ANALYSIS OF THE INFLUENCE OF ECONOMIC GROWTH ON TREND OF SEA PIRACY AND ARMED ROBBERY ATTACKS IN NIGERIA

BY

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CERTIFICATION

This is to certify that this thesis '**Analysis of the Influence of Economic Growth on Trend of Sea Piracy and Armed Robbery attacks in Nigerian** was carried out by **Ogwo, Nwokeka Eme 20174080248** in partial fulfillment for the award of the degree of M.Sc. in Transport Management in the Department of Transport Management Technology, Federal University of Technology Owerri.

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DEDICATION

This work is dedicated to the Almighty God who made the whole universe.

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ABSTRACT

The study analyzed the influence of economic growth on trend of sea piracy and armed robbery attacks against ships in the Nigeria territorial waters. The objective of the study was to assess the influence of the growth in Gross Domestic Product (GDP), revenue generated by the maritime transport sub-sector, and youth unemployment rate on trend of pirate attacks against ships trading in Nigeria waters. The ex-post facto research design was employed in which the historical data on GDP, revenue generated by the maritime transport sub-sector, youth unemployment rate and pirate attacks against ships were obtained from secondary sources. Log linear multiple regression analysis and trend analysis methods were employed to analyze the data obtained. It was found that the model showing the relationship depicting the influence of GDP growth, growth in revenue generated by the maritime transport sub-sector and unemployment rate on pirate attacks against ships in the waters of Nigeria is: $\boldsymbol{InPIRATE_{attacks}} = 2.760 \boldsymbol{- 1.160InGDP - 0.05InMAREV + 0.258InUNRATE.}$ The implication is that a unit annual increase in GDP (economic growth) causes the pirate attacks against ships to decrease by 3.81units while a unit increase in revenue generated by the maritime transport sub-sector induces a 0.007 unit decrease sea pirate attacks against ships in Nigeria. A unit increase in youth unemployment rate increases pirate attacks against ships in the Nigeria waters by 0.158units. The trend of pirate attacks against ships in Nigeria waters over the period relative to the trends of GDP, revenue generated by the maritime transport sector and youth unemployment **is:** $\boldsymbol{PIRATE_{attacks} = 23.386 - 0.105X_t + \mathcal{E}.}$ It was recommended that economic growth should be translated into opportunities for economic empowerment of youth in other to bring about a significant decrease in pirate attacks against ships in Nigeria.

Keywords: sea-piracy, armed-robbery, economic-growth, unemployment-rate, Nigeria.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

The conveyance of people and goods from one point to another is an essential element of trade and commerce. Transportation expands opportunities to acquire and sell varieties of commodity necessary for industrial and manufacturing systems. Sometimes this important function of transportation in logistics can be obstructed by some externalities in the form of attacks on the vehicular means and its traffic types (passengers and freight). Shipping has for a long time been recognized as one of the strong catalysts for socio-economic development. This means of transport is one of the cheapest and efficient means of transportation over a long distance. However, shipping operations have suffered a lot of challenges in the area of insecurity within the maritime domains and corridors.

Many theories support the fact that the development of transport particularly maritime transport catalyzes economic growth, economic development and generates employment. Thus, there is a general view that transport is the fore runner of economic growth and development; and the motto of the seaports as the gateways into the nation's economy also supports these assertions. Economic growth in this context is viewed as the increase in the production of economic goods and services, compared from one period of time to another (Tatyana, 2004; O'Neill, 2021).

Tatyana (2004) notes that the aggregate economic growth within an economy over a given period of time is measured in terms of the Gross Domestic Product (GDP) or the Gross National Product (GNP) while noting that alternative metrics are also used sometimes. In simple terms, economic growth is the increase in aggregate production of goods and services within a given economy (Tatyana, 2004; O'Neill, 2021). This also implies that increase in capital goods, labor force, technology, and human capital can all contribute to economic growth estimated as the aggregate value of the goods and services produced in the economy and/or Gross Domestic Product (GDP). It is believed that economic growth leads to increase in purchasing power, incomes, employment and higher standard of living which in turn will induce a decline in crime rates and youth criminality such as piracy and armed robbery attacks against ships involved in seaborne trade. O'Neill (2021) also notes that economic growth when sustained over the long-term leads to economic development, which is the process whereby low-income economies and nations are transformed into modern industrialized economies. Thus economic development emanates through sustained economic growth and is the all-round transformation of an economy involving qualitative and quantitative improvements in both economic and non-economic indices such as social welfare, employment and unemployment statistics, income levels, early childhood education and literacy levels, criminal justice systems reform, and other human capita development indices. Thus it is right

to assert as expected that economic growth and development should cause a declining effect on crime rates, youth restiveness and youth unemployment rate in the economy, while also improving the output, income and living standard of the working population. This declining youth unemployment rate and improved income cum living standard should in turn induce a declining trend on youth involvement in criminality, sea piracy and armed robbery attacks against ships involved in seaborne trade in the Nigerian territorial waters. Whether this is the situation in the Nigerian case at present is yet to be investigated by any empirical study.

Youth unemployment in this context case is viewed as the percentage of youth between the ages of 15 and 32 years compared to the total work force that are ready to work but are still unemployed as a result of unavailability of employment opportunities in Nigeria. This is because most pirates and sea robbers involved in attacks against ships in the Nigeria waters are youth between those age brackets.

The International Maritime Bureau (IMB) defines piracy and armed robbery against ship as "an act of boarding or attempting to board any ship with the apparent intent to commit theft or any other crime and with the apparent intent or capability to use force in the furtherance of that act". The definition encompasses both actual and attempted attacks, whether the ship is in port, at anchorage, or in the high sea. Thus for documentation and data collection purposes, the act of sea robbery is viewed to

constitute the same in the process of the crime as sea piracy whether committed outside or inside the 12 nautical miles zone of nation's territorial waters, the exclusive economic zone and the internal waters (Nnadi, Nwokedi, Ndikom, Onyemechi and Emeghara (2016). The legal differences between sea piracy and sea robbery however is that sea robbery against ships is committed inside the 12 nautical mile zones of a nation's territorial waters while only attacks committed outside of the territorial waters and outside the jurisdiction of a coastal state, i.e. in the high sea is considered piracy (Nnadi, Nwokedi, Ndikom, Onyemechi and Emeghara; 2016). IMB (2011) further defines piracy as any act of inciting or of intentionally facilitating an act aimed at forcefully boarding a ship with apparent intent to commit illegal acts of violence or detention, or any act of depression, committed for purposes of private ends by the crew or passengers of a pirate boat or aircraft in the high seas. In this study, we use the word piracy to mean both types of acts (armed robbery and piracy). This is because, the statistical reports on sea piracy from the International Maritime Bureau and other sources upon which the study is based does not distinguish between the duo of piracy armed robbery attacks against ships.

In the past two decades, there has been a surge in international concerns about maritime safety and security, with particular attention to the dangers that insecurity on sea pose to global commerce, peace and stability (Speares, 2008). Piracy and armed robbery at sea is an organised and persistent criminal activity, attackers are

aggressive and subject their victims to violence and inhuman treatment. Maritime piracy, in its entirety, puts the vessels and cargo traversing the region where it takes place, in danger, it is said to be a criminal act of robbery or violence at sea, committed by people against other people with the intention of financial gratifications, and criminal activities, are the bane of the global maritime trade (Talley, 2005). Armed attacks against ships in the oil-rich gulf of Guinea surged in 2018, making these waters off west and central Africa the world's most dangerous maritime route (TRANSEC, 1998). The United States (U.S) office of Naval Intelligence (ONI) documented 146 incidents of piracy and armed robbery in the gulf of Guinea in 2018, a 24% increase over 2017 records. The increase in these attacks confirms that the gulf of Guinea's status as the locus for maritime insecurity in Africa, which had long been associated with the Horn of Africa, particularly Somalia. Rising piracy and armed robbery in the gulf of Guinea reflects the region's growing prominence in global maritime trade, as well as capacity and coordination gaps among the region's navies. Maritime piracy imposes direct cost on the immediate victims of the attacks, the crews, the ships and their cargoes, and the shipping companies (Wallis, 2008). Merchant seamen may be injured or killed; ships and cargoes stolen, and higher insurance rates and operating costs borne by companies (Sharidan, 2018). At the same time, the indirect costs of maritime piracy are substantial, particularly in humanitarian terms.

The economic effects of piracy extended beyond littoral states to land-locked countries, which depend on these ports for their imports and exports. According to the United Nations Assessment mission on piracy in the gulf of Guinea, the annual loss to the economy of west African sub region of piracy is estimated at $2billion (United Nations Security Council 2012).

In Nigeria for example, Piracy threatens the vita fishing industry and regional trade, and long with bunkering, reduces oil revenue and therefore potential financial support for the Delta region (Tsui, 2018; Vaknin, 2015). Maritime piracy in Nigeria has been attributed to several factors. Some writers have attributed the situation to the disorder in the oil industry in Nigeria, while some attributed the situation to a combination of economic optimism by existing criminal gangs who claimed to be fighting for fairer distribution of the country's vast oil wealth, others have blamed it on bad governance in most Gulf of Guinea states who parade worse indices' of human development such as unemployment and poverty, with declining opportunities for legitimate livelihood. Some pirates particularly those from the movement for the Emancipation of the Niger Delta, or MEND-claim to be fighting for a fairer distribution of Nigeria's vast oil wealth, and as a protest to the damage caused by oil production in the Delta. Birnie (2017), notes that while the federal government of Nigeria and the oil companies split profits roughly 60 – 40, and the federal money is supposed to be disbursed to local authorities to benefit the Delta

inhabitants, this rarely occurs. As a result, destitution is rampant, pollution from oil-production facilities has decimated local fisheries and farmland and gas flaring has caused chronic respiratory problems, especially among children. The weakness of Nigeria State and its infiltration by organised crime creates fertile ground for piracy. Here motives of personal interest and enrichment coalesce with the political objectives of the Niger Delta rebels seeking to end the marginalisation of their region. Over the past four decades, Nigeria has recorded unprecedented increase in material wealth generated from the sale of crude oil. Yet according to a world bank report, about 80 percent of Nigeria oil and gas revenues accrue to just 10 percent of the country's population. The 90 percent of the population receive the remaining 20 percent (Akwule, 2006).This situation is the main reason for militancy in the region, but gradually evolved into a more organized type of piracy.

Between 2000 and 2018, Nigeria seems to have recorded substantial economic growth as suggested by her GDP figures over that period. However, the much expected decline in youth involvement in crime, improvement in the income, living standard, employment and human capital development which ought to follow economic growth seems to face a worsening trend as youth unemployment trend tend to follow a rising trend over the same period leading to continual attacks against ships in the Nigerian waters. Economic deprivation induced criminality rates such as sea piracy and armed robbery attacks against ships trading in the Gulf of Guinea

and Nigeria waters seems to also follow worsening trend. There is therefore need to develop a model of the relationship between economic growth and sea piracy and armed robbery against ships in Nigeria. This is in line with propositions of the frustration-aggression theory and deprivation theory and will provide empirical evidence on how economic growth has influenced trend of pirate attacks in Nigeria as well as the relationship between increasing youth unemployment trend and pirate attacks against ships in Nigeria. These empirical relationships once produced will form the empirical basis for proactively ensuring that sea piracy and armed robbery attacks in Nigeria is put to a permanent end by ensuring that the economic growth being recorded in the economy is translated into youth employment opportunities, improved income and living standard, and improved human capital growth, development and fulfillment.

This study will analyze the influence of economic growth on trend sea piracy and armed robbery attacks against ships in Nigeria waters with a view to providing basis for improving the economic situation of youth through employment opportunities and other economic incentives; and ensuring that the growth being recorded in the economy is consciously translated into youth employment, improvement in living standard and overall economic development. This will lead to a permanent end to the problem of maritime insecurity fuelled by sea piracy and armed robbery against ships trading in Nigeria and the Gulf of Guinea.

1.2 Problem Statement

There is a seeming problem of economic frustration as a result of the failure of Government to translate the economic growth into youth employment opportunities and economic empowerment to discourage greater number of the youthful population in the coastal states from engaging in acts of violence and piracy against ships in Nigeria waters. This is viewed as being responsible for sea piracy and armed robbery attacks against ships in Nigeria. Thus adopting root-cause approach towards addressing the issue of piracy and armed robbery attacks against ships in Nigeria requires that the economic growth being recorded in the Country and the maritime sub-sector be translated into opportunities for economic empowerment of youth. To do this, there is need to first develop a model of the relationship between economic growth measured by the GDP, maritime industry revenue cum unemployment rate and the trend of sea piracy and armed robbery against ships in Nigeria. This will provide an empirical model for translating economic growth into the achievement the eradication of criminal attacks against ships in Nigeria via improved living standards, income, youth employment and economic development rather than the militarization of the waterways as currently in practice. Since available empirical literatures has not provided the above relationships, this study views it as a central problem to bridge this gap in literature by estimating the influence of economic growth and youth unemployment on trend of sea piracy and armed robbery attacks

against ships involved in seaborne trade in Nigeria. This is important since the impact of piracy against ships trading in Nigeria waters has negative implications on the economy and society.

For example, In 2016, the International Chambers of Commerce (ICC) recorded an increase of 157% pirate attacks against ships in Nigeria between 2015 and 2016 (Alice, 2017). Nigeria accounts for over 60 per cent of total seaborne traffic for the 16 nation in the West Africa sub-region while also accounting for over 65% of pirate attacks against ships trading in West African waters (UNCTAD, 2009). This has led to increased shipping cost to Nigeria and Gulf of Guinea Countries, higher insurance premiums, higher risks assessment costs, etc; with the backlash effect of high cost of imported goods and raw materials as well as inflation within the affected economies. Many empirical studies such as works of Nwokedi, *et. al* (2020), Nnadi, *et. al* (2016), among many others have revealed that pirate attacks against ships have negative economic impacts and consequences; such studies have also suggested approaches towards reducing the pirate attacks against ships and the related economic consequences. The current study notes the proposition of various theories that crime and/or criminal attacks is the results economic deprivation, existence of unemployed idle minds in the face available targets of high economic value in the economy. The economically deprived and disadvantaged therefore become potential offenders (criminals,

pirates) with motivation to commit criminal attacks for economic gains. For example, the seeming economic growth in Nigeria over the years evidenced by the GDP and increasing revenue earnings of the maritime transport sub-sector suggests the availability of economic wealth in the maritime sector of Nigeria, the increasing youth unemployment rate in the face of increasing economic wealth implies the presence of economically frustrated youthful population as potential criminal offenders with motivation to attack the growing wealth carried in ships.

1.3 Aim and Objectives

The aim of the study is to analyse the influence of economic growth on trend of sea piracy and armed robbery attacks against ships involved in seaborne trade in Nigeria.

The specific objectives include:

1. To determine the relationship between GDP and sea piracy and armed robbery attacks against ships in Nigeria.

2. To examine the relationship between growths in revenue generated by the maritime transport sub-sector and pirate attacks against ships trading in Nigeria waters between 2000 and 2018.

3. To establish the relationship between youth unemployment as a measure of economic deprivation and sea piracy and armed robbery attacks in Nigerian waters.

4. To estimate the trend of sea piracy and armed robbery attacks against ships relative to economic growth and youth unemployment in Nigeria.

1.4 Research Questions

1. What is the relationship between growth in Gross Domestic Product (GDP) on trend of sea piracy and armed robbery attacks against ships in Nigeria?

2. What is the nature of the relationship between growths in revenue generated in the maritime transport sub-sector and pirate attacks against ships trading in Nigeria waters between 2000 and 2018?

3. What is the relationship between youth unemployment rate and trend of sea pirate attacks against ships in Nigerian waters?

4. What is the trend of sea piracy and armed robbery attacks against ships relative to economic growth and youth unemployment in Nigeria?

1.5 Research Hypotheses

H_{01}: There is no significant relationship between growth in GDP (economic growth) on trend of sea piracy and armed robbery attacks against ships in Nigeria.

H_{02}: There is no significant relationship between growth in revenue generated by maritime transport sub-sector and attacks against ships trading in Nigeria waters between 2000 and 2018.

H_{03}: There is no significant relationship between youth unemployment rate as a measure of economic deprivation and pirate attacks against ships in Nigerian waters.

H_{04}: There is no significant increase in the trend of sea piracy and armed robbery attacks against ships relative to economic growth and youth unemployment rate in Nigeria.

1.6 Justification of Study

The information from the study would assist the Federal government of Nigeria, the Ministry of Transport and Department Maritime Transport, International Oil and gas companies and shipping Companies on how to curb piracy attack in and around Nigeria using a root-cause approach. This they will achieve by employing the empirical models that will be developed by the study in ensuring that the economic growth being recorded in the Nigerian economy and maritime sub-sector in particular is translated into improvement in youth employment, output cum income of the working population, standard of living within the economy, human capital development and overall economic development. It will also form the basis for further research in the area of maritime safety and security administration in Nigeria.

1.7 Scope of the study

Given the very broad perspectives through which the issue of piracy and armed robbery attacks in the Nigerian maritime domain can be study and the limited nature of time as it affected the study; the study is limited to analysis of the influence of economic growth on

sea piracy and armed robber attacks against ships in Nigeria. The economic variables used to represent economic growth are the GDP, the revenue generated by the maritime sub-sector and the unemployment rate. The data obtained and used for the study span a period of 19 years covering the time period between year 2000 and 2018.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual framework

2.1.1 Concept of Economic and the Implications for Root-Cause Approaches to Eradication of Sea Piracy and Armed Robbery Attacks in Nigeria.

There is a general view that transport is the fore runner of economic growth and development; thus the motto of the seaports as the gateways into the nation's economy also supports these views. Economic growth in the context of this study is the increase in the production of economic goods and services, compared from one period of time to another (Tatyana, 2004; O'Neill, 2021). Tatyana (2004) notes that the aggregate economic growth within an economy over a given period of time is measured in terms of the Gross Domestic Product (GDP) or the Gross National Product (GNP) while noting that alternative metrics are also used sometimes. In simple terms, economic growth is the increase in aggregate production of goods and services within a given economy (Tatyana, 2004; O'Neill, 2021). This also implies that increase in capital goods, labor force, technology, and human capital can all contribute to economic growth estimated as the aggregate value of the goods and services produced in the economy and/or Gross Domestic Product (GDP). It is believed that economic growth leads to increase in purchasing power, incomes, employment and higher standard of living which in turn induce a decline in crime rates and youth criminality such as piracy and armed robbery attacks against ships involved in seaborne trade. O'Neill (2021) also notes that economic growth when sustained over the long-term leads to economic development, which is the process whereby low-income economies and nations are transformed into modern

industrialized economies. Thus economic development emanates through sustained economic growth and is the all-round transformation of an economy involving qualitative and quantitative improvements in both economic and non-economic indices such social welfare, employment and unemployment statistics, income levels, early childhood education and literacy levels, criminal justice systems reform, and other human capita development indices. Thus it is right to assert and expected that economic growth and development should cause a declining effect on youth unemployment rate in the economy, while also improving the output, income and living standard of the working population. This declining youth unemployment rate and improved income cum living standard should in turn induce a declining trend on youth involvement in criminality, sea piracy and armed robbery attacks against ships involved seaborne trade in the Nigerian territorial waters.

Youth unemployment in this context case is viewed as the percentage of youth between the ages of 15 and 32 years compared to the total work force that are ready to work but are still unemployed as a result of unavailability of employment opportunities in Nigeria. This is because most pirates and sea robbers involved in attacks against ships in the Nigeria waters are youth between those age brackets. Thus in this study, we used the growth in the Gross Domestic Product (GDP) over the years to represent economic growth while other economic indices such as the growth trend of revenue generation from maritime operations and youth

unemployment rates are also used respectively as indicators economic growth and the inability to translates such growth into improved economic empowerment (employment) cum better standard of living.

2.1.2 Concept of Sea Piracy and Armed Robbery

The International Maritime Bureau (IMB) defines piracy and armed robbery against ship as "an act of boarding or attempting to board any ship with the apparent intent to commit theft or any other crime and with the apparent intent or capability to use force in the furtherance of that act". The definition encompasses both actual and attempted attacks, whether the ship is in port, at anchorage, or in the high sea. Thus for documentation and data collection purposes, the act of sea robbery is viewed to constitute the same in the process of the crime as sea piracy whether committed outside or inside the 12 nautical miles zone of nation's territorial waters, the exclusive economic zone and the internal waters (Nnadi, Nwokedi, Ndikom, Onyemechi and Emeghara (2016). The legal differences between sea piracy and sea robbery however is that sea robbery against ships is committed inside the 12 nautical mile zones of a nation's territorial waters while only attacks committed outside of the territorial waters and outside the jurisdiction of a coastal state, i.e. in the high sea is considered piracy(Nnadi, Nwokedi, Ndikom, Onyemechi and Emeghara; 2016). IMB (2011) further defines piracy as any act of inciting or of intentionally facilitating an act aimed at forcefully boarding a ship with apparent intent to commit

illegal acts of violence or detention, or any act of depression, committed for purposes of private ends by the crew or passengers of a pirate boat or aircraft in the high seas. In this study, we use the word piracy to mean both types of acts (armed robbery and piracy). This is because, the statistical reports on sea piracy from the International Maritime Bureau and other sources upon which the study is based does not distinguish between the duo of piracy armed robbery attacks against ships.

Any study on Piracy begins with a problem of definition that has far-reaching political consequences. International law, as codified in Article 101 of the United Nations Conventions on the Law of the Sea, contains three criteria for the offence of piracy. It must be conducted (1) on the high sea against (2) another vessel and (3) for private gain (Smead, 2001). The definition used by the International Maritime Organisation (IMO) is broader, speaking not specifically of piracy, but of acts of armed robbery against ships or at sea, which also comprises attacks in territorial waters (including internal waters) and on vessels in port (Seltmann, 2007). This definition, too still presupposes private purpose. Maritime insecurity and attacks in ships in the Gulf of Guinea or Gulf of Aden, mingle around private and political motives.

There have been two distinct phases of piracy in the Gulf of Guinea, both originating off the coast of Nigeria. The first coincided with the oil boom in Nigeria in the 1960s, when small groups based out of Lagos and the south western coastline of the country began to prey on the commercial shipping traffic carrying construction supplies to the region.

Facilitated by the poor coastal and port security at the time, these attacks typically ranged from minor harassment and financial shakedowns to the theft of cargo and equipment (Mbekeani & Ncube, 2011; Nincic, 2009). Although the scale and organization of these attacks grew over time, their numbers declined through the 1980s in response to the fall in oil prices and the subsequent lack of targets.

Piracy rebounded in the mid-1990s following the government's latest round of oil licensing in1990 (Vaughan, 2011). Originating from the Niger Delta region, this second phase has witnessed a higher level of organization and violence than seen in the first (Murphy, 2011). Attacks have no longer been constrained to small-scale robbery, but have expanded to target the container ships and oil tankers in the region for the purposes of cargo theft and oil-bunkering (Smith, 2011). The rate of these attacks has also steadily increased over time, with spikes in1996, 2003 and 2007 (IMO, 2010). In 2011 in response to increased Nigerian naval patrols, the hot spot of these attacks appeared to shift down the coast to neighboring Benin and Togo, while attacks have also been reported in Cameroon, Guinea, and Côte d'Ivoire, among others. In August 2011, the Joint War Committee extended the high risk area to include Benin in addition to Nigerian territorial waters, resulting in higher insurance premiums for Transiting vessels (FP Marine Risks, 2012).The economic effects of piracy extend beyond littoral states to land-locked countries, which depend on these ports for their imports and exports. According to the United Nations assessment mission on piracy in the Gulf of Guinea, the annual loss to the economy of the West African sub region as a result of piracy is thus an estimated $2 billion (United Nations Security Council, 2012).

Moreover, the waters off Nigeria remain the deadliest in the world (Raidt & Smith, 2010), involving a level of violence not seen in the other region.

2.1.2.1 Historical Perspectives to Challenges of Sea Piracy and Armed Robbery in Nigerian Waters

According to Daniel (2008), after World War II these four factors began to encourage the activity of pirates. Technology has reduced the size of the crew, as well as a vessel's ability to defend itself. It has also improved the pirates‟ weapons of speed, shock, surprise, fire power and rapid escape, as well as the easier access to information about shipping plans and routes. At the same time there was a trend of reducing Navy forces. Dramatically decreased international ocean patrols and presence have left merchant vessels unprotected on the risky waters. Another reason of the increase in piracy is the fact that former colonies have not maintained their ties with home countries. These links brought stabilizing effects, including piracy problems. Now, former colonies have some financial inability to afford effective navy patrol.

To conclude, reasons why piracy occurs are political corruption, economics of the third world, willingness of shippers to pay the costs of piracy rather than higher insurance premiums and to avoid the political risks associated with reporting attacks and the failure to develop international protection agency and today’s small crews working on vessels as a consequence of cost saving tactics. Therefore pirates can come on board without ever being seen. In the crucial geographic areas, at the local level, no serious effort is made to prevent or to respond to piracy, due to the corruption of officials and simply insufficient

resources, police and military forces. Furthermore, last decade, there is an increase in the level of violence, use of weapons, technological equipment and launching speedboats from mother ships. Due to piracy reporting center's there is created more awareness to governments and they are forced to take action (Ong, 2004).

Petretto (2008) also states some causes and facilitators of piracy. First, piracy has a financial gain motive. Easy and low-risk profit making is the main reason for people to become a pirate. However, the amount of reported pirate attacks is different per region which proofs evidence, that there are more variables which have to take into account as an explanation for piracy. Busy sea routes and suitable geography do facilitate piracy as well. Ships which have to pass straits, islands or so called choke-points have to reduce speed and are therefore an easy target. These surroundings are also perfect hide-outs for pirates and their boats. Furthermore, conflict, disorder, poverty together with a weak security sector provides a breeding ground for piracy. On the one hand, when facing poverty and continuous disorder, people quite easily slide into illegality as a way to survive. Moreover, fishing-disputes are also a reason for piracy. Besides of that, piracy is also tied up ashore. First, there is a constant need of information about which vessel passes where and when, how large the crew is and what type of cargo is loaded (Ong, 2006).

Secondly, accessibility of shores or anchorages has to be provided. Therefore, well-guarded ports with strong security forces are not really an option. Thirdly, especially when vessel-, cargo- or oil theft is involved, pirates do not only need buyers for the stolen goods but also able persons to falsify official documents. The last factor, does link piracy to

international organized crime. Pirates are therefore considered a tip of the iceberg within a complex network of organized criminal activities all over the world.

The International Maritime Bureau (IMB) maintains statistics regarding pirate attacks dating back to 1995, while the International Maritime Organization maintains reports since 1984. Published figures on piracy may however not reflect the true extent of the problem. Some experts believe the true number of actual pirate attacks could be close to double the official numbers (Osler, 2008a). The IMB piracy reporting centre assumes that 50% remain unreported.

According to the International Maritime Organization (IMO), it is estimated that only one third of piracy incidents are reported. The studies of Daniel (2008) seem to agree with the IMO that pirate attacks against ships involved in seaborne trade in global sea-routes are generally under-reported when it estimated that only 10% of such attacks are reported by the shipping industry. Political reasons could prevent shipping companies from helping and mobilizing the local authorities. Munich Re Group (2012) mentioned that there were cases in which victims reported the attacks and then became involved in suspicious investigations or were even declared to be offenders themselves. The investigations could very lengthy as well. The associated loss of time leads that shipping companies not reporting an attack. It is therefore difficult to state any precise figures to the number of attacks (Osler, 2008b). Due to experiences in the past, it is not strange that shipping companies prefer to negotiate the release of crew, ship and their cargo rather than absorb the costs, both in time and money, of reporting acts of piracy to local authorities. Reporting

an attack to some local authorities is time consuming and can lead to a delay of several days.

Percival (2010), opines that the running sunk costs of a ship are approximately US $25,000 per day. Due to this fact it is, especially in smaller cases, cheaper not to report the incident. State authorities do not often report incidents that happened under their surveillance to international institutions, trying to minimize the risk of damaging the reputation of their harbor and sea routes. One good example is given by Hand (2008). He described that some Singapore-flagged ship owners were told not to report attacks to the piracy reporting center in Kuala Lumpur. Furthermore, the IMB is finding that attacks are not reported to it by rescue centers in the Asian region, but rather to the regional cooperation agreement on combating piracy and armed robbery against ships in Asia's Information Sharing Centre (ISC) in Singapore (Osler, 2008c). However, ISC is only open during office hours and does not play an active role in coordinating responses to attacks. Quick response can save seafarers lives and reduce the amount of financial costs. A list of reasons why shipping companies are reluctant to report attacks is mentioned below:

i. State authorities often do not report incidents that happened under their surveillance to international institutions trying to minimize the risk of damaging the reputation of their harbor and sea routes;
ii. Due to the fact that there are different official piracy definitions, it leads to underreporting of incidents of piracy in territorial waters if captains and/or state

officials act upon the UNCLOS definition and refrain from reporting them to the respective authorities;

iii. Some shipping companies only report to local institutions;

iv. Some shipmasters do not report pirate attacks because they expect that country's representatives cannot help them anyway.

v. Fear of companies regarding bad publicity to customers or media attention;

vi. Small vessels attacked, belonging to small companies, not often see any interest in reporting such attacks, or even do not know that these attacks can reported;

vii. In some areas when piracy takes place, it can happen that all people on board are killed and vessel seized. In case of a fishing vessel, no one will hear about this attack;

viii. In the highly competitive shipping industry, there is reluctance for shippers to report piracy incidents fearing missing contracts and fear that their customers will lose confidence in them;

ix. Shipmasters are aware of the fact that the more incidents are reported, the higher will be the costs of future risk insurances for the respective sea routes;

x. Shipmasters fear that being a victim of piracy reflects unfavorably on their discipline and watch keeping;

xi. Shipping companies believe that by highlighting themselves, their risk of further attack is increased;

xii. Some shipping companies only report bigger ones, because daily attempted attacks are too much time consuming to report every day;

xiii. Pirates themselves want to avoid attention as well.

As said, the International Maritime Organization maintains piracy reports since 1984. The reports of IMO contain the names and descriptions of the ships attacked, their positions at the time of attack and times of attack, consequences to the crew, ship or cargo and actions taken by the crew and coastal States to which the incidents were reported.

2.1.2.2 Dangers of Sea Piracy the Maritime Security concept

The concept of maritime security is viewed as a concept which that encompasses the processes and actions aimed at protecting the maritime domain of nations and investment at sea, from willful damage and destruction by either external of internal aggressors. Maritime security as a concept therefore entails the protection of the maritime environment and the related investments, human capital and infrastructure from willful attacks that could lead to injury, death, damage and/or other economic consequences. Acts of piracy, since its beginning which is traced back to when man started using the sea as a means of transportation, have posed a great danger to maritime navigation and security at large. The ships, cargoes and seafarers operating aboard the ships have been regarded as targets for attacks and hijack by the gangs of robbers and thieves. At the beginning the gangs of robbers were focused on stealing personal belongings from unlocked and untended cabins whilst alongside in certain ports but, in these decades piracy actions are conducted in a more organized way and in its growth using more advanced weapons and modern technology speed boats and other accessories associated thereto that enable the pirates to board the targeted vessel and accomplish their mission. Threats, force and violence is part

of the piracy mission and seafarers have been directly affected much by these conducts. This is uniform whenever and wherever happened around the world and it will remain to be the same and stagnant, so it is not about Somali piracy and piracy in the Gulf of Guinea coastal States alone. The target should be on the fight of crimes of piracy beginning with the Legal wing on the prosecution and punishment; as well as other wings.

According to the number of pirate attacks recorded by the International Maritime Bureau (IMB), Nigeria is the second most dangerous country in the world, after Somalia but before Indonesia and the Straits of Malacca since 2008. Such a fact is hardly disputed by academics and security analysts. Maritime piracy is supposedly on the rise and journalists are usually too happy to report on a worsening situation. Yet numbers do count and one can challenge the way they are produced, BIMCO (2008a).

The main source in this regard is the Piracy Reporting Centre based in Kuala Lumpur, Malaysia, since 1992. It depends on a Bureau, the IMB, established in 1981 by the International Chamber of Commerce (ICC) to act as a focal point in the fight against all types of maritime crime and malpractice. Its methodology relies on private sources that record the number of attacks on a voluntary basis (Abhyankar, 2012). From a geographical point of view, it covers the whole world. And it gets real time information supplied by maritime police or the victims of pirates.

Such a system has both advantages and limits. A commercial device, that is security oriented but it is not scientific. Set up in 1992, it does not give long-term trends. Moreover,

it ignores historical and social contexts. Its database is not available to the public and not open to crosschecking by academics. Last but not least, the IMB's figures raise several methodological issues that have to do with its indicator, the way statistics are produced, and the legal definition of judicial categories. According to section 101 of the 1982 United Nations Convention on the Law of the Sea, for instance, maritime piracy is limited to attacks that occur on "the high seas," "outside the jurisdiction of any state." Attacks that take place within the territorial waters are regarded as armed robbery. The IMB's definition is much larger in this regard, focusing on all types of maritime crime and malpractice within or outside 12 nautical miles.

But the main problem has to do with the indicator used by the IMB, for the number of attacks can be misleading. The issue is: Can we really compare the deliberate killing of a crew and the crash of two ships with no injuries? From the Stockholm International Peace Research Institute (SIPRI) to the Human Security Centre in Vancouver, most research centres specialized on armed conflicts does use the body-count as a reliable indicator, not the number of attacks. NigeriaWatch.org, for instance, records violent deaths off the Nigerian shore.

Finally, the way the IMB records attacks is also a problem, for it relies on "big" boats that use the Ship Security Alert System (SSAS). As a result, its panel is neither exhaustive nor representative. Indeed, the Global Maritime Distress Safety System is not compulsory for "small" boats. Many of them find its specific radio carriage requirements too expensive. Hence they cannot call for help when attacked. They simply are invisible in the statistics.

Regarding Nigeria, sources other than the IMB thus show that the main victims of pirates are fishing trawlers, not oil tankers or cargoes. This view is shared by the Nigerian Maritime Administration & Safety Agency (NIMASA), a public agency responsible for maritime safety administration in Nigeria; Nigerian Trawler Owners Association (NITOA) trade unions of trawler fishers; and the Nigerian Merchant Navy Officers and Water Transport Senior Staff Association. According to the chairwoman of NITOA, for instance, the fishing industry was so often attacked by pirates that it operated with only 150 registered trawlers in 2010, against 250 in 2003.This is because trawlers are soft targets, easy to climb. Unlike Southeast Asia, moreover, pirates seldom seize boats for their intrinsic value, but rather to extort ransoms. So they hardly try to attack oil super-tankers, since they cannot remove their cargo.

2.1.2.3 Understanding the Patterns of Maritime Piracy in Nigeria

The patterns of piracy in Nigeria are quite specific in this regard. Unlike maritime Southeast Asia, first, the Gulf of Guinea does not have many islets to shelter pirates lying in wait to attack boats outside of the Niger Delta. Historically, pirates used to ambush passing vessels in places like the Cawthrone Channel near Bonny, in between the sea and the river proper (Pohlit, 2014).

A legacy of the slave trade, war canoes levied "traditional duties" called *comey* during the colonial times. Such "security fees" resorted to a kind of protection racket in order to keep a monopoly on foreign trade and to tax Europeans that tried to reach markets in the hinterland. In the 1990s, for instance, coastal communities of the delta regularly attacked

passing boats on an ad hoc basis, following opportunities (Piercey, 2005). These pirates were akin to sea robbers and were not very organized, unlike the smugglers who operated from Oron to run all sorts of trafficking (including arms and refined oil) toward Cameroon. Armed fishermen would stay close to the shore, steal any valuables available, and share the booty with their relatives in the villages nearby: radio equipment, cash, telephones, and so on. But the stolen vessels were not seized, and their crew were not kidnapped for a ransom. In other words, it was petty theft, a bit like the sea robbers who still operate today around the Lagos anchorage, without any relation to Niger Delta militants (Pinto, 2015).

Since then, piracy has gotten more sophisticated. Technically, the introduction of cell phones helped to stage attacks. If pirates usually have no Global Positioning System (GPS), no night vision and no ladders to climb an oil rig or a supply boat, they modernized their weapons and their vessels. Pinto, (2015) reports that from street demonstrations and international lobbying to sabotages and armed struggle, the politicization of rebel and criminal groups certainly played an important role in this regard. Indeed, it explains why piracy shifted from Lagos to the Niger Delta. The pattern was quite different during the oil boom of the 1970s. In 1980 for instance, a year when the situation got so bad that the International Association of Port Authorities called for a boycott of Nigeria, the Lagos anchorage recorded 51 attacks, as against 6 in Port Harcourt and 3 in the rest of the delta.6 But nowadays, most attacks happen in the Niger Delta. This shift parallels the politicization and the sophistication of gangs led by uneducated people like Ateke Tom in Okrika, who got connected with the University of Port Harcourt's "cult societies." It also reflects the

militarization of the protest for a local control of oil resources under the aegis of the NDPVF (Niger Delta People's Volunteer Force) in 2004, then the MEND (Movement for the Emancipation of the Niger Delta) since 2006 (Pinto, 2015)..

Compared to the Biafra War in 1967–1970 or the Ogoni Crisis of 1995, the rate of homicides did not rise, but terrorist acts and "bunkering" became more common. As a result, attacks offshore got widespread, targeting oil platforms or big ships, and reaching the Bakassi Peninsula in Cameroon or even Bata in Equatorial Guinea (Pinto, 2015)..

Today, maritime piracy in the Niger Delta is not limited to petty crime anymore. It includes kidnapping, arms smuggling, and "bunkering," that is, the illicit tapping, theft, and sale of crude oil in big quantities (Pinto, 2015).. Generally speaking, pirates do not try to seize boats, even if they sometimes hijack a fishing trawler to attack other vessels, as they did with the Rose 4 in 2010. Despite media coverage, the kidnapping of the employees of transnational corporations is not a big business. Ransoms are usually paid in Naira because European companies are not allowed to import loads of cash in hard currencies. Therefore kidnappers do not need international connections to cash the mone. Apparently, their modus operandi is quite different from the one of bunkerers, drug dealers, or arms smugglers (Pinto, 2015). A famous arms trafficker like Henry Okah, for instance, started by selling guns to both the Istekiri and the Ijaw during the Warri communal crisis of 1997. He then organized connections in the Nigerian Diaspora in Britain and set up a base in South Africa, from where he supplied the MEND and maybe the Bakassi "freedom fighters" on the disputed border with Cameroon.

Likewise, bunkering is an international business where Lebanese or Eastern European "traders" finance tankers and export oil to refineries in countries like Ivory Coast or Senegal. It is quite different from the illicit tapping of pipelines for local refinement within the Niger Delta. Bunkering for international sale is organized on a much larger scale and usually goes together with the forgery of bills of lading to understate the amounts of oil actually and legally lifted for export.

As for the Nigerian partners and bunkers', they are unionized, must pay a fee to the Navy and have to "settle" (bribe) the local communities to have access to oil theft opportunities and negotiate an acceptable date for their operation, so that they are not disturbed by a naval presence. The larger barges cost more than $50,000 and carry up to 5,000 barrels. According to various estimates, between 100 and 250 million barrels of crude oil are stolen every year. With an average black market price of $25 per barrel in 2005, this represents an income of $1.5–4 billion, and a loss of $2.5–6.2 billion to the government and $121–302 million to the oil-producing companies (Pinto, 2015)..

In this regard, piracy, in all its various forms, is undoubtedly an affair of maritime "specialists," sometimes with international connections. Speaking about the Lagos anchorage, a NIMASA official claimed that it was simply "an extended version of crime onshore. "But since most Africans of the hinterland cannot swim, offshore attacks do not seem to involve many urban armed robbers. Around Lagos, a good number of pirates are young boys and fishermen from coastal communities. Likewise, sea robbers from the Niger Delta can swim and drive a speedboat (Pinto, 2015).. They connect with gangsters onshore

through the so-called cult societies, that is, mafias and students fraternities that draw their philosophy from the marine world. Active since the 1980s, these criminal organizations rely on national networks, supply weapons and bear names like the Pyrates (Seadogs), the Buccaneers, the Corsairs, and the Vikings, whose base in the University of Port Harcourt is coded "Alpha Marine."

Their rites are different from those of pre-colonial secret societies, yet invoke traditional divinities such as Egbesu, the Ijaw god of war. From Bonny, for instance, a female water spirit, *agaba*, inspired new lodges that extended up to the cities of Port Harcourt (with the Millennium Boys, 007, and Diobu United) and Calabar (with the Bayside Boys and the School Boys), then spread to Ibibio, Ogoni, Igbo, and Annang rural areas along a regional and cross-ethnic pattern of diffusion (Pinto, 2015)..

2.1.3 Concept of Economic Cost and Impacts of Piracy on the Commercial Shipping Industry

The majority of all international trade is transported by sea, both in terms of Value and weight (Mandryk, 2009). Also millions of people make use of maritime transport for travel and recreation (IMO, 2011). The presence of pirates in several regions around the world affects maritime transport in these respects. The economic costs and impacts of sea piracy on commercial shipping are derived from both the threat of piracy and the consequences of actual attacks. The threat of attacks has prompted changes in vessel management, including routing, speed and scheduling adjustments; provoked the application of various security measures, including the use of armed guards and the installation of citadels and

razor wire, among other equipment; and raised the cost of insurance, including both 'war risk' and 'kidnap and ransom' insurance premiums. The impact of actual attacks has resulted in the payment of ransoms for kidnapping and hijackings not covered by insurance; and incurred losses due to damage to or theft of the crew's belongings, cargo and the vessel (Oceans beyond Piracy, 2011a).

The 2010 and 2011 annual IMB reports on piracy and armed robbery attacks against ships clearly show that the majority of all reported piracy attacks are aimed at cargo vessels, once again illustrating the difficulties with self-reporting of pirate attacks. It also shows that most of the successful piracy attacks take place while the cargo vessels are at anchor and relatively close to shore. In most of these cases the goal of the pirates is to steal the ship's stores during which they attempt to remain undetected.

However, in the Gulf of Guinea in which Nigeria dominates the maritime affairs, pirates appear to take their time onboard and ransack the crew's quarters in search of personal valuables (IMB, 2011). In view of the above, we organized the economic cost and impacts of sea piracy and armed robbery against ships under the following headings as discussed below:

2.1.3.1 The Economic Cost and Impact of Piracy on Regional Economies

Countries bordering with Gulf of Guinea, suffers the greatest regional economic impact of piracy (IMB, 2011). From 2006-2018, piracy negatively impacted maritime trade, tourism, and stability in the Region, as discussed below.

i. The international community has increasingly taken note of piracy in the Gulf of Guinea due to the growing threat this activity represents, not only to the lives of sailors, but to both the regional and global economy. Due to the fact that they derive their profits from the sale of oil and other goods rather than the ransoming of hostages, pirates in the Gulf of Guinea have proven to be significantly more violent than their Somali counterparts. Vessels are frequently sprayed with automatic weapons fire, and the murder of crew members is not uncommon. Recent events indicate that these pirates are even willing to attack vessels with security personnel aboard, evidenced by the recent killing of two Nigerian sailors guarding an oil barge. Given that pirates are now adopting heavier weapons and more sophisticated tactics, this violence is only likely to increase.

ii. Beyond the bloodshed, the expansion of piracy in the Gulf of Guinea poses a dire threat to local economies, potentially undermining what little stability currently exists in the region. Oil revenue, which many countries in the region rely upon, is seriously threatened by pirate activity; 7 percent of Nigeria's oil wealth is believed lost due to such criminality. Additionally, instability in the Gulf has sharply decreased revenue collected from trade; Benin, whose economy depends on taxing ships entering the port of Cotonou, has experienced a 70 percent decline in shipping activity due to piracy. Furthermore, as piracy drives up insurance premiums for international shipping companies, the price of imported goods in the region could spike, further imperilling local economies. If these local economies falter, development and stability in the region could quickly deteriorate.

iii. However, the effects of piracy in the Gulf could well extend far beyond Africa, with potential ramifications for the larger global economy and the United States in particular. The estimated 3 million barrels of oil produced daily by the nations around the Gulf ultimately feed the North American and European markets. Nigeria alone is the fifth-largest supplier of oil to the United States and by 2015 could account for a quarter of U.S. oil consumption. However, given the rate at which attacks on oil tankers are increasing, the ability of these nations to reliably provide oil to the international market could be in question.

iv. Early 2012 saw a doubling in the number of attacks on oil tankers, with as many as eight hijackings in a month. If this dramatic trend continues, the flow of oil from the Gulf of Guinea to the United States and the West could slow considerably (IMB, 2011).

2.1.3.2: Economic Impact of Piracy on Nigeria Trade

Nigeria's Niger Delta region; the vast, complex and largely un-policed network of creeks and waterways that traverse the region makes it a suitable environment for pirates and other criminal gangs. Furthermore, it is home to a sizeable population of unemployed youths, many of whom have been schooled in the dark arts of militant gangsterism and insurgency, and are ready recruits for the lucrative ventures in piracy (IMB, 2011).

Let us also note that the conflict belt of civil strife in the West African sub-region running through Liberia, Sierra Leone and Cote d'Ivoire has spawned thousands of young veterans, unemployed yet proficient in the use of firearms that form an army of potential and actual

recruits for piracy. The high level of youth unemployment in coastal areas like the Niger Delta incentivizes the perception of crime as a career option. Piracy is a lucrative craft and its practitioners stand out in an impoverished community as exemplars of affluence, conspicuous consumption and eventually as "role models" to impressionable youngsters. Under these circumstances, youths are likely to abandon school to enlist in pirate navies. The net effect is the meltdown of community values and the rise of anarchy.

The most direct and obvious consequence of piracy is economic. Nigeria loses $25.5 billion annually to piracy in its coastal waters. Much of this loss revolves around the theft of crude oil now put at 300, 000 barrels per day or 12 percent of daily production. Between 2003 and 2008, illegal maritime activities cost Nigeria $92 billion (IMB, 2011). The threat of piracy is of grave concern to ship owners and to those who hire ships. Ship owners sustain heavy losses on hijacked ships which are demobilized for a long time. This is compounded by the threat to the crew. These factors are increasingly compelling mariners to avoid routes that pass through Nigerian waters, while vessels find it difficult to crew ships.

Piracy also exerts an indirect impact on the Nigerian economy. It has disrupted Nigeria's commercial fishing industry (OECD, 2003). Although the domestic fish market accounts for just 20 percent of all the fish consumed in Nigeria, that percentage has steadily decreased over the past five years as a result of the rise in piracy, according to a 2007 study by the United States Department of Agriculture. This has resulted in a sharp decline in fish consumption, now put at 7.5 kg annually, well below the 13 kg recommended by the FAO. Nigeria now imports between 700,000 and 900,000 metric tons of fish at the cost of over

N50 billion annually to make up for this shortfall – an enormous outlay that is perforating the nation's finances. Thus, we see that the impact of piracy extends well beyond the province of maritime security to economics, in terms of lost jobs in the commercial fisheries sector, to even nutrition by reason of its impact on the local availability of fish proteins for our children (IMB, 2011).

2.1.3.3 Impact of Piracy off the Horn of Africa

The strategic location of the Horn of Africa increases its importance for international security and commerce. The northern coastline of Somalia lies to the south of the Gulf of Aden, a key transit zone for ships passing to and from the Red Sea and the increasingly active port of Djibouti. The U.S Department of Energy estimates that 3.2 million barrels of oil per day transited the Bab el Mandeb strait between the Gulf of Aden and the Red Sea in 2009.The Indian Ocean waters off the southeast coast of Somalia are home to busy shipping lanes for trade between Asia and East Africa, as well as for ships making longer voyages around South Africa's Cape of Good Hope (IMB, 2011).

Ship traffic to and from the Kenyan port of Mombasa is particularly vulnerable to security disruptions in the west Indian Ocean. The Maritime Administration testified in 2009 that: On average, at least one U.S. commercial vessel transits the area each day. Many of these US-flag vessels carry Department of Defence cargo bound for Operations Iraqi and Enduring Freedom . U.S.-flag vessels transiting the region also carry humanitarian cargoes

generated by U.S. AID or international organizations to the Horn of Africa, including Djibouti, Somalia and other countries in East Africa or South Asia (IMB, 2011).

A recent study conducted by the One Earth Future Foundation estimates that maritime piracy costs the international community between $7 and $12 billion per year. As the study notes, the threat of pirate attacks in the region inflicts direct costs, including insurance, ransoms, self-protection measures, rerouting, naval operations, and piracy prosecutions. Piracy also imposes secondary costs, having a macroeconomic impact on regional trade, on the region's tourism and fishing industries, and on food prices (O"Meara, 2007).

2.1.3.4 Economic Implication of Maritime Piracy on Africa

The resurgence of pirate attacks in African waters is now a subject of serious concern to African states and indeed the international community. For the last decade, piracy in African waters is concentrated in three main regions, namely the Somali coast/the Gulf of Aden along the East African Coast; Nigeria's territorial waters in West Africa; and the Mozambique Channel/Cape sea route in Southern Africa (Onuoha, 2012).

Since 2007 when African waters overtook waters off Southeast Asia – Indonesia, Malaysia, Singapore, and Philippines – as the traditionally dangerous hotspots of global piracy, much of the international attention and efforts at countering piracy in Africa have been on Somali maritime piracy. This is understandably so, because piracy off the Somali coast accounts for more than half of pirate attacks recorded annually in Africa, if not globally. For instance, there were 439 piracy attacks worldwide in 2011, more than half of which were

attributed to Somali pirates operating in the Gulf of Aden, the Red Sea, the Arabian Sea, the Indian Ocean, and off the coast of Oman (Alessi, 2012). The spike in attacks prompted the deployment in 2008 of an ongoing international coalition of navies to fight Somali piracy. There is growing awareness that the vast resources and potential in the Gulf of Guinea and Gulf of Aden are being undermined by multifaceted domestic, regional and international threats and vulnerabilities. Rather than contributing to stability and economic prosperity for countries in this sub-region, pervasive insecurity in this resource-laden maritime environment has resulted in more than $6 billion in annual financial losses, significantly constrained investment and economic prospects, growing crime and potentially adverse political consequences. Historically, the concept of security has had two broad characteristics in many African countries. First, security has been associated with the perpetuation of a regime and not necessarily the welfare of a country and its inhabitants. Secondly, the focus has been primarily land-centric, because regime security to check pirates has seldom had a maritime dimension. Consequently, maritime security arrangements in the Gulf of Guinea and Gulf of Aden are under-resourced and have received scant policy attention.

2.1.3.5 The Cost of Ransoms

One of the most spectacular increases in the cost of piracy in recent years has been the increasing price of ransoms paid to release hijacked ship. Ransoms are generally sought by Somali pirates. Pirates in the other regions have more often stolen the vessels or cargo, rather than ransoming the value of the seafarers' lives and their ship.

In November 2010, the highest ransom on record $ 9.5 million, was paid to Somali pirates to release the (Samho Dream) South Korean oil tanker (BBC, 2010). Indeed 2010 set a remarkable record for the cost of ransoms, with the year kicking off to a $ 7 million ransoms paid in January to release the Greek super tanker (MV Moran Centaurs'), which had been carrying $162 million of crude oil from Saudi Arabia to the United states (Baldauf, 2010). The ransoms demonstrated the exponential increase in the price of ransoms in recent years. In 2005 ransoms averaged around $150.000(Payne, 2010). By 2009, the average ransom was around $ 3.4 million. In 2010, ransoms are predicted to average around $5.4 million (Sanders et. al, 2010).

Problematically, increasing ransom payments appear to be lightening negotiations and therefore the duration seafarer's are held hostage; the average length of negotiations has more than doubled over the past year as pirates seek and receive, larger ransom payments. Ships were held for an average of 106 days between April and June of 2010, up from just 55 days in 2009 ,and the last four ship release in November 2010 were held for an average of 150 days (NPR, 2010). Seafarers now face the likelihood of three tour month captivity.

The total cost of ransom is estimated to be around double the value actually paid to pirates. The total cost is duplicated by a number of factors such as; the of cost of negotiations, psychological trauma counselling, repair to ship damage caused while it is held captive, and the physical delivery of the ransom money, often done by helicopter or private plane (BBC News, February 5, 2009). Finally, large costs result from ship being held and out of

service for instance, it cost around $3milllion for cargo ship to be held for two months at a charter hire rate of $50,000 per day (Kraska, 2011).

Table 2.1: Cost of Somali Piracy Ransoms 2009 and 2010

	Average Ransom	**Total Number of successful Hijacking**	**Cost of Ransom**
2009	$3.5 million	52	$ 177 million
2010	$5.4 million	44	$238 million
	Cost of Ransoms 2009 and 2010		$415 million

Source: IMB, 2011

2.1.3.6 Increasing Trend in the Cost of Purchase of Insurance Policy

In reaction to the growing threat and cost of ransoms, the maritime insurance industry has responded by increasing its shipping rates and premiums, especially in designated high-risk piracy zones. Shipping insurance comes in four main types; war risk, kidnap and ransom, cargo and hull insurance

i). War Risk: War Risk insurance is an excess charge for a vessel transiting a war risk area. The Gulf of Aden was classified as a war risk area by Lloyd's market Association (LMA) joint war committee in May 2008. Since this date, the cost of war risk premiums have increase 300 fold (insurance broker marsh McLennan, June 26, 2009), from $500 per ship, per voyage, to up to $150 per ship, per average, in 2010 (UNODC). Other regions

affected by piracy have also been classified as war risk zones in the past, such as the Malacca strait between 2005 and 2006.

ii). Kidnap and Ransom (K&R); Generally K&R insurance covers the crew against ransom demand, but not the vessel or cargo. However, some marine insurance policies have recently expanded to include both crew and property. Insurance giant Munich Re-estimates that K&R premium increased tenfold between 2008 and 2009 (GIRO, marine piracy 2010).

iii). Cargo; Cargo insurance covers goods transported by a vessel. The excess premium on cargo transiting piracy region is estimated to have increased by between $25 and $100 per container in the few years (Emmanuel, 2010).

iv). HULL: Hull insurance covers physical damage to the ship, including harm from heavy sea, collision, sinking, collapsing, grounding, fire or piracy. It estimated that piracy has doubled the cost of hull insurance. In calculating the global cost of maritime piracy, we take the largest insurance premiums related to piracy (War risk and K&R) and multiply these rate by 90% of the total ship traffic transiting the high risk region of the Gulf of Aden (around 30,000 ships). We deduct 10% of ship traffic under the assumption that this proportion of ships opts to re-route around the Cape of Good Hope, and is therefore not liable for insurance premiums.

Table2.2: Cost of excess insurance premium from transiting around the Horn of Africa.

	2009	**2010**

Kidnap & Ransom surcharge	$340 million	$540 million
War Risk Premium Surcharge	$4.05 billion	$4.05 billion
Total Insurance costs (if all ships purchased	$4.59 billion	$4.59 billion
Lower Bound Estimate (10%)	$459 million	$459 million
Upper Bound Estimate (70%)	$3..213 billion	$3.213 billion

Source: IMB 2011

In the war risk region, note that as piracy continues to increase across the globe, and insurance against piracy attacks becomes an increasingly lucrative business, we may witness premiums actually decrease as competitors move into the market. As one marine underwriter at Lloyd's of London stated, "Traditional carriers have been cutting each other so much to get the premium in that the price has fallen off the end of a cliff (Bandel & Crowley, 2008).

2.1.3.7 The Cost of Vessel Re-Routing

For some vessels, especially low and slow moving ships, which are at the greatest risk of piracy attack, avoiding risk zones altogether may be a safer or cheaper option. For example, some ships may opt to avoid the risk of transiting through the Gulf of Aden and Suez canal, and instead take the longer voyage around the cape of good hope while robust data on the proportion of ship owners and masters who re-route their vessels via this longer route is not readily available, some companies have announced that they are diverting their fleet. For example, AP Moller Maersk, European largest ship owner, is diverting all 83 tankers, as are the Norwegian stole tanker fleet, Odell shipping group (with a fleet of 90 tankers), and frontline.Also, Egypt's Suez Canal revenue (fees collected from ships transiting the Suez Canal) has decreased by 20% in the past couple of years (Sulliyam, 2010).

We hypothesize that around half of this figure (10%) is a result of reduced shipping volume related to the recent global economic down turn. Therefore, we speculate that around 10% of shipping traffic avoids transiting this region as a result of the threat of piracy. Re-routing ships via this longer voyage also has its costs. Routing a tanker from Saudi Arabia to the United States via the Cape of Good Hope, add about 2,700 miles to the voyage (MARAD, 2008). A re-routing from Europe to the Far East will add almost six extra days to a journey for a liner or up to 15 to 20 days for a cargo ship (Ben, 2009). This excess duration of transit time reduces vessels annual voyages from six to five, equal to a 17% reduction in its yearly delivery capacity (MARAD).

Using assumption above that 10% of ships opt to take the longer route, we work out the lower bound estimate by multiplying the cheaper ship to re-route (the 300,000 DWT VLCC) by 10% of ships transiting the Gulf of Aden region (3,000 ships), which amount to around $2.34 billion per year. The same for the more expensive ship to re-route (the 10,000 TEU ship) which amount to around $2.95 billion per year. Therefore, make a rough estimate that the shipping industry pays around $2.3 to $3 billion per year to re-route ships to avoid piracy each year (business Daily March 9, 2010).

Table 2.3 Costs of re-routing, selected ships

Ship Cost: Hire and Fuel	**Cost per day**	**Excess Cost for 10 days voyage**	**Cost if 10% of ship re-route**
300,000 DWT VLCC Charter Hire	$30, 000	$300,000	$900 million
300, 000 DWT VLCC Fuel	$48,500	$480,000	$1.44 billion
Total cost per day; 300,000 DWTVCLL	$955,000	$9,550,000	$2.34 million
10,000 TEU container ship Charter Hire	$40,000	$400,000	$1.2 billion
10,000 TEU container ship fuel	$58,200	$582,000	$1.75 billion

Total cost per day; 10, 000 TEU	$100,000	$1,000,000	$2.95 billion

Source: IMB, 2011

2.1.3.8 The Cost of Deterrent Security Equipment

Ship owner may also attempt to protect their property and crew from pirate attacks by preparing their ships with security equipment and/or personnel prior to transiting a high risk zone. Robust data on the proportion of ships purchasing deterrence equipment, and the type of deterrence equipment, is not easily accessed. Nevertheless, average cost of deterrence equipment and personnel are listed in table 2.4 below. These rates reflect cost for equipment used to transit around the Horn of Africa. Since this is the area that the ship owners would likely be most interested in purchasing deterrent equipment.

The OFF cost of piracy model estimate that if a ship were to purchase all forms of security equipment and personnel, on average, they would pay around $134,000 per transit then multiply this by 90% of the total ship traffic transiting the Horn of Africa (we deduct 10% of the total shipping traffic, under our earlier assumption that this proportion might opt to re-route the cape of Good Hope, therefore, avoiding having to purchase security equipment to transit the high risk zone of the Horn of Africa).

Just as for the cost of insurance premiums above the approximate a lower bound (10% of ships) and an upper bound (70% of ships). Estimate for the total cost of deterrence equipment to the shipping industry. We calculate that the total cost of deterrence equipment to the shipping industry is between $360 million and $2.5 billion per year.

Table 2.4: Deterrence Equipment and personnel cost

EQUIPMENT	COST
Licensed Security Guards	$80,000 (MARAD)
Sonic Deterrent Equipment	$1.250 (MARAD)
Barbed / Razor Wire	$12,000 (MARAD)
Sand bags	$1,200 (MARAD)
Electric Fences	$40, 000 (MARAD)
Total per ship, per transit	$134,450
Total Security cost if all purchased per years	$3.6 billion
Lower Bound Estimate per year	$363 million
Upper Bound Estimate per year	$2.5 billion

Source: MARAD, 2010

2.1.3.9 The Cost of Policing, Militarization and Naval Forces

Over 27 countries currently contribute naval forces towards piracy deterrence. Most military and naval attention is devoted to the horn of Africa where "the big three" anti-piracy missions are focused operation Atlanta, operation ocean shield, and combined task force (LTF) 151 operation Atlanta was launched in November 2008 by the European union with the primary goal of protecting world food program vessels delivering aid to Somalia, as well as other shipping in the region operation ocean shield is a NATO initiative to protect shipping in the region, with a current mandate to the end of 2012 CTF 151 is the multinational task force in January 2009 in the Gulf of Aden and eastern coast of Somalia.

Together the three military efforts make up over 43 vessels operating off the horn of Africa and the Indian Ocean. We take the estimation giving by the 2010 Government Accountability office (GAU) report on maritime security that one US Navy vessels cost around $ 82, 794 to operate per steaming day. Multiplying this by the total 43 vessels deployed, and 365 days, we approximate the cost of these military vessels to be around $

1.3 billion per year. Adding in the administration budgets of the three major missions, along with additional in depended expenditures from other nation, we have to a rough estimate of $ 2 billion being spent on military operating in the region every year.

2.1.3.10 The Cost of Piracy Prosecution

Under universal jurisdiction for piracy, any state came prosecute the crime regardless of whether it has a direct nexus e.g nationality of the ship owner, nationality of the criminal, nationality of the crew to the act. Due to the low prosecution capacity of counties where pirates originate (such as Somalia), the international community has lent financial support to regional counties to encourage them to conduct piracy trials and some cases, imprisonment for example in recent years, Kenya and the Seychelles have signed memorandums of understanding with the Europeans union, united states, united kingdom, Canada, Denmark and Australia, stating their willingness to accept for trial. The table below shows the prosecution of Somalia pirates under-taken by different countries.

Table 2.5 Somalia Piracy Prosecution

COUNTRY	TRIAL SUSPECTS	PROSECUTION
Kenya	136	136
Seychelles	40	22
Somalia / Portland	260	235
Somaliland	100	78
Maldives	27	-
Tanzania	1	
Yemen	120	12
Netherlands	25	5
France	6	6

Germany	10	10
U.S.A.	11	3
TOTAL	752	507

Source: BBC, 2010

We estimate the cost of piracy prosecution each year by multiplying the average cost criminal prosecution in regional nation i.e. Kenya, the Seychelles and Yemen, North America and Europe and number of prosecution occurring in each of that respective region as shown in the table below. From these rough calculations and estimates indicates t that the cost of piracy prosecution 2010 was around $31 million.

Table 2.6 Total Cost of Prosecution 2010

Region	**Prosecution**	**Average Cost**	**Total Cost Prosecution**
Regional	483	$52,000	$25,116,000
Europe	21	$246,000	$5166,000
North America	3	$335,733	$1,007,199
Total Cost of Prosecution	$31,289,199		

Source: The Associated Press, AP 2010

2.1.4 Approaches and Measures Towards Combating Piracy and Maritime Insecurity

The increase in acts of piracy has led to enhanced cooperation at international and regional levels. Joint efforts are being made in various forums to find adequate solutions to piracy. Capacity Building by IMO In 2009 the IMO's Maritime Safety Committee approved revised guidance to operators: "Recommendations to Government for preventing and suppressing piracy and armed robbery against ships' and "Guidance to ship owners and ship operators, shipmasters and crews on preventing and suppressing acts of piracy and armed robbery against ships. "The Committee also agreed that a specific "Guidance on

piracy and armed robbery against ships in waters off the coast of Somalia" should include "Best management practices to deter piracy in the Gulf of Aden and off the coast of Somalia" which was developed by industry organisations (AP. 2010). As part of its technical cooperation programme, IMO is assisting countries to build capacity, so that they can effectively contribute to overall efforts to combat piracy, including through relevant national legislations. Some of the efforts gears towards dealing with piracy and insecurity in global waters are discussed below:

2.1.4.1 Regional Cooperation among Maritime nations within the same Region

The Djibouti Code of Conduct In 2009 a high-level meeting of 17 countries from the Western Indian Ocean, Gulf of Aden and Red Sea areas met in Djibouti and adopted a "Code of conduct concerning the repression of piracy and armed robbery against ships in the Western Indian Ocean and the Gulf of Aden". Signatories to the code of conduct agree to undertake wide-ranging commitments to cooperate in seizing, investigating and prosecuting pirates in the region, and to review their relevant national laws. The code of conduct allows authorized officials to board the patrol ships or aircraft of another signatory. Nine countries have so far signed the code of conduct. These include: Djibouti, Ethiopia, Kenya, Madagascar, the Maldives, the Seychelles, Somalia, Tanzania, and Yemen.

2.1.4.2 International Cooperation

United Nations Recognizing the seriousness of maritime piracy in the Gulf of Aden, the Secretary-General of the United Nations has called fora multifaceted approach to

combating piracy "to ensure that the political process and the peacekeeping efforts of the African Union and the strengthening of institutions work in tandem". The United Nations Security Council has been actively engaged in formulating adequate responses to the issue of piracy. Several UN Security Council resolutions have been adopted to address the delivery of humanitarian aid to Somalia and the protecting and escorting ships employed by the World Food Programme. In January 2009 the Security Council (resolution 1851) established the contact Group on Piracy off the Coast of Somalia to facilitate discussion and coordination of actions among states and organizations to suppress piracy off the coast of Somalia. The contact group periodically reports progress to the Security Council. In support of UN Security Council resolution 1851 and the EU-NAV for Somalia set up in 2008 to improve maritime security off the Somali coast, the European Union has established the Maritime Security Centre (Horn of Africa) as part of international efforts to coordinate efforts to deal with piracy. The Centre is part of the European Security and Defence Policy Initiative which provides a service to mariners in the region (AP. 2010).

2.1.4.3 Role of the Bank in Combating Piracy

The impact on sea borne trade and maritime economic opportunities pose serious challenges to Africa's development agenda. The Bank can play an important part in combating piracy. For example, Banks get involved in the fight against sea piracy and maritime insecurity via the production of knowledge products.

During the US Africa Command-organised maritime security conference in October 2010, the AU Commission deputy chairman Erastus Mwencha underscored that "the leading

threat to Africa's maritime domain however remains the threat of ignorance. Until there is a true under-standing of the geostrategic importance of Africa's maritime domain for Africa's socioeconomic development growth, until there is a true understanding of how central it is for the wellbeing and prosperity of millions of Africans, the scope and magnitude of all the aforementioned threats and vulnerabilities will continue to grow and undermine Africa's socio-economic development growth" (AP. 2010). The Bank could monitor and report on the impact of piracy. Such knowledge products could raise awareness of the importance of maritime security to Africa's economic growth and the seriousness of maritime piracy to economic growth in Africa. The Bank can work closely with the IMO which records incidents of piracy.

Banks also assist in the fight against maritime insecurity by contributing financial resources for fighting piracy The Bank should support the African Union (AU) in the development of an integrated maritime strategy to serve as a long-term multi-layered common vision to addressing seaborne challenges and sustain more wealth creation from the oceans and seas. The long term solution to the problem of piracy off the coast of Somalia is through the creation of economic opportunities so that the youth could be meaningfully employed. The Bank can also contribute to capacity building efforts led by IMO.

2.1.5 Other Direct and Indirect Effects of Modern Maritime Piracy

2.1.5.1 Direct Effects

The continuing threat of piracy raises the cost of undertaking trade through a range of indirect and direct effects. Examples of direct effects are robbery and ransom payments due to losses of safe and cash money, losses of ships and cargo and additional pay for

crews. Indirect effects are for example security costs incurred in the fight against piracy and higher insurance premiums in the dangerous areas.

Possible effects are summed up below, starting with the possible direct effects:

i. Delays caused by attempted attacks themselves due to escaping maneuvers;
ii. Damage to the ship or cargo incurred in the attack;
iii. Loss of safe and cash money;
iv. Loss of cargo;
v. Loss of hire;
vi. Loss of operation during the attack and investigation procedures;
vii. Loss of the whole ship as a cause of hijacking;
viii. Kidnap and ransom money for ship and seafarers;
ix. Investigation costs;
x. Costs of negotiating and delivering the money;
xi. Contractual penalties due to delayed or damaged delivery;
xii. Cargo fraud with phantom- or ghost-ships.

With daily vessel operating costs ranging from US $10,000 to US $50,000 or more, spending a week in a port while sometimes untrained or corrupted local police doing their investigation will usually cost a lot more in lost time than a small pirate attack itself.

2.1.5.2 Indirect Effects

i. Security costs

To minimize the risks associated with pirate attacks, such as shipping companies facing additional cost of transport due to ship re-routing and additional security measures, additional expenditure may be encountered in hiring security guards, crew training and defensive equipment, extra insurance, among others, which will at the long-run have effect on the cost of transportation of consignments by sea and the prices of imported goods and raw materials.

Possible effects which can mentioned include: Costs incurred in the fight against piracy; Additional security measures; Additional security costs; Increase transport price, Insurance costs

According to Munich Re Group (2012), it is far more difficult for the insurers to reduce the incurred loss then for their clients. Insurance companies on becoming aware of upsurge in pirate attacks piracy in regional waters will increase the insurance premium for transits across such regional waters. Shipping companies have insurance, but according to the IMB, kidnap and ransom premiums will rise higher and higher. Today, according to the IMO, US $1.5 million dollar is estimated for ransom money per attack. The transport price could rise due to this phenomenon. In no doubt, shipping has become more expensive as companies began paying ransoms and higher insurance premiums to protect their ships, cargoes and crews (Reyes, 2008b). Possible effects in respect to insurance costs are: Higher

premium in piracy-prone areas; Additional kidnap and ransom insurance; Additional costs; Change in trade routes A possible effect could be that shipping companies avoid servicing in piracy-prone areas or that they change their steaming routes. If risks continuous in Southeast Asia, shippers may instead sail south of Indonesia to avoid the dangerous region and increase their prices to finance longer routes (Rodrigue, 2016).

Procedures of the IMO change continuously. The official warning today is to sail 250 nautical miles of the East coast of Africa. This will lead to non-optimal economic routes and a price increase of maritime transport (Roach, 2014).

Effects of change in shipping routes are: Longer distance; longer travel time; avoiding some ports; Increase costs; Increase transport price, Arbitrariness of piracy

Luft (2004) stated that piracy is especially dangerous for energy markets. Most of world's oil and gas is shipped through the dangerous piracy-prone regions. Targets of piracy attacks include most classes of vessels. Though, when it comes to cargo, chemical product tankers are one of the most interesting targets. In relation with the increased competition in energy markets, this can also have an effect on world's oil price. This could be a dramatic consequence of attacks on oil tankers where pirates pumping fuel to their own vessels.

Today, this has become a serious coordinated business at the East of Africa. Inthe end, the consumer will pay these kinds of additional costs. Large ships with freeboard (distance from the water line to the deck) of more than 10 meter and speed above 20 knots (37 km/u) are more difficult to capture for pirates. Easy targets are small container vessels with low

speed and a small freeboard. The question will be, if piracy has more effect on shipping companies with smaller vessels in their fleet or that in general the strongest players will survive. In that case, according to Berkeley (2005), only the most expensive or well-equipped shipping companies will find it economically feasible to bring imports into piracy-prone waters.

As a result, due to the possible arbitrariness of pirates, the following effects can mentioned: Increased competition energy markets; Increase world's oil price; Increase general price levels; Change in level playing field; Specialization.

2.1.5. 3 Reputation damage

Doing business in a more risky environment could lead to higher investment risk premiums. Furthermore, crew impact of piracy can be enormous. Attacks, hostages, injuries, risk of being killed and traumas will lead to possible claims for damages by members of the crew and their relatives. Working in such environment will be less pleasant and can lead to a smaller labour market for the shipping industry. Present day pirates taking advantage of the small size of the crew on modern cargo vessels. Shipping companies have to re-think about the size of their crew. Possible effects are: Increasing investment risk premiums; Crew impact; Claims of crew and family, smaller labour pool; less quality maritime transport service; increased workload on board; double-pay danger money; Additional costs; Increase transport price.

2.1.5.3 Associated Liability with Maritime Transport

Pirate attacks against vessels can be used as a political tool to disrupt vessel passage through certain maritime bottlenecks (OECD, 2012).This is especially true in the case of the strategically important Malacca Straits where most Middle-East oil exports to Asia and most commerce between Asia and Europe pass. Due to fear of bottlenecks and changing steaming routes, it will lower the liability of maritime transport. It could create the need to count with higher inventory levels due to the potential piracy to cause bottlenecks in world's delivery systems. This will reduce the benefits of just-in-time manufacturing processes and undermining supply chain management. Effects are summed up thus: Lower liability maritime transport; Costs of higher inventory levels; Less (grow) of demand maritime transport notes Nnadi *et. al.*(2016).

2.1.5.4 Environmental Impact

Piracy could lead to environmental disasters with oil tankers. There are known cases where the bridge left unmanned after an attack. Collision with another vessel or grounding could lead to environmental disasters. The costs of these kinds of disasters can be considered as tremendous (Nightingale, 2006). Effects are: Environmental and ecological catastrophe and Major chokepoint closed for a long period of time.

2.2 Theoretical framework

2.2.1 The Routine Activity Theory

Essien and Adongio(2015) note that the basic perspective for analyzing the substantive issue of sea piracy and armed robbery against ships is anchored on the Routine Activity

Theory (RAT). The routine activity theory (RAT) is an offshoot of the socio-structural theory advanced by Colhen and Felson. Igbo (2008) as reviewed in Essien and Adongio (2015) adds that the routine activity theory explains crime as a product of the combined result of three associated elements namely:

(1) Potential offenders or persons who are motivated to commit crimes,

(2) Suitable targets; that is the presence of things that are of economic value and which can be easily transported,

(3) Absence of capable guards or persons who can prevent a crime from taking place. Note that the proposition put forward by RAT explains the factors that prompted the occurrence of pirate attack in Nigerian maritime domain and the attendant threat to maritime security in the Gulf of Guinea. Principally, the preponderance of suitable targets (fishing travelers, oil tankers, commercial non-oil carriers, oil installations of multi-national oil companies, foreign expatriates for kidnap, etc.) according to routine activity theory is a motivator that has sustained the occurrence of pirate attacks. Another problem is too weak maritime security apparatus and the near unavailability and inadequacy of competent security personnel/network to safeguard the maritime domain. There also exists a large army of unemployed and underemployed youth seeking for satisfactory means of economic fulfillment (NUMAST, 2004). These factors have over the years fully activated and sustained pirate attacks in Nigeria maritime domain and the gulf of Guinea. The routine activity theory (RAT) concerns itself with explicating the individual motivational factor in crime causation which other traditional sociological theories of crime do not. Its main

preoccupation is to emphasize on how ordinary or normal lawful conventional, routine activities of individuals increase the probability of criminal activity.

2.2.2 Frustration Aggression Theory (FAT)

The frustration aggression theory has its roots in the works of Miller and Dollard (1941). They led a research group at the Yale institute of human relations and published a monograph that is useful in explaining human conflict behavior. It is based on the hypothesis that human frustration may lead to aggressive behavior (Miller and Dollard, 1941). Several studies have agreed that frustration ultimately leads to aggression and aggression always implies that frustration has occurred at some previous times (Miller and Dollard 1941). According to the theory, people become aggressive they experience obstacles. Bushman and Huesman (2010) looks at aggression as a behavior intended to harm another person who does not want to be harmed. In the context of piracy and armed robbery attacks against ships involved in seaborne trade in Nigeria waters, the frustration aggression theory becomes a perfect theory to explain why the unemployed youths of the coastal regions of Nigeria took to arms against maritime operators in the region leading to widespread maritime insecurity. The frustration of the youths, occasioned by economic deprivation by the government and multinational oil companies in the maritime sub-sector, even in the face of economic growth and boom has led to the aggression and the resultant orgy of violence and incessant attacks against ships of all kinds trading

in the regional waters. This viewpoint is echoed by many public opinion analysts who opine that the quest for economic emancipation which lies at the heart of the unemployed youth is a protest against criminal economic neglect and deprivation. The literature documented the disappointment and frustration of the youth of the coastal regions of Nigeria which has manifested into maritime insecurity, sea piracy and armed robbery attacks in the regional waters of the Gulf of Guinea.

2.2.3 The Resource Dependency Theory

This viewed expressed in the study can also be explained in the light of the resource dependency theory. Resource dependency theory has its origins in open system theory as such organizations have varying degrees of dependence on the external environment, particularly for the resources they require to operate (Pfeffer & Salancik, 2003). This therefore poses a challenge of organization facing uncertainty in resource acquisition (Ulrich, & Barney 1984 as cited in Pfeffer & Salancik, 2003). and raises the issue of firm's dependency on the environment for critical resources (Pfeffer & Salancik, 2003).

The external control of these resources may decrease managerial discretion frequently, interfere with the accomplishment of organizational objective, and eventually intimidate the existence of the focal organization (Drucker, 2005). Confronted with the costly situation of this nature, management aggressively directs the organization to manage the external reliance to its advantage. Organization success is defined as organizations maximizing their power (Pfeffer & Salancik, 2003).

Nigeria economy mainly depends on oil and gas revenue especially as most of these resources are deposited in her ocean bed. Hence its exploitation and exploration depends to a large extent on the activities of the Nigeria Maritime sector. The external environment (piracy and armed robbery) therefore affects the activities of the maritime sector (revenue) to a great extent. The political, environmental, social and technological factors on the external environment hence affect the activities and performance of the maritime industry as it is resource based. Therefore the activity of the pirates which is a social factor affects the operation and performance of the maritime industry as poor performance will likely result during the period of high piracy activities. Controlling the social factor (piracy attack) of the external environment therefore will impact positively on the maritime sector (revenue generation).

2.3 Empirical Review

Nnadi, Nwokedi, Nwokoro and Onyemechi (2016) analyzed Maritime Piracy and Armed Robbery in the Gulf of Guinea Maritime Domain. According to Nnadi *et. al* (2016) the the Gulf of Guinea in the past years witnessed serious challenges of maritime piracy and armed robbery attacks. The study employed ex-post facto research design approach in which secondary was used for the study. Trend analysis model and analysis of variance (ANOVA) were used to analyze the data. It was found that there was significant variation in piracy and armed robbery attacks among the Gulf of Guinea countries and that the greatest of attacks occurred in Nigeria. There was also a significant variation in piracy attacks among the coastal zones of Nigeria with the greatest attacks occurring in Lagos ports and

anchorages within the period. There the study noted that there was a decreasing trend of attacks within the period.

Onuoha (2009) carried out a study aimed at unmasking the root cause of perennial challenges of piracy and maritime insecurity in the Gulf of Guinea maritime domain. Onuoha (2009) notes that the Nigeria State which recorded the highest attacks against ships in the region during the period was established to serve as an instrument for the domination and exploitation of resources by the colonial powers in Europe. As a result, the postcolonial African state has not been able to refit that warped design which has led to the state's incapacity or unwillingness to accomplish even the most basic sovereign duties including establishing security, order and social cohesion. It was believed that the Nigerian state was designed from purely utilitarian point to suit the economic and political interest of the colonial masters. Thus the country seems have lost from independence any real ability to exercise sovereign rights over her maritime domain. As a result, the State is lacking the ability to maximize resources, provide clear vision for maritime governance and is almost holistically constrained in capacity to provide maritime security (Onuoha, 2009). As a result, negligence by the Nigerian state account for above 50 percent for piracy in the GOG maritime domain.

In a similar study, Onuoha (2012) investigated the sea piracy and security challenges facing business operators in Bayelsa state, all affirmed that, a major causal factor of pirate attacks in Nigerian waters in the GOG is the perceived economic neglect and marginalization of the coastal states in the Niger Delta States in Nigeria which led to rise of militant groups

coordinated by MEND, championing the call for resource control. The militant groups operate by hostage-taking of oil workers, illegal destruction of oil storages and production facilities, attacks on oil vessels, illicit oil trade, kidnapping and ransom receipts among others. The Federal Government amnesty programme of 2009 caused over 15,000 militants to surrender about 2760 assorted guns, 287, 445 ammunitions of different calibers, 8 gunboats, 763 dynamites, 1090 dynamite caps, 3,155 magazines and several other military armorial equipment, such as dynamite cables, bullet-proof jackets and jack-knives, yet the programme couldn't bring to stop, piracy and armed robbery incidences in the area.

Studies by Nwokedi, Odumodu, Anyanwu and Dike (2020) on frustration aggression approach assessment of sea piracy and armed robber in Nigerian industrial trawler fishery sub-sector of the blue economy found that the average output lost per fishing crew death per annum (human capital death) occasioned by pirate attacks between 2007 and 2013 is $22187.60 between 2007 and 2013. The aggregate output lost by the economy due to death of about 60 fishing crew members between 2007 and 2013 is $1,275,257.505, representing an average annual total output loss of $182, 179.64 per year. The above stated losses represents only the indirect output losses to pirate attacks due to deaths alone in the industrial fishery subsector of Nigeria. The findings of the study also indicates that the trawler fishery sector lost an aggregate of N20,400,000,000 ($56,666,666.67) revenue to pirate attacks between 2007 and 2013 indicating average direct financial losses of N3,342,857,142.86 ($9,285,714.29) per annum over the period. By implication, a cumulative of N23,859,092,701.62

($66275257.52) was lost to pirate attacks as direct revenue losses and output losses due to death of fishing crew members in the sub-sector. Piracy and armed robbery attacks against the trawler fishery sector in Nigeria alone induces an annual cost of N3,408,441,814.5 ($9,467,893.92) as cumulative cost (direct financial losses and cost of lost output due death of human capital) per annum (Nwokedi *et. al*; 2020).

The international maritime bureau (IMB, 2015) note that, 65 percent of pirate attacks in the Nigeria maritime domain of the Gulf of Guinea use guns and arms mainly to kidnap for ransom purpose and steal cargoes, cash and valuables. Piracy in Nigerian maritime domain over the years was fuelled by illegal oil trading and oil theft activities which was a much more organized crime with links to foreign citizens and organizations than piracy itself. With the implementation of the IMO International Ship and Port Facility Security Code (ISPS code) in Nigeria, a decline in attacks particularly in the ports is expected particularly in Lagos ports and its attendant anchorages.

Studies by Anamika (2017) on understanding contemporary maritime piracy, the research employed two complementary research strategies designed to examine the character, magnitude and underlying dynamic of contemporary piracy in the 21st century, two primary international data sources on piracy; information collected by the International Maritime Bureau and the United States Office of Naval Intelligence were used. His research employed a case study combined with a historical/policy analysis of Somali piracy because of that nation's dominating role in the evolution of contemporary piracy and the

research examined the conditions that underlie the emergence and growth of maritime piracy in Somalia, a country without a history of piracy.

Nwalozie (2020) on his own work on exploring Contemporary Sea Piracy in Nigeria, the Niger Delta and the Gulf of Guinea, thematically explores contemporary piracy in the African state of Nigeria, the Niger Delta and the Gulf of Guinea. According to him, piracy in the Gulf of Guinea, and in particular Nigeria has had a protracted history. It is traceable down to the trans-Atlantic slave trade era, even though the slave trade predates it. He concluded that contemporary piracy is a national and transnational project for all the stakeholders to work in unison, to ensure the safe navigation of vessels carrying people and goods within the Nigerian littoral environment and the Gulf of Guinea. To do so, it will help boost economic development in the region.

In another study, Jean (2013) in his work maritime piracy and armed robbery against ships: exploring the legal and the operational solutions. The case of Madagascar, according to him, maritime piracy and armed robbery against ship are one of the contemporary challenges of the maritime industry, and that the two phenomena have a global impact on maritime trade and security. The study highlighted the intricacy of addressing maritime piracy and armed robbery against ships and the necessity of federating and integrating several components, he concluded by advocating the value of coordination and cooperation at the national, regional and international levels against piracy.

Essien and Adongoi, (2015) in a study on Sea Piracy and Security Challenges of Maritime Business Operators in Bayelsa State Nigeria, the study notes that, the African seaways

namely; the coast of the Horn of Africa (HOA) and the Gulf of Aden (GOA); in the East coast of Africa, and the Gulf of Guinea (GOG); in the West coast of Africa, from the year 2007 to date have become mine fields for sea pirates, witnessing intense attacks against ships (Essien and Adongoi, 2015). This threatens maritime security in the zones affecting negatively global trade flows and economic growth in Africa

2.4 Literature Gap

From the foregoing empirical reviews, most empirical studies the study identified the following gaps:

1. Available empirical studies have not been able to establish the relationship between economic growth measured by the GDP revenue earned by the maritime transport sub-sector cum youth unemployment rate and piracy and armed robbery attacks against ships trading in Nigeria waters.
2. No empirical studies have been able to determine the trend of pirate attacks against ships trading in Nigeria waters relative to the trend of youth unemployment rate, economic growth and growth in revenue earned by the maritime transport sector in Nigeria.

   There is therefore need to develop and understand of the empirical relationship evidencing the influence of economic growth on sea piracy and armed robbery attacks in the waters of Nigeria and the GOG, since this seems to be conspicuously lacking in available literatures and forms the gap which the current study aims to bridge

CHAPTER THREE

METHODOLOGY

This chapter provides an overview of the various methods used to collect and analyse data. In achieving this, it is relevant to develop the most possible plan for assembling the required data and information. The plan is thus, approached meticulously to authenticate the information gathered, analyse them properly, make reasonable deduction and draw valid conclusion from them.

3.1 Description of the Study Area

The study area of the research is the Gulf of Guinea maritime domain for particular focus on the Nigeria waters which dominates affairs in the GOG. Thus the data to be used for the study is that of the sea piracy and armed robbery attacks against ships within the Nigeria sections of the Gulf of Guinea maritime domain. Therefore the study area of the research is the Nigeria maritime industry with focus on the major coastal zones affected by sea piracy and armed robbery attacks over the years.

3.2 RESEARCH DESIGN

The study is designed to assess the influence of economic growth on sea piracy and armed robbery attacks against ships trading in Nigerian waters. Adopting ex-post facto research design in which historical (time series) data on the pirate attacks against ships in Nigeria, the Gross Domestic Product (GDP), the Revenue generated by the maritime (fishery) sub-sector and the youth unemployment rate between 2000

and 2018 were also obtained as historical data from secondary sources and used for the study. The decision to obtain the historical data on the identified variables is to use it to assess the quantitative relationship between the variables of economic growth and sea piracy and armed robbery attacks against ships involved in seaborne trade in Nigeria, in order to generate and empirical information on how economic growth influence pirate attacks against ships. Having earlier identified the objectives and research questions to be addressed by the study, the ex-post facto research design will be used in the study to address these objectives.

3.3 Sources of Data

This research relied entirely upon secondary sources of data for the study. Secondary data constitute of data generated from secondary means such as Nigerian ports Authority annual Reports and Statistical publication, Central bank of Nigeria Statistical Bulletin, Journal publications, website and data base of related maritime organizations, etc. The data used for the study was sourced from the various secondary sources identified above. Since the study is used a historical and quantitative research design approach as explained above, to assess the effects of economic growth on pirate attacks against ships in Nigerian waters secondary sources offer the best sources of data for the research. Data on GDP, revenue generated, and youth unemployment rate were obtained from the Central bank of Nigeria (CBN) statistical bulletin. The time series data on sea piracy and armed

robbery attacks against ships in Nigeria waters were sourced from the International Maritime Bureau (IMB).

3.4 Method of Data Analysis

3.4.1 Regression Analysis (OLS) Method

Regression analysis is a statistical investigation of the relationship between a dependent variable Y and one or more independent variable (s) X or Xs, and the use of the modelled relationship to predict, control or optimize the value of the dependent variable Y. The relationship is formulated in an equation to express the value of Y in terms of the corresponding values of X or the Xs and to enable future values of Y to be predicted in terms of the observed values of X to be controlled or optimized by manipulating the values of X or the Xs. The independent variables Xs are called explanatory variables or controlled variables while the dependent variables Y is also called response variable. Though, we have so many types of regression analysis; multiple linear regression analysis will be suitable for this work.

3.4.1.1 Multiple Linear Regression Analysis

This shows the relationship between one dependent variable (Y) and two or more independent variables (X_1, X_2 ---- X_n) which is expressed mathematically as

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \text{---- } \beta_n X_n + e \text{ ---------- (1)}$$

The regression equation of such time series dataset may be represented as follows:

for t= number of years/periods/observations.

Where *e* = random error term.

β_0 = Constant term; β_1; β_2; β_n = Coefficient of terms.

For such, ordinary least square (OLS) estimation method can be used to estimate the coefficients- β_0, and β_1, , etc., and normal hypotheses testing method using OLS holds valid. While β_1 measures the effect of the explanatory variable on the dependent variable. X_1= value of the variable in the period

Using the multiple regression model approach and OLS estimation, the relationship showing the influence of economic growth (*GDP*), revenue generated by the maritime transport sub-sector (*MAREV*), and unemployment rate (*UNRATE*) on sea piracy and armed robbery ($PIRATE_{attacks}$) against ships trading in the waters of Nigeria and the Gulf of Guinea.

For example, the model specification is as shown below:

$$\boldsymbol{PIRATE_{attacks} = \beta_0 + \beta_1 GDP + \beta_2 MAREV + \beta_3 UNRATE + \varepsilon} \text{ ---------- (2)}$$

Where $\boldsymbol{PIRATE_{attacks}}$ = pirate attacks against ships

GDP = Gross Domestic Product as a measure of economic growth

MAREV = Revenue generated by the maritime sub-sector of the economy

UNRATE = Unemployment rate.

Normal OLS estimation may be carried out in determining the relationship between dependent variables and the independent variables and normal hypotheses testing method for OLS estimation using t-test is used to determine the significances of the impacts/relationships.

However in this study, we transformed the data obtained for all the variables into common units by taking the natural log (In) of all sides and running the regression with the natural log coefficients (values) of the variables such that:

$$InPIRATE_{attacks} = \beta_0 + \beta_1 GInGDP + \beta_2 InMAREV + \beta_3 InUNRATE + \varepsilon \text{ ---------- (2)}$$

Where $InPIRATE_{attacks}$ = Natural log of pirate attacks against ships

InGDP =Natural log Gross Domestic Product as a measure of economic growth

InMAREV =Natural log of revenue generated by the maritime sub-sector of the economy

InUNRATE = Natural log of unemployment rate.

3.4.1.2 Trend Analysis

Trend analysis is a form of regression analysis in which time is the independent variable such that the influence of time on the occurrence of the dependent variable can be estimated.

We used trend analysis to achieve the last objective of the study which seeks to estimate the trend of pirate attacks against ships relative to the trend of economic growth in Nigeria.

Since the piracy and armed robbery attacks against ships is an occurrence that is dependent on time, we propose that:

$$PIRATE_{attacks} = \beta_0 + \beta_1 X_t + \varepsilon \text{ ---------- (3)}$$

Where X_t = time period in years between 2000 and 2018.

CHAPTER FOUR

4.1 DATA PRESENTATION, RESULT AND DISCUSSION

Table 4.1 Presentation of data on Piracy and armed robbery attacks against Ships in Nigeria Waters, GDP, Maritime Industry Revenue and Unemployment rate between year 2000 and 2018.

s/n	Year	Piracy Incidents	Insurance premium paid by ship owners ₦000,000	Unemployment rate %	Maritime transport industry revenue ₦000,000	GDP ₦000,000,000
2	2000	9	3.10	9.54	3,030	23,688.28
3	2001	19	4.00	9.51	3100	25,267.54
4	2002	14	7.31	9.49	2850	28,957.71
5	2003	39	13.70	9.57	2804	31,709.45
6	2004	28	20.99	9.48	3010	35,020.55
7	2005	16	21.01	9.43	3180	37,474.95
8	2006	12	7.84	9.21	3370	39,995.50
9	2007	42	11.26	9.02	3580	42,922.41
10	2008	40	17.19	9.47	3800	46,012.52
11	2009	29	16.51	9.39	4010	49,856.10
12	2010	19	21.26	9.47	4230	54,612.26
13	2011	10	22.56	9.56	3810	57,511.04
14	2012	27	26.08	9.71	3750	59,929.89
15	2013	31	14.73	9.84	3920	63,218.72
16	2014	18	23.95	8.41	4260	67,152.79
17	2015	15	25.67	7.81	4620	69,023.93
18	2016	21	30.10	12.48	4690	67,931.24
19	2017	17	28.60	13.96	4750	68,490.98
20	2018	18	-	13.72	4880	69,799.94

Source: IMB Piracy and Armed Robbery Reports against Ships (2004, 2007, 2011, 2015 and 2019 editions). Central Bank of Nigeria Statistical Bulletin (2010, 2013 and 2019 editions).Marine insurance Digest, (2007, 2012 and 2019 editions). Nigerian Industrial Trawler Owners Association (NITOA)

Table 4.1 above shows the time series statistical data on piracy attacks against ships in Nigeria, associated insurance costs/premium paid by shippers and ship owners transiting the Gulf of Guinea waters, revenue generated by the maritime transport sub-sector of the blue economy, and the Gross Domestic Product between the year 2000 and 2018. The above data was transformed using natural log as shown in table4.1.2 below.

Table4.1.2: Transformation of table4.1 above into the same Unit Using Natural Log.

S/N	*InGDP*	*InMAREV*	*InUNRATE*	*InPIRATEATTACK*
1	23.89	21.83	2.26	2.20
2	23.95	21.85	2.25	2.94
3	24.09	21.77	2.25	2.64
4	24.18	21.75	2.26	3.66
5	24.28	21.83	2.25	3.33
6	24.35	21.88	2.24	2.77
7	24.41	21.94	2.22	2.48
8	24.48	22.00	2.20	3.74
9	24.55	22.06	2.25	3.69
10	24.63	22.11	2.24	3.37
11	24.72	2.17	2.25	2.94
12	24.78	22.06	2.26	2.30
13	24.82	22.05	2.27	3.30
14	24.87	22.09	2.29	3.43
15	24.92	22.17	2.13	2.89
16	24.96	22.25	2.06	2.71
17	24.94	19.97	2.52	3.04
18	24.95	22.28	2.64	2.83
19	24.97	22.31	2.62	2.89

Source: Author's calculation

The table above is the natural Log transformation of the data presented on table4.1 to make it to conform to the same unit so that a log linear regression can now be carried out. The data presented above on table4.1.2 is employed for further analysis in section 4.2 to achieve the objectives of the study.

4.2 Results and Discussion of Findings

Table4.2.1: Descriptive Statistics

	Mean	Std. Deviation	N
PIRATEattacks	22.3158	10.11079	19
GDP	49398.7263	16132.18918	19
MAREV	3770.7368	674.69934	19
UNRATE	9.9511	1.62040	19

Source: Author's calculation

The result shows that the average sea piracy and armed robbery attacks against ships trading in Nigeria waters per annum over the 19 years period is 22.32 attacks with a standard deviation of 10.11 while the average economic growth (GDP) per annum over period is 49398.7368(billion) naira with standard deviation of 16132.189. Similarly, the average growth in revenue generated by the maritime transport sub-sector of the blue economy per year over the 19 years covered in the study is 3770.7368(million) naira with standard deviation of 674.699 while the average growth in youth unemployment rate per annum over the same period is 9.95% with standard deviation 1.62.

Table4.2.2: Influence of Economic Growth (GDP), Revenue Generated by the Maritime Industry and Unemployment rate on Pirate Attacks in Nigeria

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.820[a]	.673	.580	10.88032

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64.386	3	21.462	6.181	.041[b]
	Residual	1775.719	15	118.381		
	Total	1840.105	18			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.760	9.168		1.740	.102
	InGDP	-1.160	.343	-.056	-2.251	.005
	InMAREV	-.050	.242	-2.455	-3.594	.031
	InUNRATE	.258	.865	.084	2.083	.035

a. Dependent Variable: *InPIRATEattacks*
b. Predictors: (Constant), *InUNRATE, InGDP, InMAREV*
Source: Authors Calculation

The coefficient of correlation R which measures the degree of correlation between the dependent and independent variables is 0.82. This implies the existence of about 82% correlation between pirate attacks against ships on one hand and economic growth, increase in maritime transport sector revenue and unemployment rate on the other hand. This equally shows a high positive correlation of about 82% between pirate attacks against ships in the Nigeria waters, growth in Gross Domestic product (GDP), growth in revenue generated by the maritime transport sub-sector and growth in youth unemployment.

The model showing the relationship depicting the influence of economic growth on pirate attacks against ships involved in seaborne trade in the waters of Nigeria and Gulf of Guinea is:

$$InPIRATE_{attacks} = 2.760 - 1.160InGDP - 0.05InMAREV + 0.258InUNRATE \quad \text{-------} \quad (4)$$

This implies that a unit annual increase in GDP (economic growth) causes the pirate attacks against ships to decrease by 1.160units. The implication is that if economic growth is translated into improved standard of living of the population living with the economy, employment generation and human capital development, sea piracy and armed robbery attacks against ships trading in the waters of Nigeria and the Gulf of Guinea will with time naturally die, putting to an end the spate of maritime insecurity in Nigeria.

Similarly, a unit annual increase in revenue generated by the maritime transport sub-sector induces a 0.05 unit decrease in sea piracy and armed robbery attacks against ships in the waters of Nigeria while a unit increase in youth unemployment rate increases pirate attacks against ships in the Nigeria waters by 0.258units. The implication is that while unit growths in GDP and revenue generated by the maritime transport sector leads to decreasing attacks by 1.160 and 0.05 units respectively, growth in youth unemployment rate increases attacks by 0.258units.

The coefficient of determination r^2 which measures the explanatory power of the model is 0.67. This indicates that only about 67% variation in sea piracy and armed robbery attacks against ships trading in Nigeria is explained by the explanatory variables.

Table4.2.2: Estimating the Trend of Sea Piracy and Armed Robbery Attacks in Nigeria Waters Relative to the Trend of Economic, Maritime Industry Revenue and Unemployment rate.

Equation/Variable	**Model Summary**						**Parameter Estimates/coefficients**			
	mean	**r^2**	**F**	**df_1**	**df_2**	**Sig.**	**Constant**	***B_1***	***t***	**Sig.**
$PIRATE_{attacks}$	22.3158	0.003	0.059	1	17	0.812	23.368	-0.105	-0.242	0.812
GDP	49398.72	0.981	892.3	1	17	0.00	21000.296	2839.84	29.873	0.00
MAREV	3770.7368	0.901	154.51	1	17	0.00	2632.737	113.800	12.430	0.00
UNRATE	9.9511	0.252	5.739	1	17	0.028	8.504	0.145	2.396	.028

Source: Authors Calculation.

The result of the study as shown in table4.2.2 above indicate that the mean attacks over the 19 years period (2000-2018) covered in the study is 22.32 attacks per annum. The model equation showing the trend of attacks against ships over the period is:

$$PIRATE_{attacks} = 23.386 - 0.105X_t + \mathcal{E} \text{ ---------- (5)}$$

The negative coefficient of regression indicates that relative to the growth in the economy over the period, piracy and armed robbery attacks against ships involved in seaborne trade in Nigeria now flows a decreasing trend. The results also reveals that a unit increase in time (in years) over the period causes a 0.105 unit decrease in pirate attacks against ships in Nigeria waters. The coefficient of determination r2 value of indicates that only about 0.3% variation in attacks is influenced by time as an explanatory variable. Similarly, the respective coefficient of regression values of 2839.84, 113.80 and 0.145 for GDP, revenue generated and youth unemployment

rate, indicate that both GDP, revenue generated by the maritime transport sub-sector and unemployment all witnessed an increasing trend over the period. The implication is that the increasing rate of economic growth has not been able to be translated into enough employment opportunities as to cause a declining trend in youth unemployment rate. This portends the danger of increasing the rate of attacks against ships in Nigeria water giving the positive relationship between youth unemployment rate and sea piracy and armed robbery attacks against ships in the waters of Nigeria. The following equations show the respective trends of GDP, revenue generated and unemployment over the period.

$$GDP = 21000.296 + 2839.84X_t + \mathcal{E} \text{ ---------- (6)}$$

$$MAREV = 2632.737 + 113.800X_t + \mathcal{E} \text{ --------- (7)}$$

$$UNRATE = 8.504 + 0.145X_t + \mathcal{E} \text{ ---------- (8)}$$

4.3 Test of Hypotheses

We restate the first three research hypotheses as follows:

H_{01}: There is no significant influence of economic growth on sea piracy and armed robbery attacks against ships in Nigeria.

H_{02}: There is no significant relationship between growth in revenue generated by maritime transport sub-sector and attacks against ships trading in Nigeria waters between 2000 and 2018.

H_{03}: There is no significant relationship between youth unemployment rate as a measure of economic deprivation and pirate attacks against ships in Nigerian waters.

Table4.3.1: Test of Hypotheses H_{01}, H_{02} and H_{03}.

Hypotheses	t-cal.	t-critical	p-value/sig.	Decision
H_{01}	-2.251	2.10	0.005	Reject H_{01}
H_{02}	-3.594	2.10	0.031	Reject H_{02}
H_{03}	2.203	2.10	0.035	Reject H_{03}

Source: Authors calculation. *Accept null hypotheses if P-value>0.05; Reject null hypotheses if p-value<0.05*

The test of hypothesis **H_{01}** as shown in table4.3.1 shows a t-cal of -2.251, t-critical of 2.10, p-value of 0.005. Since p-value is less than the alpha value of 0.05 (0.005<0.05), we reject the null hypothesis **H_{01}** that there is no significant influence of economic growth (GDP) on sea piracy and armed robbery attacks against ships in Nigeria and accept the alternate that there is significant relationship between GDP growth and pirate attacks against ships in Nigeria waters. Though the relationship between growth in GDP and pirate attacks as shown in table 4.2.1 is such that economic growth measured by the GDP decreases pirate attacks. By implication, the growth in the economic can be employed to achieve reduction in attacks against ships in the region by translating it into improved living standard and opportunities for the people so as to cause significant decline in criminal attacks against ships trading in Nigeria.

Similarly, the test of hypothesis H_{02} shows a t-cal of-**3.594,** t-critical value of 2.10 and p-value of 0.031. Again since 0.031<0.05, we reject the null hypothesis to accept the alternate that there is significant relationship between growth in revenue generated by maritime transport sub-sector and attacks against ships trading in Nigeria waters between 2000 and 2018. The relationship as aforementioned indicates that growth in revenue generated by the maritime transport sub-sector leads to declining attacks against ships in the waters of Nigeria. The test of hypothesis **H_{02}**

indicates that the decline in attacks against ships over the period following growth in revenue generated by the sub-sector is significant.

The test of hypothesis $\mathbf{H_{03}}$ shows a t-cal of 2.083, t-critical of 2.10 and p-value of 0.035. We thus reject the null hypothesis $\mathbf{H_{03}}$ and accept the alternate hypothesis that there is no significant relationship between youth unemployment rate as a measure of economic deprivation and pirate attacks against ships in Nigerian waters. The relationship between pirate attacks and youth unemployment rate is such increasing unemployment rate increases pirate attacks against ships trading in Nigeria.

Table4.3.2: Hypothesis H_{04}: There is no significant increase in the trend of sea piracy and armed robbery attacks against ships relative to economic growth and youth unemployment rate in Nigeria.

Hypothesis	t-cal.	t-critical	p-value/sig.	Decision
$\mathbf{H_{04}}$	-0.242	2.10	0.812	Accept $\boldsymbol{H_{04}}$

Source: Authors Calculation *Accept null hypotheses if P-value>0.05; Reject null hypotheses if p-value<0.05*

The test of hypothesis H04 shows a t-cal of -0.242, t-critical value of 2.10 and p-value of 0.812. Since 0.812>0.05)i.e. p-value > alpha value), we accept null hypothesis H04 that there is no significant increase in the trend of sea piracy and armed robbery attacks against ships relative to economic growth and youth unemployment rate in Nigeria. The negative coefficient of t-cal indicates that there is a decreasing trend in the attacks against ships over the period. However, the decrease in the trend of attack over the period is not significant.

CHAPTER FIVE

5.1 Conclusion and Recommendations

5.1 Summary of Findings

A unit annual increase in GDP (economic growth) causes the pirate attacks against ships to decrease by 1.160units. Similarly, a unit annual increase in revenue generated by the maritime transport sub-sector induces a 0.05 unit decrease in sea piracy and armed robbery attacks against ships in the waters of Nigeria while a unit increase in youth unemployment rate increases pirate attacks against ships in the Nigeria waters by 0.258units. The implication is that while unit growths in GDP and revenue generated by the maritime transport sector leads to decreasing attacks by 1.160 and 0.05 units respectively, growth in youth unemployment rate increases attacks by 0.258units. The of hypotheses shows that there is a significant relationship between pirate attacks against ships on one hand, and growth in GDP, increase in revenue generated by the maritime transport sub-sector and youth unemployment rate in Nigeria.

5.2 Conclusion

The influence of economic growth on sea piracy and armed robbery attacks against ships trading in Nigerian waters is such that growth in GDP causes a decline in the attacks against ships. Similarly, growth in the annual revenue generated by the maritime transport sub-sector causes annual decline in the number of attacks against ships. The implication of

these being that as economic growth is translated into opportunities for income generation and improved living standards among the youth, more percentage of the attackers are caused to abandon the attacks for better living and subsequently, the attacks reduces. However, the decline caused by GDP growth and revenue growth on pirate attacks over the period is not significant, indicating the need for greater percentage of the growth recorded in the economy to be translated into economic empowerment opportunities. This will guarantee a significant decline in the number of annual attacks against ships trading in Nigeria.

Also, the relationship between pirate attacks against ships and growth in the unemployment rate in Nigeria over the period is such that growth in unemployment rate leads to subsequent growth in the number of attacks against ships trading in Nigeria waters.

5.3 Recommendations

In the light of the findings of this study, the following recommendations are made

1. A significant percentage of the evidences of economic growth been recorded in the economy should be translated into opportunities for economic empowerment of youth populations so as to achieve significant decline in sea piracy and armed robbery attacks against ships in Nigerian waters annually.
2. A significant portion of the growth in revenue generated from maritime transport sub-sector should be invested in creating opportunities for economic emancipation of the active population involved in piracy activities. This will ensure that a

significant decline in attacks is achieved even as the maritime economy continues to grow.

3. Since growing youth unemployment is found to increase sea piracy and armed robbery attacks against ships trading in Nigeria, massive investment in youth employment and economic empowerment programs is recommended to reverse the increasing trend of youth unemployment in Nigeria and subsequently curtail piracy and armed robbery attacks against ships involved in seaborne trade in Nigeria.

5.4 Contribution to knowledge

This study has for the first time established the model of relationship between economic growth and sea piracy and armed robbery attacks ships in Nigeria waters. The model equation expressing the relationships and influence of the Gross Domestic product (GDP), growth in revenue generation from the maritime transport sub-sector, and youth unemployment rate in Nigeria is:

$$InPIRATE_{attacks} = 2.760 - 1.160InGDP - 0.05InMAREV + 0.258InUNRATE \text{ ---} \quad (4)$$

The study also established the trend of attacks against ships in Nigeria between 2000 and 2018 as:

$$PIRATE_{attacks} = 23.386 - 0.105X_t + \mathcal{E} \text{ ----------} \quad (5)$$

The following equations also show the respective trends of GDP, revenue generated and unemployment over the period.

$$GDP = 21000.296 + 2839.84X_t + \mathcal{E} \text{ ----------} \quad (6)$$

$$MAREV = 2632.737 + 113.800X_t + \mathcal{E} \text{ --------- } (7)$$

$$UNRATE = 8.504 + 0.145X_t + \mathcal{E} \text{ ---------- } (8)$$

The above represent the contributions of the study to the body of existing knowledge in this field of study.

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