export and import trade of the South East region to be handled through the port covered a period of 18 years between 2003 and 2020.

Geographical Scope: The geographical scope the study covers the Onitsha port IWT route between the Onitsha port and the major seaports of Onne, Port-Harcourt, Warri, Calabar and Lagos ports.

Conceptual Framework

Concept of Seaports and Port Logistics Performance

Nwokedi et al (2018) define seaports as terminals for harnessing ships and shipping export and import trade for sea transportation. Seaports function as interface for various modes of transport in the facilitation of shipping trade to and from the seaports. The river port similar to the seaport serve as feeder route that supply shipping traffic to the major seaport while it also evacuates imports from the seaport for onward delivery to the hinterlands through the road and other means of transportation (Nwokedi et al 2018). As a result, both the seaport and the River have almost the same functions; the difference being that while the seaport is geographically positioned by

the continental shelve of the ocean to accept international shipping traffic and trade, while the River ports are located inland at the River banks to husband local ship traffic and inland trade. However, both seaport and River ports port logistical functions in facilitating shipping import and export trade. The Council of Supply Chain Management Professionals (CSCMP, 2010) define logistics

As: "the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. This definition encompasses inbound, outbound, internal, and external movements of both human and materials resources serving as input into production process as well outputs from industrial operations for purposes of marketing and distribution to the consumers. Suffice it to be that Logistics is responsible for the flow of materials through a supply chain via nodes such as seaports, river ports, rail freight stations, and other transportation terminals. Without logistics, it is impossible to achieve the movement and delivery of both raw materials and finished goods to the hub markets and customers in the last mile corridors of the supply chain networks (CSCMP, 2010). Thus, logistics as a concept, is an integral part of the production and distribution system, without which, it is impossible to achieve continues flow of materials and finished goods inventory to and from the factories and service organizations. By implication, the global economies will plummet in the absence of implementation of effective logistics principles tools and tools in the management of organizational processes. When principles and scientific tools of logistics are applied in the maritime sub-sector of the global economy and in the facilitation and administration of seaborne trade via ports, land-based maritime operations, as well as offshore operations, it is termed maritime logistics. The motivation for maritime logistics is to enthrone efficiency and effectiveness in the discharge of maritime operations and maximize the utility derivable from consumption of port and maritime services.

Aylin (2016) views maritime logistics as a concept which involves the process of planning, implementing and managing the movement of goods and information involved in the ocean carriage of goods and trade through the seaports. It is a coinage from two words- 'maritime, which is an English adjective usually employed in qualifying services, trade, operations, carrier and all forms of objects found in or within the proximity of the seas, ocean and Rivers. Typical examples include expressions such maritime transport, maritime trade, maritime operations, etc. and; 'logistics'- which according to Aylin (2016) is the process of planning, organizing and executing the efficient transportation and storage of goods from the point of origin to the point of consumption with the goal being to meet customer requirements in a timely and cost-effective manner. The functions of logistics according Aylin (2016) are identified to include but not limited to:

Transportation

Warehousing and storage

Planning and organization of resources (time, labour, finance, equipment, etc,)

Optimizing and executing the use of vehicles, labour. time, retail locations and customers, planning and optimizing, yards, routes and shipment loading, inventory management,

Demand analysis and order processing, etc.

The maritime industry/sector represents such a complex sector where the integration of logistics for performance improvement is inevitable. In the maritime industry, the complex nature of the maritime sub-sector requires the incorporation of the logistics functions and activity areas when addressing the numerous challenges and bottlenecks to efficiency in service delivery and port-user satisfaction in the sub-sector. For example, all maritime-related fields, such as ship ownership, chartering, shipping agencies, brokering, freight-forwarding, stevedoring, supply management, port operations, etc. are separate operating units. However, they are integrated in the functions of port/maritime logistics (Nwokedi, Ndikom, Okoroji and Nwaorgu, 2021). According to Nwokedi*et al* (2021), Maritime logistics, similar to port logistics, is an integrated concept aimed at addressing all aspects of logistics and supply chain challenges associated with maritime transportation and the delivery of goods via the seaports, with focus on improving and/or maximizing efficiency of ports and maritime transport, bring about cost-effectiveness in port operations and use, limiting time of port service delivery, improving maritime safety and security services, improving quality of service quality, utility/customer satisfaction, etc., associated with the use of maritime transport and seaports in the delivery of consignments by shippers and freight forwarders.

The Onitsha port is one of the river port projects in Nigeria designed to ease traffic off the major seaports in Lagos, Port-Harcourt, Onne, Calabar and Warri to the South east region of Nigeria. The port is directly involved in the performance of port logistics functions aimed at facilitating the shipping import and export trade of the Sout-East (SE) region of Nigeria. However, it has not been optimally functional over the years, necessitating the need for forecasting study to determine the shipping export and import trade capacities of the SE region expected to be handled by the Onitsha port to ensure sustainable port operations and development of the SE region in particular and Nigeria in general (National Inland Waterway Authority NIWA, 2016).

Concept of Shipping Import Trade

Shipping trade is the purchase, sale or exchange of goods and services in the international markets across national borders for onward transportation by sea. Shipping import trade encompasses the purchase of goods by the importing country from the exporting country for onward delivery to the ports of the importing country by sea. Shipping import trade influences the directions of the growth of a given country and the global economy and the interaction of demand and supply forces determines the prices of commodities traded in the global markets.

Shipping trade is also termed foreign trade consisting major of two broad components referred to as import trade and export trade. Global events such as war and conflicts and political events influence international trade and prices since natural endowments in terms of the articles of trade in international trade is the same for all countries. Some countries have competitive advantage in particular commodity types while others have not, thus influencing not only prices but the bilateral trade agreements between countries (NIWA, 2016).

One major importance of international trade is that it affords countries the opportunity to earn foreign and maintain a positive balance of payment while also growing her local economy through the proceeds of export and import trade. It is also a sure means of youth employment and development of small and medium scale enterprises (SMEs). Thus, it is common sight to see

youth take to international import and export of goods and services as a veritable means of livelihoods, employment and sustainable living.

The role of the seaports and river ports is the facilitation of shipping import and export trade operations and activities. Trading globally gives locals opportunity to export goods and services to foreign countries and earn a living in the process. Almost all kinds of goods and services can be found and traded in the international markets including clothes, food items, heavy equipment, motor vehicles, crude oil and refined petroleum products, jewelry, beverages, cosmetics, stocks, etc.

The Systems Theory of Port Operations

The system theory of port operations is an extension of the systems theory propounded by Von Bertalanffy Ludwig in 1950. The systems theory is an is the interdisciplinary study of systems, which states that a system is a cohesive groups of interrelated, interdependent components that can be natural or human-made (artificial) but which interact to achieve predetermined objectives. The seaport represent such a system, with several components (port authorities, terminal operators, shippers, freight forwarders, ship-owners, port infrastructure, ship, cargo handling super structures, port labour and personnel, trucking arm, etc); interacting to ensure the smooth flow of trade to and from hinterland markets through the sea. According to the system theory of port operations, the port is a cohesive group of interrelated, interdependent components that consisting of both natural and artificial components that interact to achieve the objectives of harnessing and facilitating the flow of seaborne trade through it to the consignees market locations. According to Ludwig (1950), every system has causal boundaries, is influenced by its context, defined by its structure, function and role, and expressed through its relations with other systems. Ludwig (1950) theorized that a system is "more than the sum of its parts" by expressing synergy or emergent behavior. Beven (2006) notes that changing one component of a system may affect other components, or the whole system. The systems theory also postulates that, for systems that learn and adapt, the growth and the degree of adaptation depend upon how well the system is engaged with its environment and other contexts influencing its organization, (Beven, 2006). Some systems support other systems, maintaining the other system to prevent failure. The goals of systems theory are to model a system's dynamics, constraints, conditions, and relations; and to elucidate principles such as purpose, measure, methods, tools, etc, that can be discerned and applied to other systems at every level of nesting, and in a wide range of fields for achieving optimized output.

The system theory of port operations similar to the general system theory propounded by Ludwig (1950) notes that the seaport is a system of cohesive group of interrelated, interdependent components, interacting with each other and with the port internal and external environment to actualize the goals of cargo handling and processing as well as trade facilitation of the ports. A given seaport for example is composed of the port authority with varied sub-components such as the harbor operations section, the berthing documentation section, regulation and policy development and implementation section, gate section, etc.;   multiple terminals and terminal operators, customs & excise, multiple government agencies, stacking areas and warehousing sections, among others. Each of the components of the seaport has specific roles in the handling and processing of cargo and trade transiting through the seaport. As a result, to secure the delivery of processed trade from a given seaport, each component of the port system must have made its input. Thus, the efficiency of the individual components of the port system in the

discharge of their roles towards cargo handling and trade processing through the seaport robs off on the overall efficiency of the port and port operations. This is because of the interrelatedness and interdependency of the components of the port as a system identified in the systems theory

Table: Summary of Empirical Framework

Author(s)	Year	TOPIC
Elentably, Fisher, Holger, Alghanmi&Alhrbi (2022)	2022	Stochastic Model to Estimate the Waiting Time for Container Vessel Turnaround Times', in Saudi ports.
Radifan, Raja, and Dhimas (2020) .	2020	Analysis of the Container Dwell Time at Container Terminal by Using Simulation Modelling
Nicolae, Cotorcea, Filip, Bucur and Buciu (2019)	2019	Performance measurement of the port logistics system.
Wajira, Premathilaka (2018)	2018	Determining the factors affecting the turnaround time of container vessels: a case study on Port of Colombo
Filipe (2017)	2017	'Ports Logistics Performance: Comparative Analysis
Myriam, Marcela, Rosa and César.(2017)	2017	'A Dwell Time-based Container Positioning Decision Support System at a Port Terminal
Ioanna, Amalia, and Tsiklidis (2016)	2016	'Development of models predicting dwell time of import containers in port container terminals using Artificial Neural Networks application'.
Monica, Mohamed, Gaël, and Salim (2012)	2012	Study on the Impact of Demand on Cargo Dwell Time in Ports in Sub-Sahara Africa (SSA) region.
César and Olaf(2011)	2011	container vessel turnaround times across the world ports.
The African Development Bank **(**ADB, 2010**)** did a report on	2010	Port Development in Africa:Historical perspectives and performance of African ports.
Raymond, Palmquist, Kerry, Daniel, &Phaneuf (2007)	2007	measuring the values for time.
Kasypi and Muhammad (2006).	2006	"A Regression Model for Vessel Turnaround Time"

Source: Prepared by the Author.

Literature Gap
From the aforementioned empirical studies, the following knowledge gaps have been identified in line with the objectives of this study and which this study is seeking to address: no studies have been able to provide knowledge of the trend of shipping import trade capacities of the south east region as basis for forecasting the future volumes of import trade of the region expected to be handled by the Onitsha river port. Similarly, the extent of transportation cost savings of using the Onitsha IWT route for the delivery of shipping import trade of the South East region.

Research Design
The study used a mixed research design method also called the triangulation method. This consists of the use of quantitative research design and survey. The quantitative research design involved the use of time series secondary data obtained from the National Inland Waterways Authority (NIWA), Nigerian Ports Authority (NPA) and Nigeria Shippers Council (NSC), for each from where shipping trade to the SE region is delivered from or moved to, in the case of export trade. The use of survey constitutes the use of primary data sourced from the shippers on

the cost of transporting per TEU of cargo between the Lagos Apapa seaport SE region. The transport cost of transporting per TEU of cargo between the seaports in Lagos, Onne, Warri, Calabar, and Port-Harcourt by road to the SE region was also obtained through survey.

Source: Prepared by the Authors

Sources of Data
This research relied upon secondary and primary sources of data for the study. Secondary data constitute of data generated from secondary means such as Nigerian Ports Authority annual reports, the shipping companies and allied companies operating in the maritime clusters, National Inland Waterways Authority (NIWA), the Nigeria Shippers Council publications as aforementioned under research design. Primary data was sourced from survey of the shippers and the shipping operators' operating in the maritime clusters. The responses of the sampled population of the management staff of the companies formed the primary data sources for purposes of the study.

Population Covered by the Survey and Sample Size
The shippers and operators in the maritime and marine haulage sector in Nigeria used in the study form the population of the study. However, we are unable to determine specifically the population of the shippers and operators in the ports are unknown for purposes of population sampling. Thus we used the Z score formula for unknown population to determine the sample size while adopting a purposive random sampling method. Respondents were randomly sampled and questionnaires were administered.

The determination of sample of unknown population using Z score is given as:

N = Z2(P) (1-P) /C2 --- (3.1)

Where Z = standard normal deviation set at 95% confidence interval =1.96

P = percentage picking a choice or response =50%

C = confidence interval =0.05

Therefore N = $(1.96)2(0.5)(1-0.5)/(0.05)2$

N= 240.16

=240

The sample population will be about 240 shippers, ship operators and haulage operators in the maritime logistics sector operating between the major seaport and the Onitsha port in the IWT route, and between the major seaports and the SE regions and hinterlands were sampled. However, only about 180 respondents, which is about75% of the respondents, were able to return their questionnaires correctly filled.

Method of Data Analysis

The study employed multiple methods in analyzing the data obtained in line with the objective of the study. Firstly, it used the Trend Analysis method to investigate and determine the objective of the study which seeks to estimate the trend of shipping import trade capacity of the South East region expected to be handled via the Onitsha port. The trend analysis also provided the basic model for extrapolating or forecasting the shipping import volumes to be handled by

Finally, the t-test corresponding to the trend analysis model and the difference of means statistical method was used to test the hypotheses of the study in line with the study objectives.

Fig: Data Analysis methods. Source: Prepared by author

Trend Analysis

The trend of shipping import (IMPSTRDE) volumes of the SE region expected to be handled by the Onitsha port in contribution to the development of the Nigeria economy was estimated by the use of trend analysis. Trend analysis is a kind of regression analysis where time is the explanatory or independent variable. The coefficient of regression obtained from the trend line can be used as basis for extrapolation to estimate the future shipping import trade volumes to be handed by the Onitsha port in SE Nigeria. Microsoft Excel software was used to implement the analysis

The model specification is as shown below:

$$Y = \alpha + b_1 X_1 + e$$

Here Y is the dependent variable = shipping import trade or shipping export trade.

X_1… Xn are the n independent variable = time in years.

$$IMPSTRDE = \alpha + b_1 X_1 + e \qquad\qquad (1)$$

Where:

α = regression constant

b_1 = coefficients of regression.

Data Presentation

Table: Import Shipping Trade from Major Seaports to South-East Region, Nigeria

Year	s/n	LAGOS APAPA (MT)	ONNE PORT	WARRI PORT	CALABAR PORT	RIVERS PORT
2006	1	13999248.00	23783173.92	1488140	1003422.74	4143929
2007	2	14553496.00	22208752.72	1402629	1160103.82	5439465.78
2008	3	16262225.00	23567446.32	1013046	1157848.76	6169192.77
2009	4	14516036.00	20034535.84	1179514	1260809.78	1888331.65
2010	5	17833603.00	19299825.60	1121239	1448762.78	1710520.34
2010	6	19506794.00	19966806.64	889942	1328072.42	772933.76
2012	7	12776999.00	20329067.44	1177891	1336011.66	10841472.65
2013	8	21135802.00	20966515.68	1286571	1498620.38	3866723.85
2014	9	21907424.00	23346163.28	2013654	1766027.82	5128298.17
2015	10	19124906.00	24867642	3220709	1619629	4974116
2016	11	19501467.00	21974251	6412866	1700765	4166148
2017	12	19807263.00	24833436	6463034	2350149	5506605
2018	13	19110564.00	23859916	4878035	2120449	4339371
2019	14	17714959.00	22230999	4741568	2273939	2599973
2020	15	17523313.00	23888899	2078542	2078542	2332967
2021	16	20037430.00	26194970	6422556	2524426	4708683
2022	17	20024054.00	25219310	8284992	2806426	4637996
2023	18	19111809.00	177647472	9833730	2732368	4119693

Sources: (i) NPA Annual reports. (ii) National Inland Waterways Authority (NIWA). (iii) Nigeria Shippers Council (NSC)

Table is the data set collected for the study, showing the major destination hinterlands in the south-east region for all imports handled in the five major seaport of Lagos Apapa port, Onne port, Warri port, Calabar port and River's port between 2006 and 2023. It shows the shipping import capacities handled in the South-East region which play host to the Onitsha port and the major seaports of Lagos Apapa port, Onne port, Warri port, Calabar port, and Rivers port over the period. Table is used for subsequent analysis, to investigate the trend of shipping import trade hauled between the major seaports and the south-east region.

Results and Discussion

Table: Shipping Import Trade from the major Seaports to the Region in South-east Nigeria

	Onne Port	Warri port	Calabar port	Rivers port	Lagos port
Mean	31345510	3550481	1787021	4297023	18024855
Standard Error	8619020	674703.7	134727.3	519067	614429.2
Median	23456805	2046098	1660197	4252760	19111187
Mode	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	36567405	2862525	571599.4	2202215	2606802
Sample Variance	$1.34E+15$	$8.19E+12$	$3.27E+11$	$4.85E+12$	$6.8E+12$
Kurtosis	17.87117	-0.44281	-1.08242	3.897082	-0.5179
Skewness	4.221012	0.893623	0.454371	1.261017	-0.67103
Range	$1.58E+08$	8943788	1803003	10068539	9130425
Minimum	19299826	889942	1003423	772933.8	12776999
Maximum	$1.78E+08$	9833730	2806426	10841473	21907424
Sum	$5.64E+08$	63908658	32166373	77346420	$3.24E+08$
Count	18	18	18	18	18

Confidence Level(95.0%)	18184543	1423500	284249.7	1095136	1296332

Source: author's calculation

Table above shows the result of the descriptive analysis carried out to ascertain the quantum of shipping import trade that flow from the major seaports in Nigeria to the SE region. The result indicates that the average quantum of shipping import trade flow from the Onne seaport to the South-east Nigeria between 2006 and 2023 is 31345510 metric tons of cargo per annum with standard deviation of 36567405 while an average of 3550481 metric tons of shipping import trade moved from the Warri seaport to the South east region of Nigeria per annum with a standard deviation of 2862525.

From the Calabar seaport, an average of 1787021 metric tons of import trade was moved to the South-East Nigeria per annum with standard deviation of 571599.4 while 4297023 metric tons of shipping import trade moved from the Port-Harcourt seaport to the South-East Nigeria per annum with standard deviation of 2202215. An average of 18024855 metric tons of shipping import trade moved from the Lagos seaports to the South-east Nigeria per annum with a standard deviation of 2606802.

The implication of this is that the Onitsha port has potentials to attract large tons of shipping import trade destined for the South-East region from the major seaports in Lagos, Onne, Calabar, Warri, and Port-Harcourt. Figure4.1 below shows the graphical presentation of the quantum of shipping import trade from the various major seaports to the South East Nigeria.
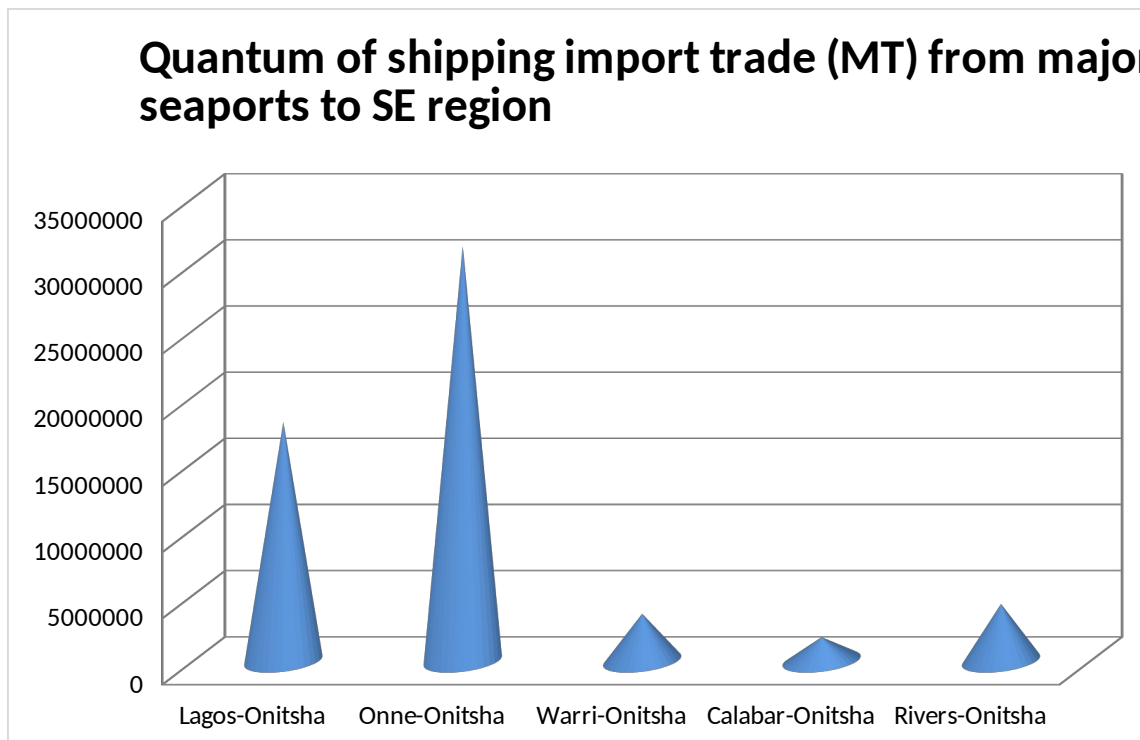

Quantum of shipping import trade (MT) from major seaports to SE region

Fig **Quantum of shipping import trade (MT) from major seaports to SE region**
Source: Prepared by author

As indicated in the figure above, the Onne seaport handled the greatest tons of shipping import trade destined for the SE region. This is followed by the Lagos seaports and the Rivers seaport. Warri and Calabar handled the least of the import shipping trade destined for the SE region in Nigeria.

Table: The Trend of Shipping Import Trade Destined to the South East Region from the major Seaports in Nigeria.

VARIABLES	R	R Square	F score	B_0 (Constant)	B_1= Reg. Coef. = rate of change	t score	p-value
LAGOS-ONITSHA PORT	0.580677	0.337186	8.139493	15331188	283543.9	2.85298	0.01151
ONNE-ONITSHA	0.424582	0.18027	3.518624	3717019	2908262	1.8758	0.05049
WARRI-ONITSHA	0.825352	0.681206	34.18915	-653781	442553.8	5.847149	2.48E-05
CALABAR-ONITSHA	0.957593	0.916984	176.7342	812987.4	102529.8	13.29414	4.6E-10
RIVERS-ONITSHA	0.48758	0.2377	0.038128	4488100	-20113.3	0.19526	0.847644

Source: Author's calculation

Table shows the result of the trend analysis carried out to ascertain the trend of shipping import trade flow from each of the five major seaports to the region, in South-East Nigeria. The result of the study indicates the existence of about 58% positive correlation between the quantum of shipping import trade from Lagos seaport to region in South-east Nigeria, and the time of flow of the imports.

The equation showing the trend of flow of shipping import trade from Lagos Apapa port to region in South east Nigeria is:

IMPSTRDE$_{LAG-ONIT}$= 15331188 + 283543.9X$_1$ (4.1)

This implies that there is an increasing trend in the flow of shipping import trade from the Lagos Apapa port to the region in south-east Nigeria. By implication, for each unit increase in time (per year/ annum), the flow of shipping import trade from the Lagos Apapa port to the region in South-east Nigeria increases by 283543.9 metric tons. Equation 4.1 above provides the basis for estimating the flow of shipping import trade from the Lagos seaport to the region, in south-east Nigeria, using the extrapolation principle.

The result also shows the existence of about 43% correlation between the quantum of shipping import trade from Onne seaport to the region in South-east Nigeria, and the time of flow of the

imports. The equation showing the trend of flow of shipping import trade from Onne port to the region in South east Nigeria is:

$$IMPSTRDE_{ONNE-ONIT}=3717019 + 2908262X_2 \quad (4.2)$$

This implies that there is an increasing trend in the flow of shipping import trade from the Onne port to the region in south-east Nigeria. By implication, for each unit increase in time (per year/annum), the flow of shipping import trade from the Onne port to the region in South-east Nigeria increases by 2908262 metric tons. Equation 4.2 above provides the basis for estimating the flow of shipping import trade from the Onne seaport to the region, in south-east Nigeria, using the extrapolation principle.

Similarly, the result of the study on table shows the existence of about 83% correlation between the flow of shipping import trade from Warri seaport to the region in South-east Nigeria and the time of flow of the imports from 2006 to 2023. The model showing the trend of shipping import trade flow from the Warri seaport to the region in South-east Nigeria is:

$$IMPSTRDE_{WARRI-ONIT}=-653781+ 442553.8X_3 \quad (4.3)$$

The implication is that there is an increasing trend in the flow of shipping import trade from the Warri port to the region in south-east Nigeria. The result indicates that, for each unit increase in time (per year/annum), the flow of shipping import trade from the Warri port to the region in South-east Nigeria increases by 442553.8 metric tons. Equation 4.3 above provides the basis for forecasting or estimating the flow of shipping import trade from the Warri seaport to the region, in south-east Nigeria, using the extrapolation.

Furthermore, the result of the study on table4.12 shows the existence of about 96% correlation between the flow of shipping import trade from Calabar seaport to the region in South-east Nigeria and the time of flow of the imports from 2006 to 2023. The model showing the trend of shipping import trade flow from the Calabar seaport to the region in South-east Nigeria is:

$$IMPSTRDE_{CALABAR-ONIT}=812987.4+ 102529.8X_4 \quad (4.4)$$

The positive coefficient of regression confirms that there is an increasing trend in the flow of shipping import trade from the Calabarport to the region in south-east Nigeria. The result indicates that, for each unit increase in time (per year/annum), the flow of shipping import trade from the Calabarport to the region in South-east Nigeria increases by 102529.8 metric tons. Equation 4.4 above provides the basis for forecasting or estimating the flow of shipping import trade from the Calabarseaport to the region, in south-east Nigeria, using the extrapolation.

Lastly, the result of the study on table shows the existence of about 49% correlation between the flow of shipping import trade from the Rivers port (Port-Harcourt seaport) to the region in South-east Nigeria and the time of flow of the imports from 2006 to 2023. The model showing the trend of shipping import trade flow from the Riversseaport to the region in South-east Nigeria is:

$$IMPSTRDE_{RIVERS-ONIT}= 448810 - 20113.3X_5 \quad\quad\quad (4.5)$$

The negative coefficient of regression confirms that there is a decreasing trend in the flow of shipping import trade from the Rivers port to the region in south-east Nigeria. The result indicates that, for each unit increase in time (per year/annum), the flow of shipping import trade from the Rivers port to the region in South-east Nigeria decreases by 20113.3 metric tons. Equation 4.5 above provides the basis for forecasting or estimating the flow of shipping import trade from the Rivers seaport to the region, in south-east Nigeria, using the extrapolation.

Table: Extrapolating/Forecasting the Quantum of Shipping Import Trade Flow from the Major Seaports to the Region between 2024 and 2030

Year	Lagos port (MT)	Onne port (MT)	Warri port (MT)	Calabar port (MT)	Rivers Port (MT)
2024	20718522.1	58973999	7754741.2	2761053.6	66657.3
2025	210022066	61882259	8197295	2863583.6	46544
2026	21285609.9	64790521	8639848.8	2966113.2	26430.7
2027	215691338	67698783	9082402.6	3068643	6317.4
2028	21852697.7	70607045	9524956.4	3171172.8	-13795.9
2029	22136241.6	73515307	9967510.2	3273702.6	-33909.2
2030	22419785.5	76423569	10410064	3376232.4	-54022.5
Total					

Source: Author's calculation

The table shows the result of the forecasted tonnages of expected shipping import trade to be hauled between Onitsha port and each of the major seaports in Nigeria between 2024 and 2030. It indicates that the tonnage of shipping import trade expected to be hauled between Onitsha port and each of Lagos Apapa port, Onne port, Warri and Calabar port will witness increasing trend between 2024 and 2030. The have implications on the level of cargo handling facilities and other port infrastructure required to process the increasing shipping import trade to the port in order to make ready for the realization of its full potentials. Only the expected tonnage of import shipping traffic between the Rivers port and Onitsha port in the South-east region shows a decreasing trend between 2024

Test of Hypotheses
In this section, the various hypotheses proposed in the study were tested for significance in line with the study objectives as shown in the respective tables below.

Table: H_{01}: There is no significant increase in the trends of shipping import trade hauled between the South East region and the major seaports

Route	Hypotheses	t-cal.	p-value/sig.	Decision
Lagos port-Onitsha port	H_{01a}	2.85298	0.01151	Reject H_{01a}
Onne port-Onitsha port	H_{01b}	1.8758	0.04509	Reject H_{01b}
Warri port-Onitsha port	H_{01c}	5.847149	2.48E-05	Reject H_{01c}
Calabar port-Onitsha port	H_{01d}	13.29414	4.6E-10	Reject H_{01d}

Rivers port-Onitsha port	H_{01e}	-0.19526	0.847644	Accept H_{01e}

Source: Author's calculation. Reject *null hypothesis if t-cal> t-critical; Accept null hypotheses if t-cal.< t-critical.*

The test statistics reveal a t-score of 2.853, p-value of 0.011 and alpha (α) value of 0.05 for the trend of shipping import between Lagos seaports and the Onitsha port in the south-east region. Since the p-value is less than the alpha value (0.01152<0.05), and the t-score coefficient is positive, we assert that there is significant increase in the trend of flow of shipping import trade between the Lagos Apapa seaport and the South-east region of Nigeria. We therefore reject hypothesis H_{01a} and accept the alternate that there is significant increase in the trend of shipping import trade hauled between the south east region and the Lagos Apapa seaport.

The test statistics reveal a t-score of 1.8758, p-value of 0.04509 and alpha (α) value of 0.05 for the trend of shipping import between Onne seaports andin the south-east region. Since the p-value is less than the alpha value (0.04509<0.05); and the t-score coefficient is positive, we assert that there is significant increase in the trend of flow of shipping import trade between the Onne seaport and in the South-east region of Nigeria. We therefore reject hypothesis H_{01b} and accept the alternate that there is significant increase in the trend of shipping import trade hauled between the south east region and the Onne seaport.

Similarly, the test statistics reveal a t-score of 5.847149, p-value of 2.48E-05 and alpha (α) value of 0.05 for the trend of shipping import between Warri seaports and the south-east region. Since the p-value is less than the alpha value (2.48E-05<0.05); and the t-score coefficient is positive, we assert that there is significant increase in the trend of flow of shipping import trade between the Warri seaport and in the South-east region of Nigeria. We therefore reject hypothesis H_{01c} and accept the alternate that there is significant increase in the trend of shipping import trade hauled between the south east region and the Warri seaport.

Furthermore, the test statistics reveal a t-score of 13.29414, p-value of 4.6E-10 and alpha (α) value of 0.05 for the trend of shipping import between Calabar seaports and the south-east region. Since the p-value is less than the alpha value (4.6E-10<0.05); and the t-score coefficient is positive, we assert that there is significant increase in the trend of flow of shipping import trade between the Calabar seaport and the South-east region of Nigeria. We therefore reject hypothesis H_{01d} and accept the alternate that there is significant increase in the trend of shipping import trade hauled between the south east region and the Calabar seaport.

Lastly, the test statistics reveal a t-score of -0.19526, p-value of 0.847644 and alpha (α) value of 0.05 for the trend of shipping import between Riversseaports and in the south-east region. Since the p-value is greater than the alpha value (0.847644>0.05); and the t-score coefficient is negative, we assert that there is no significant increase in the trend of flow of shipping import trade between the Riversseaport in the South-east region of Nigeria. The trend of shipping import trade hauled between Rivers port and the south-east region shows a declining trend between 2006 and 2023. We therefore accept hypothesis H_{01e} and that there is no significant increase in the trend of shipping import trade hauled between the south east region and the Rivers seaport.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study having been able to implement the investigations and having achieved the objective of the study identified in chapter of this thesis concludes as follows:

There is a significantly increasing trend in the quantum of shipping import trade hauled between the Lagos seaports, Onne seaport, Calabar seaport and Warri seaport and the South-east region of Nigeria which play host to the Onitsha port. The trend of shipping import trade hauled between the rivers seaport and the region is however declining, but not significantly.
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Recommendations

In line with the findings of the study, it is recommended that:

The significantly increasing trend in the quantum of shipping import trade delivered between the south-east region and the major seaports in Nigeria should be sustained so that the Onitsha port remain viable when fully operational. The declining trend of shipping import trade between the region and the Rivers port should be reversed in order to improve the operational viability of the Onitsha River Port.

Contributions to Knowledge
The study has for the first time determined that:

The use of IWT route to deliver shipping trade between Lagos seaport and the Onitsha port will offer a 65.28% reduction in the cost of transporting per TEU of container freight between the ports
The equation showing the trend of flow of shipping import trade from Lagos Apapa port to the region in South east Nigeria is:

$$IMPSTRDE_{LAG\text{-}ONIT} = 15331188 + 283543.9X_1 (4.1)$$

The equation showing the trend of flow of shipping import trade from Onne port to the region in South east Nigeria is:

$$IMPSTRDE_{ONNE\text{-}ONIT} = 3717019 + 2908262X_2 \qquad (4.2)$$

The model showing the trend of shipping import trade flow from the Warri seaport to the region in South-east Nigeria is:

$$IMPSTRDE_{WARRI\text{-}ONIT} = -653781 + 442553.8X_3 (4.3)$$

The model showing the trend of shipping import trade flow from the Calabar seaport to the region in South-east Nigeria is:

$$IMPSTRDE_{CALABAR\text{-}ONIT} = 812987.4 + 102529.8X_4 (4.4)$$

The model showing the trend of shipping import trade flow from the Rivers seaport to the region in South-east Nigeria is:

$$IMPSTRDE_{RIVERS\text{-}ONIT} = 448810 - 20113.3X_5 (4.5)$$

REFERENCES

Aylin C. &Yucel o. (2016)Maritime Logistics. Retrieved: 06/07/2021, from http//www.IGglobal.com. DOI: 10.4018/978-1-4666-9779-9.ch019.

Beven, K. (2006). A manifesto for the equifinality thesis. Journal of hydrology, 320(1), 18-36.

Buhari, S.O., Ndikom, O.B., Nwokedi, T.C. (2020) An assessment of the relationship among cargo-throughput, vessel turnaround time and port-revenue in Nigeria. (A study of Lagos port complex). Journal of Advance. Research in Business, Management and Accounting. 2017, 3(7)33-39.

David N, Joyce N., Haragopal P., Rahul P. and Jean-Pierre V. R. (2015) Consumer patronage and willingness-to-pay at different levels of restaurant attributes: A study from Kenya. Research in Hospitality Management 2015, 5(2): 171–180

Dayananda Shetty K & G.S. Dwarakish (2018): Measuring port performanceand productivity, *ISH Journal of Hydraulic Engineering, DOI: 10.1080/09715010.2018.1473812*

Dere I. G., Omoke V., Ojekunle J.A. and Nwaogbe O. R.(2021) Assessment of Port Performance in Nigeria. International Journal of Advances in Engineering and Management (IJAEM) Volume 3, Issue 8 Aug 2021, pp: 1854-1862 www.ijaem.net

Emeghara G.C. (2012) Measurement of Delay Factors on Container Ports of a Developing Economy: A Study of Lagos Container Terminal, Nigeria. *International Journal of Development and Management Review, Vol.7 (3)Pp.: 146-158*

Festus, O. &Xiaoming, L. (2010). Information Sharing and Collaboration Practices In reverse Logistics, *Supply Chain Management: an International Journal*, Vol. 15 Iss: 6 Pages.454-462.

Fugazza, M., Hoffmann, J. (2017) Liner shipping connectivity as determinant of trade. Journal of shipping trade. Vol. 2 (1) 45-53. https://doi.org/10.1186/s41072-017-0019-5

Gael Raballand, SalimRefas, Monica Beuran, and GozdeIsik (2013) Why Cargo Dwell Time Matters in Trade. The World Bank.www.worldbank.org/economicpremise.

GaëlRaballand, SalimRefas, Monica Beuran, and GözdeIsik (2018) Why Does Cargo Spend Weeks in Sub-Saharan African Ports? Lessons from Six Countries. UNCTAD Ad Hoc Expert Meeting (Under the framework of the IAME Conference 2018) 11 September 2018, Mombasa, Kenya.

Gekara, V.O., &Chhetri, P. (2013)."Upstream transport corridor inefficiencies and the implications for port performance: a case analysis of Mombasa Port and the NorthernCorridor." *Maritime Policy and Management, 40 (6): 559-573.*

Halldorsson, A, Kotzab, H, Mikkola J., Skjoett-Larsen, T.(2007). Complementary theories to supply chain management. *Supply Chain Management: An International Journal,* Volume 12 Issue 4, 284-296.

Ludwig V.B. (1976). *General System Theory: Foundations, Development, Applications* (rev. ed.). New York: George Braziller. ISBN 0-8076-0453-4

Monde A., Yang J., Stephen O. (2018)Evaluating the Impact of Long Cargo Dwell Time on Port Performance: An Evaluation Model of Douala International Terminal in Cameroon. *Archives of Transport*, *Volume 46, (2) 7-20.*

Montuori, A. (2011). Systems Approach. Pp. 414–21 in *Encyclopedia of Creativity* (2nd ed.). Academic Press. doi:10.1016/B978-0-12-375038-9.00212-0*https://doi.org/10.5604/01.3001.0012.2098*

Ndikom O. Buhari S.O, Nwokedi T.C., Okeke O.K. (2017) The challenges of cargo clearance at the Nigerian ports. (A service provider and shippers' perspectives). *Journal of Maritime Research Vol XIV. No. I (2014) 38–43*

Ndikom, Nwokedi, Buhari (2018) Cargo clearance and congestion challenges in Nigeria ports: A case for integration of Emerging River Ports and ICDs into Hub Port Trade Corridors. *Ijagun Journal of Social and management Sciences. Vol. 5(1) 27-43.*

Njelita, C. I. Anyasor, O. M. (2020) Customer Loyalty and Patronage of Quick Service Restaurant in Nigeria. British Journal of Marketing Studies (BJMS) Vol. 8(2) Pp.:54-76.

Nwokedi T.C., ,Ndikom O.B., Okoroji L.I, and Okonko I..(2020) Estimates of Economic Cost of Congestion Travel Time Delay BetweenOnne-Seaport and Eleme-Junction Traffic Corridor. *LOGI – Scientific Journal on Transport and Logistics Vol. 11 (2)Pp:33-43 2021. DOI: 10.2478/logi-2020-0013*

Nwokedi, T. C., Ibe C. C., Mbachu J. C., ,Okafor C. O., (2022). Modeling influences of Container Freight Ocean Shipping and Road Haulage Costs to Last-mile Trade Corridors on Price Inflation Trend in West Africa, 12(4) 71-78.Retrieved from http://jms.eleyon.org/index.php/jms/

Nwokedi1 T. C., Ndikom O.B., Okoroji L.I. and Nwaorgu J.,(2021) Determinant Port-related Factors Affecting the Flow of Shipping Trade and Logistics in Nigerian Seaports. *LOGI – Scientific Journal on Transport and Logistics Vol. 12 (1) Pg:261-270.* DOI: 10.2478/logi-2021-0024

Nwoye C.F., Oluwaji A.O; and Odeyinka O.F.(2017) Factorial Analysis of Delay Causative Factors in Nigerian Ports Journal of Research in Science Teaching · Vol. 15(2) 219-236

Nze I.C., &Onyemaechi C., (2018) Port congestion determinants and impactson logistics and supply chain network of five African ports. Journal ofSustainable Development of Transport and Logistics, 3(1 (4)

Nze, O. N., Ejem, A. E., &Nze, I. C. (2020). Benchmarking technical efficiency of Nigerian seaports. Journal of Sustainable Development of Transport and Logistics, 5(1), 77-95. doi:10.14254/jsdtl.2020.5-1.8.

O'Daly L. &Fantino (2003): Delay Reduction Theory. The Behavior Analyst Today, 4 (2), 141–155.

Oghojafor B. E. A. Kuye O. L. and Alaneme G. C. (2012) Concession as a Strategic Tool for Ports Efficiency: An Assessment of the Nigerian Ports. American Journal of Business and Management Vo. 1(4) Pp. 214-222.

Okwong, K.B., Ogbuji C.E. and Emenike G.C. (2020) Determinants of Cargo Dwell Time and Performance Onne Seaport, Rivers State, Nigeria. *International Journal of Scientific & Engineering Research Volume 11(3)1076-1095. http://www.ijser.org*

Osis S.A. and Dele B. (2003) Recent trend in seaport competition in Nigeria. Global Journal of Social Sciences Vol.2(1)Pp. 53-63.

Rowland E. (2018) Nigerian Ports Most Inefficient, Record Highest Cargo Dwell Time In ECOWAS Region. https://businessandmaritimewestafrica.com/

Usman G. (2015) Consequences of Port Congestion on Logistics and Supply Chain in African Ports. *Developing Country Studies 5(6) 160-167*.