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EFFECT OF MARITIME SECURITY MANAGEMENT ON VESSEL TURNAROUND TIME OF PORTS IN NIGERIA

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ABSTRACT

This study empirically examined the effect of maritime security management on vessel turnaround time of ports in Nigeria. The data used for the study were time series data sourced from the National Bureau of Statistics (NBS) annual abstract and Central Bank of Nigeria (CBN) statistical Bulletin, Nigerian Ports Authority (NPA), Nigerian Shippers Council (NSC), Transparency International Corruption Perception index (ICPI) and Global Terrorism Index (GTI) from 1995 to 2024. The regressand utilized in this study was vessel turnaround time which served as the dependent variable. Maritime security management (the independent variable) was measured with piracy, terrorism and corruption and they served as the regressors. The analytical techniques employed were Augmented Dickey Fuller (ADF) unit root test and bounds cointegration test. The unit root test revealed that corruption was stationary at level that is integrated of order zero I(0) while the other variables were stationary at first difference that is integrated of order one I(1) which led to the application of bounds cointegration test given the mixed order of integration and the cointegration test results confirmed the presence of a long run relationship amongst the examined variables. The model was estimated using Autoregressive Distributed Lag (ARDL) model and the short run results revealed that piracy and corruption have positive and statistically significant effect on Nigeria's port vessel turnaround time in the short run while terrorism showed an

insignificant negative effect on vessel turnaround time in Nigeria both in the short run and long run. Thus, the study recommends among other things, that government should implement and enforce stringent security measures at ports, including access control, cargo screening, and enhanced surveillance systems. Also, investment in technologies for enhanced maritime domain awareness, including sensor nets, electro-optical detectors, and unmanned underwater vehicles, to detect and track potential threats is essential in order to effectively combat maritime security challenges and improve vessel turnaround time of ports in Nigeria.

Keywords: Maritime Security Management, Piracy, Terrorism, Corruption, Vessel Turnaround Time, Nigeria Ports

INTRODUCTION

Maritime security is the art and science of protecting the maritime domain, encompassing all activities, infrastructure, and resources related to the seas (Adesina,S2023). It refers to the comprehensive set of measures and actions aimed at ensuring the safety, security, and integrity of maritime operations, vessels, ports, and coastal areas. From combatting threats such as piracy and terrorism to addressing illegal activities like smuggling and human trafficking, maritime security forms the bedrock of a resilient and secure maritime environment (Atakpa,2021).

Despitetheenormousinvestment(militaryexpenditure)insecuritymeasuresprovided by the Nigerian government through the Integrated National Security and WaterwaysProtection Infrastructure Framework (Deep Blue Project) and Falcon Eye (which are reactive ratherthan proactive and do not address the root causes of maritime insecurity), the Tantita SecurityServices Limited (TSSL) pipeline surveillance contract, these threats persist in the Nigerian coastalzones. Also, the Nigerian Navy though carries out incessant security drills to rid Nigerian waters ofpirates,oilthieves,illegaloilrefineries,andillegalfishing,seemtobeoverwhelmedwitheffectivelygoverning of the Nigerian Exclusive Economic Zone (EEZ) as no nation can handle that alone. TheJoint Task Force (JTF) commissioned to interdict maritime crimes in the Niger Delta region areallegedly perceived to be complicit in the oil crimes going on in the oil-rich region (Adesina,2023).

With an estimated theft of between 6 - 10 percent of thecountry'scrudeoilproduction,Nigerialeadsgloballyinoiltheft(Naanen,2019).Therateofattacksso far put the number of seafarers kidnapped in the Gulf of Guinea in 2018, 2019, and 2020

to 108,142,and154,respectively(Pretorius & Henwood, 2020).AttacksremainmorelikelyclosertotheNiger Delta RegionofNigeria;thethreathasspreadtolargerpartsoftheGulfofGuinea,affectingcountriesfromGhanato Gabon(Adesina,2023).Nigeria loses approximately US$6 billion annually in freight costs because of piracy in herwaters (Pichon & Pietsch, 2019). As a result, import and export rates are pushed up, causing localcustomers to pay higher prices and governments to lose revenue at the ports. Alongside the objectives of the "port operational efficiency," which include increased vessel turnaround time, improved cargo throughputs, boosting of berthing occupancy rate enhancing social justice, guaranteeing environmental preservation, and promoting human well-being, the " port operational efficiency " is an economic paradigm that places a higher priority on the optimal performance of ports (Impalure & Dore, 2020).

Okereke (2022) submits that maritime security efficacy is important foreconomicdevelopmentinNigeriagivenitslargedepositofoilandgas. Nevertheless, instead of contributing largely to economic development of the country, challenges in the maritime domain including sea piracy, oil theft, internal conflicts, political instability, and poor socio-economic conditions of the people have contributed in many ways in preventing Nigeriafrombenefitingsignificantlyfromitsstrategiclocation intheGulf of Guinea. Given challenges in the country's maritime domain, Nigeria loses nearly $600 million in export revenue yearly as a consequence of threatsposedbyseapiracytofishingindustryalone.FromJanuary2000to September2008,Nigerialostabout $115.4billiontooil theft (Adeleke, 2021).In2011,the countryalsolost$7.7billionperdaytoillegaloilbunkering,whichreduces the ability of Nigerian to ensure adequate development in the country, especially in the coastal areas of the country (Ahmed, 2017). International maritime securitythreats in Nigeriamaritime domain affect seabusinessinNigeria as a result ofincrease in the number of attacks off the country's coastaswellasinthe neighboringwatersinthesub-region'scoastlines.In view of the above background, the study seeks to examine the effect of maritime security management on the vessel turnaround time of ports in Nigeria (from 1996 to 2024) and this has become highly imperative.

Objectives of the Study

This study seeks to investigate the effect of maritime security management on vessel turnaround time of ports in Nigeria. Based on this, the following specific objectives were achieved:

1). To determine the extent to which piracy affects vessel turnaround time of ports in Nigeria.

2). To investigate the extent to which maritime terrorism affects vessel turnaround time of ports in Nigeria.

3). To find out the extent to which corruption) affects vessel turnaround time of ports in Nigeria.

Research Questions

In line with the statement of the problem, the study sanswered the following research questions.

1). To what extent does piracy affect vessel turnaround time of ports in Nigeria?

2). To what extent does maritime terrorism affect vessel turnaround time of ports in Nigeria?

3). To what extent does corruption) affect vessel turnaround time of ports in Nigeria?

Research Hypotheses

The following hypotheses relating to the purpose and problems of the study were formulated and investigated:

Ho_1: Piracy has no significant effect on vessel turnaround time of ports in Nigeria,

Ho_2: Maritime terrorism and corruption have no significant effect on vessel turnaround time of ports in Nigeria,

Ho_3: Corruption have no significant effect on vessel turnaround time of ports in Nigeria.

LITERATURE REVIEW

Theoretical Framework

The study is anchored on two theories namely: The Routine Activity Theory and Securitization Theory.

The Routine Activity Theory

The Routine Activity Theory (RAT) may be used to examine piracy and other marine security challenges within the maritime environment (Ogu, 2013). The Routine Activity Theory was developed in 1979 by Lawrence Colhen and Marcus Felson as an offshoot of socio-structural theory reviewed the three factors that have resulted in the relaxation of marine security hurdles (Essien & Adongoi, 2015). i. Criminals may be attracted to these individuals. ii. An ideal target must have something of value that is easy to transport in the aquatic environment. iii. A crime cannot be prevented if there are not enough qualified maritime security personnel on the scene. According to The Routine Activity Theory's proposals, pirate attacks in Nigeria's maritime domain can be explained, as well as the

challenges they pose to maritime security (Adanali, 2016). The most frequent targets of kidnappings have been fishing boats, oil tankers, non-oil transporters, and multinational oil installations. (Essien. & A. Adognio 2015). Using the regular activity idea, this hypothesis claims that pirate attacks have continued. Insufficient marine security measures and a lack of skilled security personnel/network to safeguard the maritime industry must be taken into consideration carefully. A large number of young people are either unemployed or underemployed and are seeking for strategies to find jobs that they are both satisfied with. During the past several years, these variables have fueled pirate assaults in Nigerian waters and the GOG (Essien & Adongio, 2015). Crime and security causality cannot be explained by traditional sociological theories such as the regular activity hypothesis. The major goal of the law is to prevent criminals and weaken security measures by enforcing the norms of ordinary life (Ertazzo, 2018).

Securitization Theory

Securitization theory provides a powerful lens for understanding how seemingly ordinary issues can be transformed into urgent security threats, demanding extraordinary measures. This paper, focusing on the War on Terror as a case study, examines the theory's strengths and limitations in illuminating this complex phenomenon. Drawing on the Copenhagen School's framework of speech acts, securitizing moves, and desecuritization, the study analyzes how maritime security affects the operational effectiveness of ports. Securitization often goes beyond these limited realms to include other types of threats that are non-military in nature such as human security (Litwinski, 2017). The proponents of this theory have subsequently largely focused on five sectors namely economic, societal, military, political and environmental sectors. In the context of this study, this theory relates various activities which in some instances may be taken as normal become serious security issues which is going by the main tenet of this theory, become securitized. For instance, Illegal, Unreported, and Unregulated (IUU) and pollution of the marine environment which for a long time remained non-concern issues have in the recent years become major security concerns due to securitization of the issues by different players like politicians, security professionals and environmentalists (Okafor-Yarwood, 2017). The application of securitization theory to the study of maritime security management and operational effectiveness of ports in Nigeria is justified by the significant challenges faced by the maritime industry in Nigeria is a hub for maritime activities in West Africa, but it is also susceptible to a range of security challenges such as piracy, armed robbery at sea, and oil theft. These security threats can have a

significant impact on the operational effectiveness of ports, as they must take steps to mitigate risks and ensure the safe delivery of goods (Shan & Lee, 2014).

The study argues that while securitization theory, particularly the Copenhagen School framework, requires significant adaptation to remain relevant in the 21st century, it still offers valuable insights into the construction of security threats and the dynamics of contemporary maritime security landscapes. By acknowledging its limitations and fostering ongoing dialogue, securitization theory can retain its valuable role in guiding our understanding of complex maritime security challenges and their consequences for port operational effectiveness (Okereke, 2022).

Conceptual Review

In this section, the key concepts used in this study have been reviewed; they include: Maritime security management, piracy, maritime terrorism, corruption and vessel turnaround time, cargo throughputs, berth occupancy rate and maritime legal framework:

Conceptual Framework

This study evaluated the effect of maritime security management on vessel turnaround time of ports in Nigeria. In carrying out the study three dimensions of maritime security management (independent variable or predictor variable) namely piracy, terrorism and corruption were examined. These dimensions were adopted in line with the works of Adesina (2023); vanDyck & Vry (2022) and UNCTAD (2024) Also, vessel turnaround time of ports in Nigeria served as the key dependent or criterion variable appraised.

The study adopted part of the classification of vessel turnaround time of ports in Nigeria espoused by Okereke (2022); UNCTAD (2024). The imperative of the usage of these elements in this study has become obvious as could be seen from the conceptual framework of the Study- “the effect of maritime security management onvessel turnaround time of ports in Nigeria” (Figure 1).

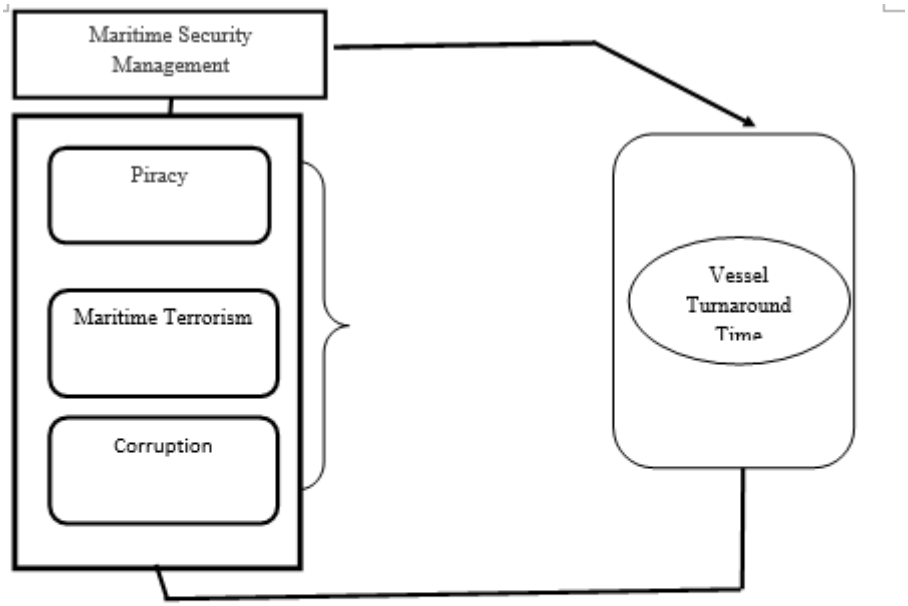

Figure 2: Conceptual Framework of the Effect of Maritime Security Management on Vessel Turnaround Time of Ports in Nigeria

Sources: Adesina, S. (2023). Strengthening Maritime Cybersecurity in Nigeria: Policy and Practice. *Nigerian Maritime Journal*. 4(3), 17-31

vanDyck. M & Vry, R. 2022). Maritime strategies for sustainable development in Ghana. University of Ghana Press

Researcher's Review of Relevant Literature, (2026).

Maritime Security Management

Maritime security management involves determining the root causes of all maritime incidents, near misses, and non-conformities, whether major or minor. From there, a company should take corrective and proactive actions to prevent any recurrences of accidents (Oluniyi, 2017).

Maritime security serves as the anchor that ensures stability, safety, and prosperity within the Nigeria Maritime Industry. As one of the most dynamic sectors of the Nigerian economy, it plays a vital role in driving economic growth, fostering international trade, and generating employment opportunities. However, with great opportunities come great challenges, making maritime security an imperative focus. In today's interconnected world, maritime security has become paramount due to various threats that pose significant risks to maritime activities.By prioritizing maritime security, Nigeria can safeguard its waters, protect its maritime assets, and ensure the uninterrupted flow of goods and commodities. Strong maritime security measures inspire confidence among local and international stakeholders, attracting investments, encouraging trade partnerships, and enhancing the country's position as a reliable maritime hub (vanDyck & Vry, 2022).

Theconceptmaritimesecuritymeansdifferentthingstodifferentpeople,howevertheadoptedin this study is holistic as it is not limited to piracy but entails the protection of a state's land andmaritime domain, resources, economy, environment, and community from certain harmful activitiesat sea (Okereke & Okoli, 2020).

Maritime security governance entails a country's ability to successfully monitor its territorialwaters and EEZ to investigate illegal activities and enforce maritime law, and mitigate security risks(Stable Seas, 2019). Most States in the Gulf of Guinea (GoG) region lack the capacity to maintainnaval presence and effectively monitor their coasts. In the year 2020, the International Chamber ofCommerce(ICC)-InternationalMaritimeBureau(IMB)reportedthatmorethan95%ofallseafarerskidnappedglobally were incidentsrecordedintheGoGregion(NATOSouthernHub,2021).

Piracy

Piracy against vessels constitutes serious security threats to water transportation. Pirates attack all kinds of vessels: general cargo, bulk carriers, tankers, ro-ro, liners, fishing vessels, sailing yachts and tugboats and sometimes the pirates attack vessels to take the crew members hostage (Akinterinwa, 2019).

Piracy in its simplest form connotes crimes other than environmental crimes committed at the high seas against persons and vessels. Piracy represents a grave threat to global trade and maritime security (All Hands. 2023). With modern pirates armed with sophisticated weapons and tactics, their attacks on vessels have become increasingly daring and organized. From the waters of the Gulf of Guinea to the Strait of Malacca, piracy disrupts the flow of commerce, endangers the lives of seafarers, and inflicts economic losses on nations. Understanding the causes, trends, and countermeasures against piracy is crucial to secure our maritime routes and protect the welfare of those who sail the seas (Transparency International Defense and Security (Omeje, (2014).

The definition of piracy provided under Article 101 of the United Nations Convention on theLawoftheSea(UNCLOS)1982, statesthat piracy consists ofany:

(a) Illegalactofviolence,anactofdetention,oranyactofdepredation,committedforprivateen dsby thecreworthepassengersofaprivateship oraprivateaircraft anddirected:

(i)

InInternationalWatersagainstanothershiporaircraft,orapersonorpropertyonboardsuchship oraircraft.

(ii) Againstaship,aircraft,personsorpropertyinaplaceoutsidethejurisdictionofanyState;

(b) Act of voluntary participation in the operation of a ship or an aircraft with knowledge offactsmaking it apirateship oraircraft; and Actofincitingorofintentionallyfacilitatinganactdescribedinsubparagraph (a)or (b).

Onuoha et al. (2013) and Spamer (2018) argued that the UNCLOSdefinition of piracy is deficient as it is limited by geographical location. The authors observed thatthe definition failed to capture the inland waterways, the ports, anchorages as it concentrated on actsagainstashiponthehighseasaspiratical.Itdidnottakeintocognizancethatpiraticalattackscanbe politicallymotivated.

According to ReCAAP (2023), piracy involves any unlawful act of violence, detention, or depredation committed for private purposes by the crew or passengers of a private ship or aircraft, directed against another ship or aircraft, or against persons or property on board, occurring on the high-seas. This definition restricts piracy to high seas incidents. However, violent acts resembling piracy also occur within territorial waters, which this study aims to address within Nigeria's territorial waters. Thus, ReCAAP's definition is too narrow for the purposes of this research.

Piracy in Nigeria, encompassing the acts of killing, kidnapping, torturing, assaulting, starving, and shooting seafarers, has substantial humanitarian implications. Owing to theseverity ofpiracy intheregion, asignificantportionofmarinershavebeen permanently injured (Barta & Schaarschmidt, 2021). Sailors who have beenabducted in Nigeria face an elevated risk of developing post-traumatic stress disorder (PTSD). This affects the lives of the afflicted seafarer(s)' families, and in most cases, results in job losses and financial hardship for these families (Ojutalayo & Boniface, 2023). These criminal activities lead to outputlosses dueto the deathand injury of maritime workers, affectingindustrialtrawlerfisheries (Jouili, 2016).

Maritime Terrorism

Maritime terrorism and other security threats significantly hinder the efficiency of Nigerian ports, impacting trade and economic growth, but efforts like the ISPS Code and the Deep Blue Project aim to address these challenges (Ibrahim, 2022). TheCouncil forSecurityCo-operation intheAsiaPacific(CSCAP),aninformal mechanism for scholars,officialsand othersto discusspoliticalandsecurityissues,producedan extensive definitionforwhatistermed"maritimeterrorism."

Maritimeterrorismisdefinedastheundertaking ofterroristactsandactivitieswithinthemaritime environment, usingoragainstvesselsorfixedplatformsatseaorinport,oragainst anyoneoftheirpassengers orpersonnel,againstcoastalfacilitiesorsettlements, includingtouristresorts,portareasandporttownorcities(Okereke, 2022; Ifedi, 2020; ReCAAP. 2023).Maritime terrorismis, however,motivatedbypoliticalgoalsbeyondtheimmediateact of attackingamaritimetarget.Generally,piracyisnotnecessarilyunderpinnedordriven bypoliticalgoals,butthismaybeofimportancewhenstudyingpiracyintheAfrican context,specificallypiracyofftheNigeriancoast.

Terrorism in Nigeria has been blamed on a number of issues by experts and academics. Corruption, poverty, unemployment, religious fanaticism, and illiteracy are among these issues. Terrorism has enveloped Nigerian culture in recent years, and it's hard to keep up. This is the result of the State's repeated inability to offer effective leadership and to distribute the benefits of good governance to its citizens (Keter, 2022).

Corruption

Generally, corruption can be defined as the intentional or accidental violation of ethics and codes designed to regulate the conduct of a profession, a public service, private transactions, contractual agreements, and actions resulting in selfish or dishonest personal gains at the expense of other individuals, a system, and society (Abimiku et al., 2023). Corruption is a worldwide issue and that is why the control of corruption is one of the good governance indicators advocated by World Bank. A clear-cut definition of the word corruption is however difficult. This is because corruption covers a wide range of morally offensive or criminal acts; thus, its precise definition is not easy. vanDyck and Vry (2022) defined corruption as the perversion of integrity or state of affairs through bribery, favour or moral depravity. Corruption involves the injection of additional but improper transactions aimed at changing the normal course of events and altering judgments and positions of trust. defined corruption as the use of public office for private gains.

Akujuru and Enyioko (2017) x-ray corruption as a phenomenon so difficult to define, yet it more gradually through every aspect of the society. As far as it our maritime officers' hands. Thus, any act or behaviour committed internationally or not to influence the actions of authority, the influential and the influenced, respectively has corrupted a system which is detrimental to the entire society. In other perspective the technocrat in the maritime field see corruption as an economic rape to a nation seaport in other to hinder its economy growth.

Vessel Turnaround Time

Vessel turnaround time (VTT), also known as ship turnaround time, refers to the total time a vessel spends in a port from its arrival to its departure. It's a crucial indicator of port efficiency, affecting cargo throughput, operational costs, and overall port performance (Jia & Xu, 2020).

Vessel turnaround time in the port is the primary indicator to judge the quality of service being given by the port to the ships (Ojutalayo et al., 2023).Vessel turnaround time is the total time spent by a vessel at the port from its arrival at reporting station till its departure from the reporting station. It thus includes pre berthing waiting time navigation time (inward movement and outward movement time) stay at working and non-working berth sand shifting time. However, the detention/idle time due to litigation fire repair/drydocking delay in the decision regarding dismantling etc. are not to be included in their vessel turnaround time.

Vessel turnaround time (VTT) is the aggregate of arrival and departure time that a ship spends at the Seaport (Kyari, 2019). Vessel turnaround time (VTT) is a synopsis of all waiting time for berth idle times mooring/unmooring time and container handling times and other time components at Seaports (Okafor-Yarwood, 2020). Keter (2022) indicated that the level of container moves per hour determines the berth occupancy rate of terminal and the degree of terminal berth occupancy rate in turn determines Vessel turnaround time (VTT). In other words, higher berth occupancy rate means lower turnaround time for ships and vice versa. Seaport end users expect higher terminal berth occupancy rate at Seaports to achieve shorter Vessel turnaround times (VTT) thus leading to low costs and increase in ship traffic. Lloyd et al. (2020). maintains that ship turn-around time (VTT) constituents: time at sea and time in the port. Ship turn-around time (VTT) comprises of the time it takes to attach mooring lines secure ships at the berth provide ship supplies bunkering unloading loading containers between ship and shore which all depends on the efficiency of port infrastructure and operations. Spamer (2018) found that East and North Asian Seaports have the shortest vessel turnaround time (VTT) while West Coast United States and African Seaports have the longest vessel turnaround time (VTT). This implies that East and North Asian Seaports are more efficient than West Coast United States and African Seaports. Relatedly Okereke (2022) indicated that transhipment ports have shorter vessel turnaround time than others and mega ships have longer turnaround time than smaller ships thus indicating that size of ship and port operations may influence vessel turnaround time.

The vessel or ship turn-around time is an accumulation of the two critical times ship service time at berth and waiting time or the time the ship spends in port from its arrival within the limits of the port up to its departure (Ibrahim, 2022). Based on statistics provided by the Knowledge Transfer Office (KTO) for the last two and a half years 1999-2001 ships' turn-around time was equivalent to the ships' service time at berth as there was no waiting time. This indicator is one of the most common measurements of port performance in the world because the survival of ports totally depends upon the satisfaction of the ship-owner who is the primary customer of the port. The shortest ship turn-around time is the most advantageous for the ship-owners because their profits are highly influenced by the time spent in port. Thus, the shorter the staying time of ships in ports the higher the profit. Based on Ezirim (2018) time in port is approximately 18% of distribution of port expenses. The study found that ship turnaround time however includes waiting time manoeuvring time between the entrances to the berth or mooring point ship service time at berth shifting time between berths and manoeuvering time to leave the port.

Effect of Maritime Security Management (Piracy, Terrorism and Corruption) on Vessel turnaround time of Ports in Nigeria

Many studies have examined the effects of maritime security on port performance in Nigeria. Abiodun and Dahiru (2020) explored the impact of maritime security challenges, including piracy and theft, on the operational effectiveness of ports in Nigeria. The study found that piracy and theft incidents negatively impacted the operational effectiveness of ports, leading to delays, increased costs, and reputational damage. The authors recommended that ports implement effective security measures to mitigate the risks of piracy and theft and improve operational efficiency. Another study conducted by Akinterinwa (2019) examined the impact of security measures on the operational efficiency of container terminals in the Mediterranean region. The study found that security measures, such as access control and surveillance systems, can improve the operational efficiency of container terminals by reducing cargo handling times, minimizing disruptions, and enhancing safety. In a study conducted by Kyari (2019) in Egypt, the authors explored the role of stakeholder collaboration in enhancing both maritime security and operational effectiveness. The study found that effective collaboration among stakeholders, including ports, port authorities, and government agencies, can lead to improved security and operational effectiveness in the maritime sector. The authors recommended that stakeholders work together to develop and implement comprehensive security strategies and protocols. In a study by Lloyd, et al. (2020), the authors investigated

the impact of maritime security on the operational effectiveness of ports in Ghana. The study found that piracy and armed robbery at sea negatively impacted the operational effectiveness of ports, as they led to increased costs for security measures and disrupted the timely delivery of goods. A study by Effiong and Nwokedi (2015) examined the impact of maritime security on the operational efficiency of Nigerian ports. The study found that poor maritime security led to increased costs for ports, as they had to invest in additional security measures to protect their vessels and cargo. This resulted in reduced operational efficiency, as ports had to spend more time and resources on security measures rather than on their core business activities. A study by Abiodun and Dahiru (2020) focused on maritime insecurity in the Gulf of Guinea and the quest for security intelligence deployment in combating the crime of maritime insecurity. The study identified security threats in the GoG including piracy, terrorism, kidnapping, and oil theft and emphasised on the need for intelligence gathering in combating the challenge of maritime insecurity, which is slightly related to the findings of this study in terms of approach adopted in arriving at the conclusion. Sea piracy attacks and oil theft in Nigeria maritime domains have huge implications not only for Nigeria, but for West Africa, Africa and the entire world.

In this regard, findings from a study by Uadiala (2012) showed that because of the international nature of sea piracy and oil theft as well as other maritime security threats, the Economic Community of West African States and Economic Community of Central African States (ECCAS) in 2013 organised the Yaounde Summit to adequately tackle sea piracy, pollution, issues of unsettled maritime boundaries, poor enforcement of maritime international laws in order to combat maritime insecurity. However, the challenges of sea piracy, oil theft and many other maritime criminal activities have continued to constitute hiccups to the economic activities of people.

Similarly, a study by Omeje (2014) found that the stiff competition among global oil players over oil and gas in the Gulf of Guinea prepares the grounds for likely arms confrontations as Europe, United States, and Asia, especially China competes for energy resources in West Africa. The competitors usually create client states, which in some cases arm dissidents with a view to defending their national economic interests. Maritime security threats in the country originate largely from Guinea, Liberia, Congo Republic, and Sierra Leon, and these threats reverberate to other littoral states.

Adesina (2023) focused on economic effects of piracy in Nigeria with particular reference to fishing industry in Nigeria, which is slightly related to the focus of this study. Just like the findings from the study by Adesina (2023), sea piracy hampered employment and food

production in the fishery sector of Nigerian economy, which is slightly related to the findings from this study.

The study by Onuoha (2013) focused on sea robbery and maritime security in the Gulf of Guinea, which is slightly related to the findings of this study. The study equally found that between 1991 and 2012, 734 pirate attacks occurred in the Gulf of Guinea, with attacks in Nigeria accounting for 46 % of the total attacks. The study found that sea piracy has negative implications for energy security, increased insurance premiums as well as terrorist financing, which is slightly related to the findings of this study Also, oil theft and sea robbery are found to be responsible for capital flight worth over N 2 trillion per annum from Nigeria to foreign countries.

Findings from a study by Soremi (2020). showed that maritime insecurity in the Horn of Africa cost the global economy, especially Nigeria above $18 billion USD per annum. Somali pirate activities were found to have negatively impinged on sea transportation in the Horn of Africa, especially in the Gulf of Aden, Read Sea, the Arabian Sea, the Indian Ocean, and Oman. This led to loss of $ 1.09 billion to Egyptian economy. Every year, Egypt loses 10 % of its revenue to sea piracy. The foregoing findings are largely related to the findings of this study in terms of identification of the global implications of sea piracy and oil theft on the economies of coastal areas in Nigeria, especially in Rivers and Delta States. The foregoing findings are related to the findings of this study in terms of issues identified, but differ significantly in terms of depth of coverage of the issues.

A study by Adeleke (2021) found that shipping companies paid ransom worth $159 million USD in 31 cases of vessel hostages. This shows that an average of $4.97 million was paid per vessel hostage. The foregoing is related to the findings of this study in terms of examinations of implications for sea piracy and oil theft on economic security of the residents of coastal areas of Delta and Rivers States in Nigeria.

In another study by Jia and Yang (2018), the authors investigated the impact of maritime security on the operational performance of ports in China. The study found that piracy and armed robbery at sea had a negative impact on the operational performance of ports, as they led to increased costs for security measures and disruptions in supply chain operations. Ndikom, (2013) conducted a study: The study therefore, hypothesizes that: Ho_1: piracy, terrorism and corruption have no significant effect on vessel turnaround time in Nigeria.

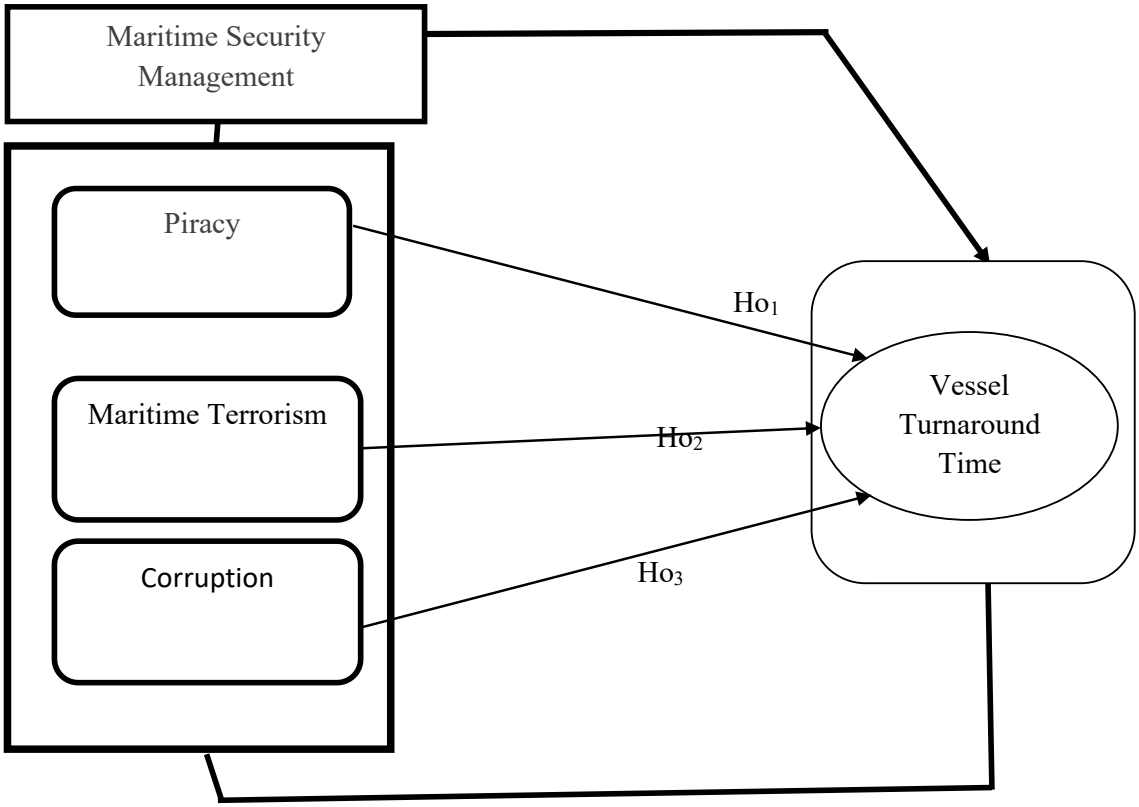

Figure 2.3: Operationalized Framework of the Effect of Maritime Security Management on Vessel Turnaround Time of Ports in Nigeria

Sources:Adesina, S. (2023). Strengthening Maritime Cybersecurity in Nigeria: Policy and Practice. *Nigerian Maritime Journal*. 4(3), 17-31

vanDyck. M & Vry, R. 2022). Maritime strategies for sustainable development in Ghana. University of Ghana Press

Researcher's Review of Relevant Literature, (2025).

METHODOLOGY

Research Design

The focus of an ex-post facto research design is to effectively explain the characteristics of a population or a social phenomenon in the past (Akujuru & Enyioko, 2018). Being a study that looked into the type of connection between maritime security management variables in real time and cargo throughput of ports proxies the ex-post-facto research design was adopted as the most appropriate for the study. Annual time series data from secondary sources of information covering the years 1996 - 2024 were used in this investigation.

Method of Data Collection

Secondary sources of data were used as the main data collection sources in which accuracy, availability, adequacy, authority, scope, suitability and sources of data were considered for relevance. So, the relevant data for this study were generated from the annual reports and accounts of Nigerian Ports Authority, National Bureau of Statistics and Central Bank of Nigeria Annual Statistical Bulletins of the various years in question from their official website. The data for the study were from the period of 1995 – 2024.

Model Specification

$Y = b_o + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + e$ ----------(II) {for testing H}

VTT = f (P, MT, C)

Where;

VTT= Vessel Turnaround Time

P = Piracy

MT = Maritime Terrorism

C = Corruption

Statistical Model Specification

This study used cargo throughputs to measure the dependent (criterion) variable while piracy, terrorism and corruption were used as the dimensions or predictor variables of the independent variable (Maritime security management). The model has been specified thus:

$Y = b_o + b_1x_1 + b_2x_2 + b_3x_3 + e;$

Y = Vessel Turnaround Time

X_1 = Piracy

X_2 =Maritime Terrorism

X_3 =Corruption

b_o = The parameter which represents the intercept b_1 b_2 b_3= the regression parameters were used in determining the significance of the effect of each of the independent variables x_1 x_2 x_3 on the dependent variable Y. e = Random disturbance term. The a priori expectations for the coefficients are as follows: $\beta_0<0$; $\beta_1<0$; $\beta_2<0$; $\beta_3<0$.

Pre-Estimation Test

The following pre-estimation tests will be carried out in this study:

Unit not Test

An average of the ADF tests when u_{it} is serially correlated with different serial correlation properties across cross-sectional units. The ADF test involves estimating the model,

obtaining the test statistic, and comparing it with critical values in order to decide on the rejection of the null hypothesis or otherwise.

Cointegration Test

To empirically analyze time series using traditional methods such as ordinary least squares, an assumption is usually made: the series' means and variances are constants which are independent of time (i.e., the processes are stationary). Unit root variables (or non-stationary time series) do not meet this assumption, hence, any hypothesis tested produces skewed, biased or misleading results.

Data Analysis Techniques

The study employed multiple regression because, it assured the best linear unbiased estimator. Further test was carried out with the help of Auto regressive distributed lag (ARDL) model.

Post Estimation Test

The study conducted the following post estimation tests:

Normality Test

Normality tests are statistical procedures used in ascertaining whether the errors or residuals in a regression model follow a normal distribution or not.

Serial Correlative Test

Serial correlation is also known as autocorrelation. It refers to the correlation between the error terms or residuals in a regression model at different time periods.

RESULTS

Presentation of Data

Time series annual data on cargo throughput, port vessel turnaround time, berth occupancy rate, maritime legal framework, piracy, maritime terrorism and corruption for Nigeria covering the period from 1995 to 2024 used for this study are presented in Table 1:

Table 1: Time Series Annual Data on Cargo Throughputs, Port Vessel Turnaround Time, Berth Occupancy Rate, Piracy, Maritime Terrorism, Corruption and Maritime Legal Framework from 1995 To 2023.

Year	Vessel TurnaroundTime(Days) National Average	Piracy (No. of Incidents)	Maritime Terrorism (Perception Index)	Corruption (CPI)
1995	7.23	5	0.0	6.9
1996	6.34	7	1.2	6.9
1997	6.71	9	1.3	18

1998	7.31	12	1.9	19
1999	6.31	16	1.9	16
2000	7.01	19	1.9	12
2001	7.91	19	1.6	10
2002	11.34	14	1.7	16
2003	7.89	39	1.4	14
2004	6.44	28	1.6	10
2005	7.40	16	1.9	19
2006	6.10	12	2.2	22
2007	4.30	42	2.2	22
2008	4.41	40	2.2	20
2009	4.68	29	2.7	25
2010	4.11	19	4.38	24
2011	3.72	10	4.61	24
2012	4.68	27	5.77	27
2013	4.89	31	5.77	25
2014	5.65	18	5.77	27
2015	4.81	14	5.53	26
2016	4.30	36	5.53	28
2017	4.75	33	5.53	27
2018	3.63	48	6.35	27
2019	3.98	35	6.35	26
2020	4.42	35	6.35	25
2021	4.85	11	6.21	24
2022	5.1	8	7.03	24
2023	4.0	3	7.58	25
2024	3.96	5	7.66	26

Sources: Nigerian Ports Authority (NPA), Nigerian Shippers Council (NSC), National Bureau of Statistics (NBS) and Central Bank of Nigeria(CBN)

The descriptive statistics which summarize and organize the characteristics of the variables are presented in Table 2:

Descriptive Statistics

Table 2 Summary of Descriptive Statistics of the Variables.

	VTT	PIR	MTER	COR
Mean	5.607667	21.33333	3.904000	20.72667
Median	4.870000	18.50000	3.540000	24.00000
Maximum	11.34000	48.00000	7.660000	28.00000
Minimum	3.630000	3.000000	0.000000	6.900000
Std. Dev.	1.718369	12.80984	2.276233	6.447075
Skewness	1.317819	0.401584	0.180379	-0.876562
Kurtosis	5.049158	1.933741	1.398095	2.510895
Jarque-Bera	13.93204	2.227485	3.370308	4.140837
Probability	0.000943	0.328328	0.185416	0.126133
Observations	30	30	30	30

Source: Author's computation using E-views software

From Table 2 above, the descriptive statistics revealed that the mean values of all the variables are greater than their respective standard deviations indicating that the data are centered around their respective mean. Furthermore, the distribution of data for variables (vessel turnaround time, piracy and maritime terrorism) showed they are skewed to the right of the normal distribution curve given their positive skewness values while the distribution of data for (corruption) is skewed to the left of the normal curve as indicated by their negative skewness values.

Additionally, maritime piracy, terrorism and corruption have kurtosis values that are below 3 implying that their curves are less peak. Furthermore, the probability values of the Jarque-Bera statistics revealed that all the variables are normally distributed at 5 percent significance level except for port vessel turnaround time whose probability value (0.000943) is less than 5 percent significance level.

The trends of the series which spanned through the study period (1995-2024) are presented to provide some insights into the data distribution in Figure 1- 2:

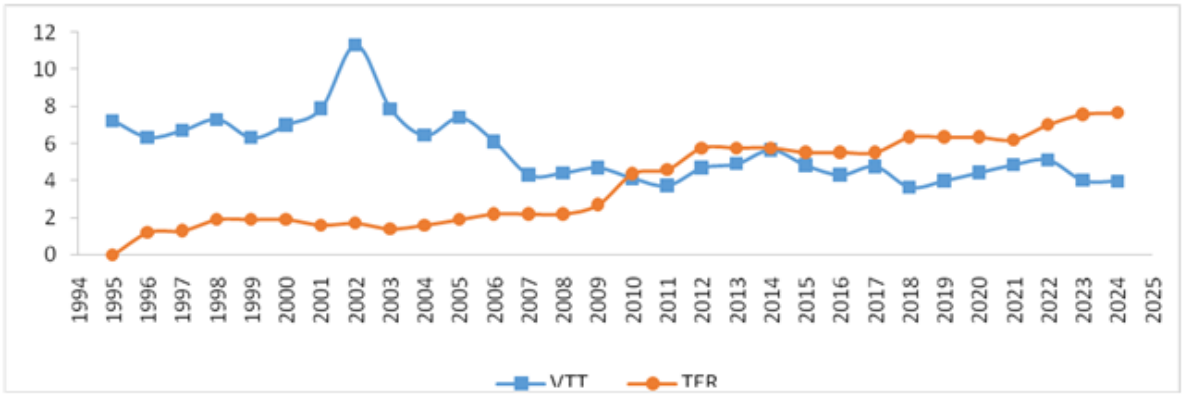

Figure 1: Trends of Port Vessel Turnaround Time and Terrorism in Nigeria (1995-2024)
Sources: Nigerian Port Authority and Global Terrorism Index.

As observed from the graph,vessel turnaround time was 7.23 day in 1995 but reduced to 6.31 days 1996 and followed an upward trend in 1997 and reached a maximum level in 2002 where it stood at 11.34 days. The vessel turnaround time fluctuated downwards and upwards between 2003 and 2010 and reached a minimum level of 3.72 days in 2011. It swiftly increased to 4.68 days in 2012 and sustained the rise until 2014 where it was 5.65 days before declining to 4.81 days and 4.3 days in 2015 and 2016 respectively. Nigeria's port turnaround time increased to 4.75 days in 2017 decreased to 3.63 days in 2018 followed by a continuous

rise to 5.1 days in 2022 before fluctuating downwards to 4 days in 2023 with further decline in 2024 to 3.96 days. The trend in vessel turnaround time at Nigerian ports may be attributed to a combination of factors, including infrastructure development, investment, port reforms and concessioning. While some periods have seen improvements due to reforms and increased private sector involvement, other periods have experienced setbacks due to infrastructure limitations, congestion, and operational inefficiencies.

Additionally, the trend of maritime terrorism as observed from the graph has been characterized by upward and downward movements. It was 1.2 in 1996, rose to 1.3 in 1997 and continued on an upward trend till 2000 where it stood at 1.9 before fluctuating downwards to 1.6 in 2001. The terrorism index increased to 1.7 in 2002 followed by a decline in 2003 at 1.4 and experienced a sustained increase from 1.6 in 2004 to 5.77 in 2014 then, oscillated downwards to 5.53 in 2015 and remained stable until 2018 where it rose to 6.35. Nigeria's maritime terrorism in 2022 was 7.03 and has continued on an upward trend since then. The upward and downward trends in Nigeria's maritime terrorism index could be due to the complex interplay of factors including: the presence of extremist groups, socio-economic conditions, and regional instability.

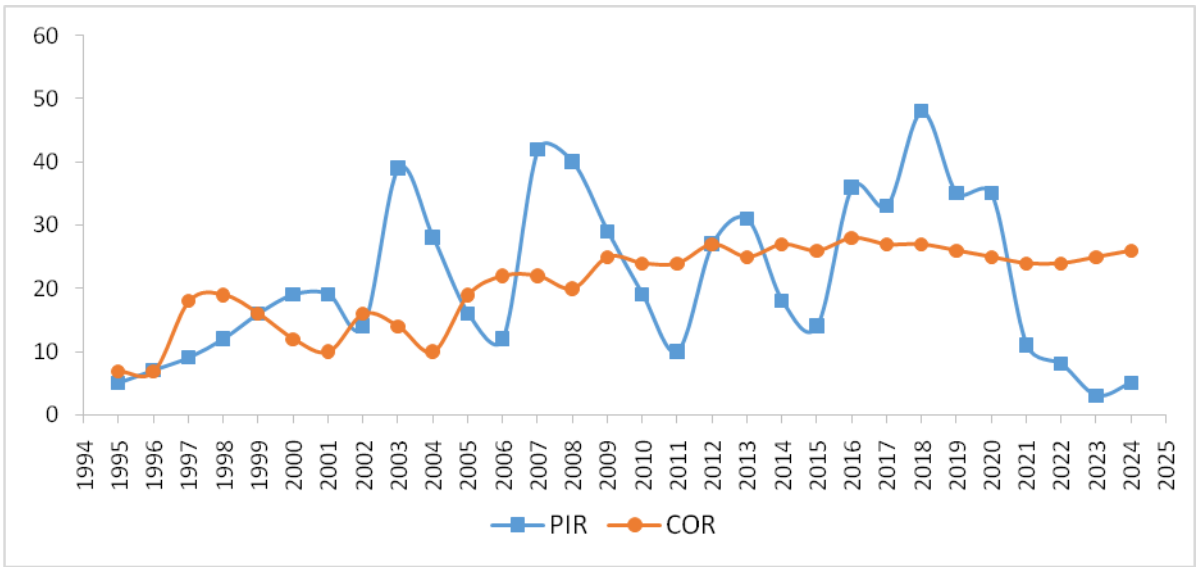

Figure 2: Trends of Piracy and corruption in Nigeria (1995-2024)

Sources: Nigerian Port Authority and Transparency International Corruption Perception index

The graph clearly shows that maritime Piracy has fluctuated over the years. 5 incidents were recorded in 1995 and continued on an upward trend until 2001 with 19 incidents, declined to 14 incidents in 2002, escalated to 39 incidents in 2003 and followed a downward trend until 2006 where 12 incidents were recorded before increasing rapidly to 42 incidents in 2007.

Maritime piracy reduced in 2008 to 40 incidents and by 2011 it had decreased to 10 incidents and continued on an upward and downward trend until 2018 with the highest no of incidents at 48 and has continues to decrease with 3 incidents recorded in 2023 and 5 piracy incidents in 2024. The upward trend in Nigerian maritime piracy is a sign of weak law enforcement, inadequate maritime surveillance, poverty, and the lucrative nature of illegal activities like oil bunkering and kidnapping. These factors, combined with the strategic location of Nigeria (Gulf of Guinea) which is a major shipping route for oil and other goods, making it a prime target for pirates.Also, the downward trend in Nigerian maritime piracy in recent years is a positive development, but it is crucial to acknowledge that the problem is not fully resolved. Sustained efforts to strengthen law enforcement, and enhance regional cooperation are essential to ensure the continued safety and security of Nigeria's maritime domain.

As observed from the graph, Nigeria's corruption level increased from 6.9 in 1995 to 19 in 1998 before declining to 10 in 2001, rose to 16 in 2002 and decreased to 10 in 2004. By 2007 it was 22 followed by mixed oscillations and in 2016 it stood at 28 and decreased to 24 in 2022. The corruption level increased to 25 in 2023 and 26 in 2024. The trend of corruption in Nigeria's maritime sector has seen both upward and downward movements over the years, influenced by a complex interplay of factors. While there have been periods of increased scrutiny and efforts to curb corruption, challenges like weak internal controls, inadequate infrastructure, and the involvement of powerful actors have contributed to its persistence.

Data Analysis

Unit Root Test

The unit root test is carried out to ascertain the level of data stability and the stationarity of the variables examined so as to avoid spurious regression analyses. Hence, this study employed the Augmented Dickey-Fuller (ADF) unit root test to examine the order of integration of the variables.

The result of the augmented Dickey-Fuller test of stationarity at level and first difference are presented in Table 3:

Table 3: Unit Root Test Results.

Variables	ADF at Level	Critical value 5%	ADF at 1st Diff.	Critical value 5%	Order of Integration
$LVTT_t$	1.708067	2.967767	3.261117	2.998064	1(1)
PIR_t	2.860413	2.967767	4.704646	2.981038	1(1)
TER_t	0.035949	2.967767	4.672602	2.971853	1(1)
COR_t	3.351916	3.004861	-	-	1(0)

Source: Authors computation from Eviews 10

It was observed from the Augmented Dickey-Fuller unit root test results in Table 3 above that the variables which include vessel turnaround time (VTT),piracy (PIR) and maritime terrorism (TER) were non-stationary in their level form. The series became stationary at first difference that is integrated of order one I(1). Additionally, the result revealed that corruption (COR) was stationary at level as their ADF statistics, in absolute term were found to be greater than their critical value at 5 percent level of significance. In view of the mixed order of integration of the series I(0) and I(1), the autoregressive distributed lag (ARDL) model was employed following the confirmation of the order of integration of the variables examined in the respective models.

ARDL Bounds Cointegration Test

Given that variables showed evidence of mixed integration, the ARDL bounds cointegration test method was utilized to establish the presence of a long run relationship amongst the examined variables. The results of the bounds test based on the f-statistics are presented in Tables 4:

Table 4: ARDL Bounds cointegration tests results for the models

Null hypothesis: No cointegrating relationship.

	F-STATISTICS	K	Critical value Lower bound 5%	Critical value Upper bound 5%
VTT	4.2309	3	2.79	3.67

Source: Researcher's computation using Eview 10

The table 4 gives the summary of the ARDL bounds test of cointegration for modelvessel turnaround time (VTT). As advised by Soremi (2020), the study should reject the null hypothesis of no long run association between the examined variables in a situation whereby the calculated F-statistics exceed the upper bound critical value and vice versa. The results revealed that the F-statistics for the model (VTT), specifically 42309 is greater than their upper bound critical values at a 5 percent significance level. This finding is an indication that the variable is cointegrated and as such the null hypothesis of no cointegration is rejected. Hence, the study established the presence of a long run relationship between the dependent

variable and the independent variables in each of these models. This, therefore, provides the empirical basis for estimating the ARDL model.

Model Estimation

Short-Run and Long-Run ARDL Model Estimates

The behaviour of the variables in the long run and short run and the speed of adjustment to long run equilibrium were estimated using the autoregressive distributed lag (ARDL) method and the result of the estimation are presented in Table 5.

Table 5: ARDL Estimates for Vessel Turnaround Time (VTT) Model.

Dependent Variable: LOGVTT				
Variable	**Coefficient**	**Std. Error**	**t – Stats**	**Prob.**
Short Run Estimates				
D(PIR)	0.0036	0.0016	-2.2449	0.0403
D(TER)	-0.0580	0.0416	-1.3948	0.1834
D(COR)	0.0088	0.0076	1.1589	0.0264
CointEq(-1)	-0.8444	0.1631	-5.1764	0.0001
Variable	**Coefficient**	**Std. Error**	**t – Stats**	**Prob.**
Long Run Estimates				
PIR	-0.0050	0.0032	-1.5473	0.1426
TER	-0.0028	0.0257	-0.1100	0.9138
COR	0.0378	0.0112	-3.3565	0.0043
C	2.6358	0.1347	19.558	0.0000
R-Squared	0.7988	Durbin-Watson Stat.	2.2971	

Source: Author's compilation from output of E-Views 10

SHORT RUN RESULTS

The short run results from the table above revealed that piracy has a positive and statistically significant effect on port vessel turnaround time in Nigeria indicating that one unit increase in piracy incidents will increase port vessel turnaround time by 0.36 percent. Thus, in conformity with pre-stated a priori expectation. Also, the estimated coefficient of terrorism appeared negatively signed suggesting that one unit increase in terrorism will lead to a decrease in port vessel turnaround time by 5.80 percent which is not consistent with theoretical expectation. However, the negative effect of terrorism on port vessel turnaround time was found not to be statistically significant at 0.05 level. The coefficient of corruption appeared positively signed and significant. This outcome implies that one unit rise in corruption will lead to an increase in port vessel turnaround time in Nigeria by 0.88 percent thus, conforming to a priori expectation.

LONG RUN RESULTS

The long run estimate revealed that piracy has a negative and insignificant effect on Nigeria's port vessel turnaround time suggesting that a unit increase in piracy incidents will reduce port vessel turnaround time by 0.50 percent. Also, long run results showed that terrorism has an insignificant negative impact on port turnaround time in Nigeria, indicating that one unit rise in terrorism will lead to a decrease port turnaround time by 0.28 percent. The result is not consistent with to theoretical expectation.In addition, the long run results revealed that corruption exerts a positive and significant effect on port vessel turnaround time in Nigeria suggesting that one unit increase in corruption index increases port vessel turnaround time in Nigeria by 3.78 percent. This finding is in conformity with a priori expectation.Furthermore, the R-squared value of 0.7988 indicates that the model is a good fit and also signifies that 79.88 percent of the variation in port turnaround time is explained by the independent variables examined in the model (piracy, terrorism and corruption).Additionally, Durbin-Watson statistic 2.29 is within the acceptable range indicating there is no autocorrelation in the residuals of the regression model. Also, the error correction term appeared statistically significant at 0.05 level with the expected negative sign (-0.8444) indicating an adjustment mechanism, with the system correcting deviations from long-run equilibrium at a speed of 84.44 percent, ensuring stability in the long-run relationship.

Post-estimation Tests

The study carried out post diagnostic test to determine whether the empirical results are reliable and to also ensure the model can be used to make predictions and also suitable for policy application and recommendations.

Table 6: Post-Estimation Test Results

Port Vessel Turnaround Time (VTT) Model

Tests	CLRM Problem	Test Stats.	Prob.	Decision
Breusch-Godfrey LM	Serial Correlation	2.0292	0.3625	Serial independence
Breusch-Pagan-Godfrey	Heteroscedasticity	12.741	0.3105	Constant Variance
Jarque-Bera	Normality Test	0.4392	0.8028	normally Distributed
Ramsey RESET	Model Specification	4.4214	0.0541	Model is not misspecified

Source: Author's compilation from output of E-Views 10

As presented in Table 6, the Breusch-Godfrey Serial correlation LM test result shows there is complete absence of autocorrelation in the residuals. The test revealed that the chi-square statistics value is 2.029208 with a probability value of 0.3625 for VTT model, 0.438803 with a probability value of 0.8030 Hence, the null hypothesis is accepted at 0.05 significance level. This implies that serial autocorrelation is not present in the stochastic term.

Heteroscedasticity tests aid in evaluating the constancy of time series data variance and Breusch-Pagan-Godfrey heteroscedasticity test was employed. The results revealed that there is no existence of heteroscedasticity in the stochastic term as the null hypothesis is accepted. The chi-square value 12.74174 and probability value of 0.3105 for the model. The findings reveal uniform variances in all models, with their probability values exceeding the 0.05 significance level. This suggests the validity of the constant variance assumption across all models analyzed.

The Jarque-Bera Normality test results indicate that their residuals are normally distributed. Thus, the null hypothesis is not rejected as the Jarque-Bera test statistic values in the examined models exceed 0.05 significance level.

The Ramsey's reset test results show that there is no functional or specification error, given the F-Statistic of 4.421409 and 0.0541 for the model.

DISCUSSION

Effect of MaritimeSecurity Management (Piracy, Terrorism and Corruption) on Vessel Turnaround Time in Nigeria

Port vessel turnaround time is anticipated to be positively affected by an increase in piracy. The ARDL model's short run result seems to confirm this assertion. The results showed that piracy has a positive effect on port vessel turnaround time in Nigeria in the short run. It explained that one unit increase in piracy incidents will increase port vessel turnaround time by 0.36 percent in short run. This result is in tandem with the findings of Jia and Xu(2020). and Effiong and Nwokedi (2015) highlighting that Pirate attacks disrupt normal port operations, causing delays in cargo handling and overall vessel turnaround. In addition, the positive effect of piracy on port vessel turnaround time was found to be statistically significant at 0.05 significance level in the short run given the probability value of 0.0403. Hence, we reject the null hypothesis since the probability value is less than 0.05. Based on the short run result, the study submits that piracy has a significant positive effect on port vessel turnaround time in Nigeria.

Also, there is evidence of a negative effect of terrorism on port vessel turnaround time in the short run. This indicate that one unit increase in terrorism will lead to decline in port vessel turnaround time in Nigeria by 5.80 percent which corresponds with the long run outcome. Additionally, the findings is not consistent with a priori expectation of the study and not in tandem with the findings of Amarh (2019) and Andrew et al. (2019) indicating that Security incidents, such as terrorism, can disrupt or directly halt port operations, causing significant delays in cargo handling, loading, unloading, and clearance procedures which in turn impacts the overall turnaround time. However, negative effect of terrorism on port vessel turnaround time was found not to be statistically significant both in the short run and long run given that their corresponding probability values are greater than 0.05 significant level. Hence, we fail to reject the null hypothesis and submits that terrorism has a non-significant negative effect on port vessel turnaround time in Nigeria.

Furthermore, the short run and long run estimated coefficient of corruption revealed it has positive effect on port vessel turnaround time in Nigeria which is consistent with a priori expectation of the study. This implies that a one unit rise in corruption leads to an increase in port vessel turnaround time by 0.88 percent and 3.78 percent in the short run and long run respectively suggesting that corruption acts as a significant barrier to efficient port operations, leading to increased vessel turnaround time. In addition, the positive effect of corruption on port vessel turnaround time was found to be statistically significant both in the short run and long run given the corresponding probability values of 0.0264 and 0.0043 respectively. Hence, we reject the null hypothesis and submit that corruption has significant positive effect on port vessel turnaround time in Nigeria.

CONCLUSION

The study after empirically and analytically examining all the variables involved concluded that: i. Piracysignificantly and negatively affect vessel turnaround time ii. Terrorism and militant activities, though less frequent negatively affect vessel turnaround time. iii. Corruption, particularly during customs clearance, inspections, and berthing processes negatively affect vessel turnaround time.

RECOMMENDATIONS

Based on the findings and conclusion reached in this study and also, to improve the operational efficiency of Nigerian ports through better maritime security management, the following recommendations have been made:

i. Government and the concerned authorities shouldstrengthen maritime domain awareness and security infrastructure by expanding and sustaining the Deep Blue Project, ensuring 24/7 patrol and surveillance coverage of Nigerian territorial waters and investing in integrated port security systems, including CCTV, automatic identification systems (AIS), and real-time cargo tracking to deter piracy and monitor vessel movement.

ii. Government and port authorities should institutionalize anti-corruption reforms by Sustaining and replicating successful initiatives like the Nigerian Port Process Manual (NPPM) and HelpDesk models across all ports, digitizing all port clearance and documentation processes to reduce human interface, which is the breeding ground for extortion and bribery. port users.

iii. Government and maritime stakeholders should operate strategically to enhance inter-agency collaboration by improving coordination among the Nigerian Ports Authority (NPA), Nigerian Navy, Customs, Marine Police, and Shippers Council for joint patrols, intelligence sharing, and faster incident resolution and create a central maritime security coordination center for unified decision-making and faster response to threats.

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