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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**AN EXAMINATION OF THE EFFECTIVENESS OF
IMPLEMENTATION OF THE MARPOL 73/78
CONVENTION IN NIGERIA**

By

AKPAMA IKPI OFEM (S17116)

Nigeria

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS


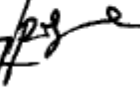
**(OCEAN SUSTAINABILITY, GOVERNANCE AND
MANAGEMENT)**

2017

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the university.


Signature:
Date: ¹¹ Sept. 2017 
.....

Supervised by: (Professor Michael Baldauf)
World Maritime University

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Author

Akpama, Ikpi Ofem

ABSTRACT

Title of Dissertation: An Examination of the Effectiveness of Implementation of the MARPOL73/78 Convention in Nigeria

Degree: MSc

This dissertation is a study that is aimed at examining the effectiveness of implementation of MARPOL 73/78 Convention. In this regard, the research is designed to analyze prevailing trends and investigate the strength of strategies for solving identified problems within the scope of the research.

This research relies on both qualitative and quantitative analysis. However, the data obtained is analysed on the basis of their quality, relevance and strength in determining the results of this research. Furthermore Expert's views were gathered in a form of semi- structured interviews, which are conducted as part of data collection in addition to literature review.

The scheduled interviews with the staff of Nigeria Maritime Administration and Safety Agency (NIMASA), Nigeria Port Authority (NPA), Terminal operators, Federal Ministry of Transportation, Grimaldi Deep Sea shipping company, Northern Marine Management, Clydebank Scotland Shipping Company and ACL, proceeded as scheduled; the results were collected and summarized for the purpose of analysis.

The dissertation analysis is based on interview results, theoretical framework, and empirical findings. According to responses from 98% of the interviewees, the existing national legislations in Nigeria used for the implementation of MARPOL 73/78 are grossly inadequate and ineffective.

KEYWORDS: MARPOL73/78 Convention, Implementation

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LIST OF ABBREVIATIONS

ACL	African Circle Pollution Management Limited
COW	Crude Oil Washing Systems tanks
CBT	Dedicated Clean Ballast Tanks
DW	Death Weight
EU	European Union
FMT	Federal Ministry of Transportation
GT	Gross Tonnage
IGS	Inner Gas System
IMO	International Maritime Organization
MARPOL from Ships, 73/78	International Convention for the Prevention of Pollution
MEPC	Marine Environmental Protection Committee
NIMASA	Nigeria Maritime Administration and Safety Agency
MPAG	Marine Pollution Advisory Group
MDA, s	Ministries, Departments and Agencies
NPA	Nigeria Port Authority
NLS	Noxious Liquid Substances
NESREA Enforcement Agency	National Environmental Standards and Regulations
PPM	Part per Millions
PL	Product Line
PMOU	Paris Mémorandum
PSC	Port State Control
SBT	Segregated Ballast Tanks
WMU	World Maritime University
UNCLOS	United Nation Convention on the Law of the Sea
LOSC	Law of the Sea Convention

1 INTRODUCTION

1.1 The Background of the Topic

The IMO-recognized Maritime Administration for Nigeria, the Nigerian Maritime Administration and Safety Agency (NIMASA), reported that the Federal Government of Nigeria, in its bid to implement IMO Conventions, in June 2012, included in the official journal thirteen marine environment regulations in line with IMO conventions on the prevention and control of marine pollution. Among the regulations included in the official journal are sea protection levy; ship-generated marine waste reception facilities; sea dumping; prevention of oil pollution; prevention of pollution by harmful substances in packaged form; dangerous or noxious liquid substances in bulk and prevention of pollution by sewage (Ibokwe 2017).

Other regulations include prevention of pollution by garbage; ballast water management; and oil pollution preparedness among others. According to NIMASA, the Federal Government Official Gazette No. 158: Marine Environment Management (Sea Protection Levy) Regulation 2012, empowers the agency to impose levies on all commercially operating vessels of 100GT and above in Nigeria waters. However, NIMASA has been consistently accused by legal experts in the maritime industry of encouraging non-compliance with IMO rules and standards of foreign ships sailing on its coastal waters (Michael, 2002). NIMASA and the Ministry of Transportation are accused of permitting foreign vessels affected by international regulations requiring all ships, particularly single hull tanker vessels, to have double hulls, as required by convention, to operate in Nigerian coastal waters (Ibokwe, 2017). The legal expert observers opined that, such

foreign vessels are allowed in the nation's coastal waters and jetties to do business after obtaining waivers from the relevant authorities.

The policy introduced by the global maritime regulatory body, IMO in 2003, sought to phase out all single-hull tanker vessels involved in bulk wet cargo operations as at 2010 for safety reasons (IMO, 2011). The measure, which is mandatory on all member states of IMO, of which Nigeria is a member, has forced some of the affected ships to African waters, particularly Nigeria, where enforcement is alleged to be liberal, ineffective and thwarted by waivers (Ibokwe 2017).

The researcher entirely agrees with the expert finding and opinion that single hull vessels are allowed in the nation's Coastal Waters and jetties to do business after obtaining waivers from the relevant authorities. The evidence of this expert was subjected to rigorous cross-examination and he found this expert evidence credible. Accordingly, hereby award in respect of these claim.

1.2 Statement Problem

The liberal nature of enforcement for IMO rules in Nigeria and the little progress made in its domestication within national laws presents the toughest challenges faced in the implementation of most IMO regulations in Nigeria (Ibokwe 2017). IMO rules, no doubt, have international outlook and command international compliance. But these rules are meant to be domesticated by sovereign nations for enforcement. In Nigeria, the pace of domestication has been very slow and even current government policies that encourage ship-owners to obtain waivers on supposed deficiencies that require rectification before legal operations. Such flexible enforcement and administration of waivers has persistently aided the prevalence of challenges in enforcement of MARPOL rules and has rendered almost all strategies for achieving compliance to be ineffective (Ibokwe, 2017).

These and similar problems prompted the researchers quest to examine the effectiveness of the strategies used for the Implementation of MARPOL 73/78 rules.

1.3 Aim of the Research

The aim of this research is to assess the level of implementation of the MARPOL Convention within Nigerian territorial waters with the view of evolving strategies for the effective protection of the marine environment for sustainable use and development.

1.4 Objectives of the Research Work

The objectives of the research work are to:

- i. Evaluate the quality and quantity of manpower available in Nigeria for the implementation of the provisions of the MARPOL Convention
- ii. Evaluate the adequacy of facilities provided in Nigeria ports for compliance with the requirements of the MARPOL Convention
- iii. Analyze the records of enforcement activities of the MARPOL Convention by designated agencies on vessels, platforms, and operators.
- iv. Benchmark the status of implementation of the MARPOL Convention in Nigeria against other developed countries and IMO standards
- v. Suggest more effective ways of tackling implementation challenges of the MARPOL Convention in Nigeria.

1.5 Research Questions

To analyze the basics of this study, the following research questions were posed:

- i. Does Nigeria have the qualified and required number of personnel as specified in international standards for the effective implementation of the MARPOL Convention?
- ii. Are the facilities provided by Government for enforcement of the MARPOL Convention adequate and operational?
- iii. Are violators of the MARPOL Convention within the Nigerian marine environment detected and sanctioned appropriately?
- iv. Are the challenges faced by Nigeria in the implementation of MARPOL rules unique to Nigeria or do they have international precedents?
- v. How effective are the current strategies employed in enforcing Marine pollution rules in Nigeria?

1.6 Hypothesis

The following hypotheses are propounded by this research:

- i. The status of personnel could affect the implementation level of the MARPOL Convention in Nigeria. Status in this study is defined as the quality and quantity of personnel.
- ii. The nature of facilities provided could have an effect on the enforcement of the provisions of the MARPOL Convention
- iii. Strict sanctions on violators does not result in a clean marine environment
- iv. The challenges faced by Nigeria in MARPOL Implementation are local to the country entirely.
- v. The strategies adopted by Nigeria in tackling enforcement problems on MARPOL are ineffective.

1.7 Methodology

This research is conducted as an analytical study that is aimed at examining the effectiveness of the strategies used for the Implementation of MARPOL 73/78 rules. In this regard the research is designed to analyze prevailing trends and investigate the strength of strategies for solving identified problems within the scope of the research. Most data collected for use in this research is secondary data that was backed up with primary data that was obtained through semi-structured interviews from stakeholders in maritime environmental management and administration in Nigeria.

1.8 Source of Data Collection

This research relies on secondary data which was obtained from NIMASA, NPA, Terminal operators, Federal Ministry of Transportation, oil and gas platforms, Shipping Companies, ACL, related literature, IMO conventions, reports and proceedings. Others sources include Federal Government of Nigeria legislations on Maritime environment management and Control and other implementation strategies adopted by sovereign nations e.g. United Kingdom.

1.9 Research Design

This research was designed to commence at the beginning of January, 2017 and to cover a scope limited to the methodology of Pollution and environmental management in the Nigerian Maritime industry and the effectiveness of the various strategies adopted by Nigerian Authorities to enforce MARPOL standards and institute compliance by the Nigerian Maritime Administration Agencies and Operators.

1.10 Data Analysis

This research relied on both qualitative and quantitative analysis. However, the data obtained is analyzed on the basis of their quality, relevance and strength in determining the results of this research.

1.11 Limitation

The only envisaged potential limitation on this research exercise is the proximity of the WMU Malmo, to the area of study for the research, which is Nigeria. In a sense, administration of questionnaires and interview required the researcher to travel to Nigeria and some interviews were conducted on unsuitably scheduled periods during the research exercise. This set some limitations on this research exercise.

2 LITERATURE REVIEW

According to Basil Owolabi, (2017), who wrote on sovereignty and the enforcement of Maritime regulations in December, 2015, *“In an ideal world, all flag States live up to their regulatory commitments. In the real world, we all know that the quality of flag States varies tremendously, as clearly shown in the annual statistics from the member States of the Paris Memorandum (PMOU) and other Port State Control organizations. The researcher can understand that the IMO, being governed by sovereign States, is in a difficult position. We must support its efforts to press those flag States, which are lagging into a thorough process of self-examination. Evidently the Flag States implementation sub-committee has an important task to bring about effective measures. The researcher would expect that through IMO’s good work, pressure will be building up on the poor-performing flag States and that eventually we may see more flags taking their roles seriously, thereby ensuring compliance with international requirements”*. Although the regulatory frameworks by which the highest degree of attainment of safety and pollution-prevention at sea can be achieved are already in place, courtesy of the IMO conventions, much still must be done with respect to Flag State Implementation/Enforcement of these rules and standards (IMO, 2013).

Generally, there are three ways in which States agree to be bound by international treaties (also referred to as conventions, protocols, etc.)(IMO, 2002)

- i. By Full Signature,
- ii. By Signature subject to Ratification and
- iii. By Accession.

In some States, once the treaty has been fully signed it automatically becomes binding on a national level and national courts must abide by it. In other States, a national law must be passed in the normal way by parliament, containing the text of the

convention. Whichever of the two methods is adopted by a particular State, the principle remains, *pacta sunt servanda*, that is, the State having consented fully to the treaty is bound by it in international law (Owolabi, 2017). The pertinent question is: Does the enforcement of IMO conventions diminish the sovereignty of Member States? The answer is no in view of the principle of *pacta sunt servanda* (Owolabi, 2017).

As has been stated earlier, IMO was established to adopt legislation and contracting Governments are responsible for implementing it. When a Government (like Nigeria) accepts an IMO Convention, it agrees to make it part of its own national law and to enforce it just like any other law. The problem however is that, some countries lack the expertise, experience and resources necessary to do this properly. Others perhaps put enforcement fairly low down their list of priorities. With about 170 Governments as Members, IMO seem: to have plenty of teeth but some of them don't bite. The result is that serious casualty rates – probably the best way of seeing how effective Governments are at implementing legislation – vary enormously from flag to flag. The worst fleets have casualty rates that are a hundred times worse than those of the best (Heidegge, 2015). IMO, concerned with this problem, set up a special Sub-Committee of Flag State Implementation in 1992 to improve the performance of Governments. Another way of raising standards is through Port State Control (IMO, 2002). The most important IMO conventions contain provisions for Governments to inspect foreign ships that visit their ports to ensure that they meet IMO standards. If they do not, they can be detained until necessary repairs are carried out (IMO 2002). Experience has shown (Owolabi, 2017), that this works best if countries join to form regional Port State Control Organizations.

Port State Control (PSC) is defined as the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules.

The primary responsibility for ensuring that ships comply with international legal regimes rests with the owners and masters of the ships in addition to the flag states. Port

states however, provide an important safety net, and are a last line of defense against unscrupulous and/or negligent shipping practices (Michael, 2002).

The idea of port state control recognizes that it may not be possible for flag states to fully ensure that international stipulations are met. While the expense of flag state administration is an important factor, the popularity of flags of convenience no doubt renders international shipping more vulnerable to poorly regulated ships (IMO, 2002). Article 218 of UNCLOS provides that, when a vessel is voluntarily within a port or at an off-shore terminal of a State, that State may undertake investigations and, where the evidence so warrants, introduce proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that State in violation of applicable international rules and standards established through the competent international organization such as IMO or general diplomatic conference. (LOSC, n.d).

Article 220 of UNCLOS provides that, when a vessel is voluntarily within a port or at an off-shore terminal of a State, that State may, subject to Section 7 relating to safeguards, institute proceedings in respect of any violation of its laws and regulations adopted in accordance with this Convention or applicable international rules and standards for the prevention, reduction and control of pollution from vessels. The state can only exhibit this right, when the violation has occurred within the territorial sea or its exclusive economic zone (LOSC, n.d.).

3 THE MARPOL 73/78 CONVENTION

3.1 Introduction

This section of the study examines the essence of the MARPOL 73/78 convention from the perspective of its establishment and statutes and then delves into its operations and services. It also, looks at the challenges it is experiencing and implementation on national and domestic level.

3.2 Establishment

In 1948, the United Nations Maritime Conference was convened in Geneva and concluded the Convention on the International Maritime Organization. This convention and IMO came into being in 1958. IMO started with 21 member states, but has steadily grown its membership at present (July, 5th, 2017) to a total of 172 states. The objectives of IMO, according to Article 1 of its convention are, inter alia, to encourage the overall acceptance of the highest practicable standards in issues that deals with maritime safety and efficiency of navigation and the control and prevention of marine pollution from ships, to provide machinery for cooperation among governments in the field of governmental regulations and practices concerning all technical issues affecting shipping involved in international trade, and to handle legal matters related thereto (IMO 2011) In other to achieve its some of its objective of controlling and preventing pollution from ships, the MARPOL 73/78 convention, a very important pillar of the IMO was established.

The International Convention for the Prevention of Pollution from Ships, 1973 was adopted between 8 October and 2 November 1973, by the International conference on Marine Pollution convened by the IMO. This Convention was consequently modified by the Protocol 1978 relating thereto. The Protocol introduced sterner regulations for survey and ship certification. It is to be read as one instrument and is usually referred to as MARPOL 73/78. This Convention is the most essential global agreement for the prevention of pollution from ships operation; the convention establishes a system of certificates and inspections; governs the equipment and the design of ships and requires states to provide reception facilities for the disposal of chemicals and oily waste.

All the technical aspects of pollution from ships, excluding the disposal of waste into the sea by dumping are covered by the convention, and it applies to all the ships, though it does not include pollution arising out of the exploitation and exploration of mineral resources in the sea-bed. Regulations covering the different sources of pollution generated from ships are contained in Annexes I, II, II, IV, V and VI of the London Convention and are updated frequently. Annexes III, IV, V and VI on packaged materials, sewage, and garbage and air pollution are optional while Annexes I and II, governing oil and chemicals are compulsory (IMO, 2011).

Currently, 154 states representing 98.7% of the world shipping tonnage are party to the Convention, showing that it has global application. All ships that fly the flag of a member state to MARPOL are liable to its rules and regulations, irrespective of where they sail. Member states have the obligation to inspect and survey the ships that operate under their authority and the issuance of the vital on-board certificates, and for sanctioning any infringement of MARPOL 73/78 regulations (Djadjev, 2015).

It is no longer a story that shipping is essentially international in character, and rules and standards that deal with maritime pollution prevention and safety should be discussed, agreed, and implemented at an international level. With the development of international merchant shipping in the past decades, there was increasing international activity in shipping which was carried out on the inventiveness of the United Kingdom, the then largest maritime nation in the world. They played a role of a reader in concluding

different international conventions which deal with maritime safety and pollution prevention (Sasamura, n.d).

3.3 The mission, vision and corporate objectives of the MARPOL 73/78 Convention and its Implementation Issues

Most conventions, in the process of their establishment and operation, have a focus in terms of what they stand for, why they exist, their function and what any convention to achieve. Likewise the MARPOL Convention has framed for itself a vision and mission statement, which it considers as basic components in its area of work.

MARPOL 73/78 among others lays down requirements for the construction and equipment of ships, including oily-water separating and filtering equipment, segregated ballast tanks (SBT), dedicated clean ballast tanks (CBT), oil discharge monitoring and control systems, and crude oil washing systems (COW). It also lay down criteria for the discharge of oil from ballast water and tank washings of oil tankers, and from machinery room bilges of all ships (Djadjev, nd). The implementation of the convention has an important economic and technical influence (IMO, 2002) Main technical problems in the implementation of Annex I are; the absence of reception facilities in many ports globally and lack of consistent and accurate oil content meters (Sasamura, n.d). The problem seems to be serious in Special Areas, like the Mediterranean Sea, where the discharge of oily wastes is totally prohibited except for segregated and clean ballast (Karim, 2010b).

The MARPOL 73/78 convention, as a whole, is a far-reaching and comprehensive instrument which strengthens the existing requirements in respect of oil and also incorporates new requirements in respect of other harmful substances. The effective implementation of the MARPOL 71/78 would need resolution of some complex technical problems and this is the main work of the MEPC of IMO (Djadjev, nd).

With regard to Annex I of MARPOL 73/78 concerning oil, major technical problems have been resolved. Precisely, in September 1984 MEPC formally adopted amendments to those technical requirements of Annex I of the convention which generate difficulties in implementation (IMO, 2011). There are, however, two important issues which hinder

effective implementation. One of them is non-availability of accurate and reliable oil content meters while the second one is the inadequacy of reception facilities for oily wastes (Sasamura, n.d).

3.4 The Legal Regime

The IMO knows that the provision of port reception facilities is integral for a successful MARPOL 73/78 implementation, therefore the MEPC has strongly advised contracting parties, to MARPOL 73/78 as port states, to ensure that sufficient reception facilities are provided in their ports (IMO 2011). Contracting parties were likewise encouraged to react to a questionnaire on alleged inadequacy of port waste reception facilities in their ports (MEPC/Circ.417) (Erik, 2007) and to report their encounters to the MEPC with the objective of recognizing territories with issue and building up a future plan of action (IMO, 2013). MARPOL 73/78, as a major instrument handling marine pollution from ships, gave flag states the primary obligation of ensuring compliance with the standards provided for international pollution. Each state consequently has a general obligation to ensure that a vessel which fly its flag conform to the convention (Gini, 2006).

Regarding vessel discharges monitoring, a state having evidence of a violation, cannot take unilateral action under MARPOL 73/78, rather is expected to communicate this proof to the state in control of the vessel for action to be taken (MAR POL, Art III(3)). The flag state is bound to commence investigations the very moment it receive evidence that its vessel has violated the convention standards. Legal proceedings must be followed if the investigation is sufficient and has proved the claim of violation (Erik, 2007).

If a vessel is to be punished, the flag state must impose penalties, which are adequate in severity to discourage violations of (Gin, 2006) the convention and shall also serve no matter wherever the violations happen (MARPOL, Art IV (4)). It implies that the convention provided flag states with the primary responsibility of enforcing marine pollution standards. To the degree that flag state enforcement is an unsuitable method of ensuring compliance with endorsed standards, the coastal states see MARPOL 73/78 as not having significantly improved the business of regulating marine pollution from ships.

Doubts proliferate with regards to the efficacy of flag state jurisdiction simply because many flag states have customarily recorded serious levels of diligence in implementing and enforcing global environmental standards (Erik, 2007). In any case, this can be ascribed to the spread of flags of convenience, which are flags of certain states whose laws render it simple and appealing for ships owned by foreign nationals to fly these flags.

A convenience registry normally would keep no genuine connections with, or control over the registered ship, aside from the absolutely ostensible fact of registration. From the point of view of ship owners, this registry provides appealing advantages like simple registration of ships, bringing down taxes and expenditures on environmental standards and safety, providing access to modest foreign labour, and relative flexibility from the control of flag states. Be that as it may, the results attached to such courses of action are different: manning and crew conditions are poor, safety records are inadequate, wages are low, and pollution control is weak.

The major cause of accidental collisions involving convenience fleets is the absence of flag state supervision on the standard of pollution and safety (Bergtrand & Doganis, 1985). Furthermore, flags of convenience states may not accept international conventions like MARPOL 73/78 or any other in the first place. In a case where they are party to these conventions, convenience registries would naturally give little incentive to assiduously enforce international environmental standards.

Because of their aggregate reliance on registry income, it is unreasonable to anticipate that convenient registries will thoroughly avert and punish infringement committed by their customers. In this way, to the degree that a huge extent of world tonnage is registered in convenience registries, one shortcoming of MARPOL 73/78 rotates around its exceptional dependence on flag states as the primary enforcement agent (<http://www.turkish-shipping.com/>). Obviously, not all flag states work as convenience registries, in this way, not all flag states should stand blamed for being unusual in controlling marine pollution.

The reality remains that whether flag states, is a convenience registry or not, have minimal motivating force in punishing ships engaged in discharge infringement (Tatjana, 2007). This would be particularly valid if discharge infringement were to happen somewhere else on the planet, with insignificant impact on the flag state. In fact, many flag ships ordinarily from time to time call at their ports of registration (Maes, 2011). From the point of view of the coastal state interests, MARPOL 73/78 is skewed for the maritime states' interests and their favoured flag state enforcement component. The continuous challenges for MARPOL 73/78 and the worldwide regulatory framework generally, is to continually enhance pollution control efforts by accommodating the dissimilar requests of the coastal and maritime states' interests (Tatjana, 2007). Specifically, an answer must be found to address the worries of disappointed coastal states, which are progressively looking to force unilateral pollution control measures.

The MARPOL arbitrators were distinctly mindful of the clashing interests of contracting parties, including the contention encompassing convenience fleets, however they eventually endeavoured to accommodate the coastal and maritime states' interests by reaffirming and fixing the current legal commitments of the flag states, while giving more prominent parts to coastal and port state jurisdiction (IMO, 2011). Under UNCLOS III, the balancing of the maritime and coastal states' interests is affected by separating the individual states' jurisdiction over the particular zones of the sea, the territorial sea, the internal waters, the contiguous zone, the exclusive economic zone and the high oceans (UNCLOS,1982).

Hence, each of these zones has a particular allocation of jurisdiction between coastal and flag states, with the basic hypothesis being that as one continues further out to sea , the maritime state's enthusiasm for navigational flexibility increases, while the coastal state's enthusiasm for ensuring a better environmental condition diminishes. Where the prescription of particular pollution control measures is concerned, it is to be noted that as opposed to enumerating new standards for specific types of pollution, announces a general regime of obligations and power, expanding upon the codification and advancement of existing conventions for pollution control (UNCLOS 1982).

The Convention is loaded with references to an oft-repeating phrase, "by and large acknowledged global guidelines and norms", which with regards to (Tatjana, 2007) vessel-source pollution (UNCLOS, 1982), is surely known globally to mean the inclusive provision of MARPOL 73/78 resolved to retain the general competence of flag states over ships, leaving to UNCLOS III the fragile assignment of addressing the coastal states' claims for increased jurisdiction (SJICL 1997).

In respect of flag state duties, the regulatory provisions of Article 211 (2) of UNCLOS III express that: *"States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry. Such laws and regulations shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference"*.

In particular, flag States are encouraged to adopt regulations and laws for the control, reduction and prevention, of marine pollution from ships of their registry or flying their flag (Dzidzornu & Tsamenyi, 1991). Moreover, flag States have a commitment to enforce the legislation, that implements global standards. UNCLOS III, Art 217(2), (4), (5), (6), (7) and (8) expressed as follows:

- i. States should, specifically, take the right measures in ensuring that ships of their registries or flying their flag are denied sailing, until such a time when they have met the required international standards and rules. The requirement includes construction, design, manning of ships and equipment.
- ii. If any violation of standards and rules established through the general diplomatic conference or a competent international organisation is committed by a ship, the flag state shall carry out an urgent investigation and institute proceedings in regard of the suspected violation notwithstanding where the infringement took place without prejudice to articles 218, 220 and 228,
- iii. Flag States carrying out an investigation of the infringement can ask for the help of other states whose cooperation might be valuable in elucidating the conditions of the matter. States are advised to meet appropriately the requests of flag States.

- iv. States should investigate any infringement, claimed to have been committed by ships of their registry or flying their flag, if requested by other states. If the claim is proving to be true, states shall institute proceedings with effect and in accordance with the laws
- v. Flag States should, without delay, inform the competent international organisation and requesting State of the move made and the result. This information shall be accessible by every State.
- vi. The provided punishment by the laws and regulations of States for ships flying their flag must be sufficient enough to discourage violations wherever they take place.

In the event that they are legitimately adhered to, these commitments would have significantly improved the effectiveness of flag state jurisdiction (Cot, 2010), particularly in remedying the stubbornness of flags of convenience vessels. In any case, it must be noted that the provisions are not generously more stringent than those effectively set down in the current agreement, especially MARPOL 73/78. Indeed, the very premise of the UNCLOS III regulatory structure depends on its emphasis of standards enclosed in current agreements. The Guidelines contribute significantly to a definitive point of MARPOL73/78 to accomplish the total elimination of the intentional pollution of the marine environment (IMO, 2002).

The guidelines contain information identifying with the progressive management of current facilities, and in addition for the planning and provision of new facilities. They are additionally expected to urge port states to provide adequate port reception facilities and ships to make more effective use of them (IMO/MEPC.11Circ.671, 2009).

The fundamental target of the Guidelines is to remind states that waste emerges from all marine exercises: recreational and commercial fishing, and that every activity needs a particular consideration. As indicated by Resolution MEPC, 83(44) section 3.2 and 3.3, the Guidelines are planned to:

Help States in providing adequate waste reception facilities in ports as well as planning; and urge them to develop ship- source waste disposal standards that will be environmentally friendly.

3.5 Structure and Functioning

i. MARPOL 73/78 annex I: Prevention of Pollution by Oil

This annex into force on the 2 October 1983 and is applied to every oil tanker of 150t GT and above and every other ship of 400t GT and above, and it sets forth rules for discharge of oil into the water. Annex I requires oil tankers to be provided with slop tank arrangements, an oil discharge monitoring system, and an oil-content meter. Also, it is mandatory for oil tankers to have double hulls as well as segregated ballast tanks or dedicated clean ballast tanks.

ii. Annex II: Control of Pollution by Noxious Liquid Substances (NLS) in Bulk

Entry into force: 6 April 1987

The Annex distinguishes between four categories of NLS. The discharge of NLS into the sea is prohibited and they should be discharged only to reception facilities when certain conditions, such as the concentration of the substance, are complied with; these conditions vary depending on the category of the substance (Djadjev, 2015).

iii. Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form.

Came into force 1 July 1992; Participation of 141 contracting parties which account for 97.59% of world tonnage (IMO, 2002).

It contains general requirements for the standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications for preventing pollution by noxious substances.

iv. Annex IV: Prevention of Pollution by Sewage from Ships

Entry into force: 27 September 2003; 134 contracting parties; 90.74% of the world tonnage.

It forbids ships of 200t GT, or ships less than 200t GT which are certified, to carry more than 10 persons, to discharge sewage into the water unless certain requirements are met (e.g. the presence of a sewage treatment plant; a system to comminute and disinfect sewage; or a holding tank).

v. Annex V: Prevention of Pollution by Garbage from Ships

Entry into force: 31 December 1988; 147 contracting parties; 98.03% of the world tonnage (IMO, 2002).

It prohibits the discharge into the sea of all plastics, and sets rules for the discharge of different type of garbage depending on whether the ship is within or outside a special area. (Djadjev, 2015)

vi. Annex VI: Prevention of air Pollution from Ships and NO_x Technical Code

Entry into force: 19 May 2005; 80 contracting parties; 95.23% of the world tonnage (IMO, 2020).

It provides rules for the emissions of ozone-depleting substances, nitrogen oxides, and sulphur oxides as well as rules regarding shipboard incineration and fuel oil quality. (Djadjev, 2015)

3.6 Regulatory Framework Concerning Port-Waste Reception Facilities

MARPOL 73/78 has established discharge standards for six main groups of pollutants contained in six annexes (IMO, 2011) as follows:

- i. “Annex I: “Regulations for the Prevention of Pollution by Oil came into force on 2 October 1983. Regulation 12 of Annex I express that: " the Government of each Party attempt to ensure the provisions at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for

the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the need of the ships using them without causing undue delay to ships, the reception facilities prescribed in this regulation shall be made available no later than one year from the date of entry into force of the present convention or by 1 January 1977, whichever occurs later.”

- ii. Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk came into force on 6 April 1987. Regulation 7 of Annex II states that (IMO, 2011): “the Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the needs of ships using its ports, terminals or repair ports.”
- iii. Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms came into effect in July 1992
- iv. Annex IV: Prevention of Pollution by Sewage from Ships came into force on 27 September 2003.⁶⁷ Regulation 9 of Annex IV states that: “discharge of sewage into the sea is prohibited”.
- v. Annex V: Prevention of Pollution by Garbage from Ships came into force on 31 December 1988. Regulation 7 of Annex V states that: “the Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.”
- vi. Annex VI: Prevention of Air Pollution from Ships came into force on 1 November 2003. Annex I and Annex II are necessary while other Annexes are optional. Governments are encouraged to ensure the provision of port waste reception facilities at ports and terminals for the reception of waste produced by ships. The provision of adequate reception facilities in ports is a fundamental factor in the prevention of ship-source pollution (IMO, 2011).

3.7 Legal obligation

States party to MARPOL 73/78 have a legal commitment to deal with the issues connected with unlawful discharge of ship-source wastes (INCPPS, art .I) and UNCLOS

III (UNCLOS, art. 194). Marine pollution is trans-boundary by nature with a serious global impact (Kraska, 1999).

According to UNCLOS III, States have a general commitment to ensure the protection and preservation of their marine environment (Article 192). They have an obligation to take measures, utilizing the best practical means available to them and according to their capacities, to limit without limitations ship pollution, specifically measures for averting deliberate and accidental discharges from both foreign and local ships (Article 194); Flag States have an obligation to make laws and regulations which have at least an indistinguishable impact from that of globally adopted standards and rules provided by IMO (Article 211(2)).

MARPOL 73/78 and UNCLOS III provided a framework of duties and rights.

MARPOL 73/78 contracting parties have the following general obligations:

- i. The provision of port waste reception facilities; and
- ii. contracting states to ensure that ships of their registries or flying their flag hesitate from discharging wastes into the marine environment; (<http://www.unep.org/>)

The general rights are:

- i. The punishment should be sufficient enough to discourage infringement of the Convention and might be similarly extreme regardless of where the infringement took place; and
- ii. Not being polluted by ships from other contracting parties and can prosecute (<http://www.unep.org/>).

Coastal states have the right to prohibit discharges from both domestic and foreign shipping in their zones. If this right is exercised by the coastal state, they have an obligation to provide adequate port waste reception facilities for waste generated by ships in their ports (Kraska, 1999).

The provision and use of waste reception facilities in ports is crucial to the general achievement of MARPOL 73/78 in its goal of eliminating and diminishing marine pollution from intentional ships.

For this objective to come true there is need to provide mariners with means of disposing waste from ships. According to MARPOL 73/78 Annexes, adequate waste reception facilities in ports indicates that the reception facilities provided by the ports must be ready or able to accommodate waste generated from ships that use their ports without causing unnecessary delay (MEPC.I /Circ.671, 2009). Similarly this was taken into account in Section 3 of the Guidelines, How to Achieve Adequacy, or section 2.3.1 of the Comprehensive Manual on Port Reception Facilities (1999). In accordance with the Guidelines precisely, section 3.2, adequate facilities can be characterized as the facilities which ports use to meet the demands of ships that use them, without discouragement.

Section 3.3 of the Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities also stipulates that the reception facilities must ensure that ship- source waste is disposed of in an environmentally sound manner while section 3 of the same Guidelines (Resolution MEPC.83 (44) stressed the necessity for adequate waste reception facilities in ports, rather than the enforcement of international obligations (<http://www.mpa.gov.sg/sites>).

3.8 Enforcement and Compliance

Port and flag states should endeavour to prove that they are complying with the MARPOL73/78 requirements through the provision of adequate reception facilities in their port, and maintain and ensure good enforcement. *“Parties to MARPOL 73/78 are also encouraged to accomplish their duties in accordance with regulation 12(5) of Annex I, regulation 7(4) of Annex II and regulation 7(2) of Annex V”.*

Contracting parties can achieve this by giving urgent response to reports of inadequacies identified by masters or ship-owners and report adequately such allegations of inadequacies via the ships flag state to the IIMO and to the appropriate port state authorities or operators, utilizing the prescribed arrangement for reporting. Port states

should react to reports of insufficiencies and report to the IMO and the flag state that reported of the result of their investigation (MEPC.I/Circ.671, 2009).

MEPC/Circ.349 expressed that contracting parties to MARPOL 73/78 should use the following steps when they are making use of the Alleged Inadequacy Reporting form:

In a case where the port and flag State are not the same, the flag State should inform the port State of the speculated insufficiency and furthermore inform the IMO. Notification should be made as quickly as time permits following culmination of the Alleged Inadequacy Reporting Form. If the port and the flag State are not different from each other, the marine administration should take up the matter of the asserted inadequacy specifically with the port in question.

The flag State is advised to inform IMO of any situation where facilities are reported to be inadequate

3.9 Roles and obligations of flag states

UNCLOS III Article 211 confirms the obligations of flag states to adopt laws and regulations for the reduction, control and prevention, of pollution of the marine environment from vessels flying their flag. These regulations and laws "might in any event have the comparable effect as" that of generally accepted international standard and rules (UNCLOS III, Art 211(2)). According to UNCLOS III, the very moment a standard gains international acceptance, e.g., provisions within convention, a flag state has an obligation to implement that standard through its national laws, despite its status to the convention which established the standard (Dziedzornu and Tsamenyi, 1991).

Furthermore, flag states have a duty to enforce the legislation, which implements global standards. They are advised to investigate suspected violations committed by vessels that fly their flag, comprising alleged violations by other states and established violation procedure for international rules and standards, notwithstanding where the violation took place and impose severe punishments strong enough to discourage violations wherever they take place (UNCLOS III, Articles 217). In the event where it is properly adhered to,

these commitments would have extraordinarily improved the effectiveness of flag state jurisdiction, particularly in remedying the non-cooperation of flags of convenience ships (IMO, 2011). Nonetheless, it must be noted, that these provisions are not considerably stricter than those effectively set down in the current treaties, especially MARPOL 73/78. The regulatory structure of UNCLOS III depends on its emphasis of standards enclosed in current agreement.

Ensuring flag state compliance with these prescribed standards has dependably been the issue (Maes, 2011). To a point this issue remain without any solution; the affirmation of flag states' obligations contributes less in enhancing the regulation of waste generated from ships (IMO NEWS 3, 1992).

The IMO Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities address and differentiate the roles of the flag state, port state and the IMO. There are measures that the flag state should take to ensure that its vessels comply with the requirements of MARPOL 73/78 (IMO).

Flag State is requested to:

- i. Examine on-board arrangements;
- ii. Provide advice to ships flying its flag;
- iii. Investigate infringements; and
- iv. Prosecute offenders.

The flag state is in a remarkable position to provide a regular source of adequate information, which correctly lists the inadequacies of ports visited by its vessels to port state. In a case where flag states neglect to give exact record of the inadequacies, IMO and port states may not be able to settle matters of suspected inadequacy as fast as possible. The communication procedure between contracting parties to MARPOL 73/78 must be important for the procedure to bring about positive changes in the provision of port waste reception facilities (Ball, 2003). Moreover, flag states have the obligation to ensure that good measures are taken to report matters of inadequacy. Port states cannot take the required action against their ports without getting adequate information.

3.10 Roles and duties of port states

Port states are to provide adequate infrastructure and powers to administer, implement and enforce MARPOL 73/78 through their domestic laws. The port states shall expose all those who refused to comply with these laws to prosecution. Port states shall ensure the provision of adequate and available of waste reception facilities to ships operating in their ports (Georgakellos, 2007) The Port State shall ensure that the reception facilities are adequate and ready at all time to respond to the discharge of waste from regular vessels that use the port and also ensure the provisions of good arrangements to consider and give compelling reactions to reports of inadequacies (<http://www.shipping.dft.gov.uk/>).

The initial position before UNCLOS III was that port states into whose ports the violating vessel had entered just had jurisdiction over violations that took place within its territorial sea. On the contrary, port states could never exercise jurisdiction for violations that took place outside their territorial sea (Stenman, 2010). At the UNCLOS III negotiations, expounded port state jurisdiction came to be as the preferred solution over the coastal states' jurisdiction expansion, reasons being that the previous presented less obstacles to navigation (Maes, 2011). UNCLOS III gave port states the power of jurisdiction over violations of discharge taking place on the high seas (Pisani, 2002). This would apparently serve to ease the worries of coastal states that flag states can never be depended on in prosecuting violating vessels. It also assured the maritime interests that the costal state will not just tinker with vessel navigation.

“A port state may therefore conduct inspections and institute proceedings against vessels for discharges on the high seas in violation of applicable international rules and standards. Proceedings may also be instituted in the port state in respect of a violation occurring in another state's waters, at the request of that state, the flag state or any other injured state (SJICL, 1997)”.

3.11 Requirements for reception facilities

There has been continuous improvement in the constructional and operational requirements intended to abolish or reduce the need for port reception facilities, e.g. SBT, load-on-top procedure, COW, oily water filtering and separating equipment, and incinerator plants for oily wastes (Sasamura, n/d). Refer to table I,2 and 3 below for details.

Table 1 Control of discharge of oil under MARPOL 73/78

Sea areas		Discharge criteria
Within a SPECIAL AREA ₁		NO DISCHARGE except clean ₂ or segregated ballast
Within 50 nautical miles from land		NO DISCHARGE except clean or segregated ballast
Outside a SPECIAL AREA	More than 50 nautical miles from land	NO DISCHARGE except either: (1) clean or segregated ballast; or (2) when (a) the tanker is en route; and (b) the instantaneous rate of discharge of oil does not exceed 60 liters per nautical mile; and (c) the total quantity of oil discharged does not exceed 1/15,000 (for existing tankers) or 1/30,000 (for new tankers) of the total quantity of cargo which was carried on the previous voyage; and (d) the tanker has in operation an oil discharge monitoring and control system and slop tank arrangements as required by Regulation 15 of Annex I of MARPOL 73/78

Source: Sasamura, (n.d.)

Table 2 Control of discharge of oil from machinery spaces of all ships

Sea areas	Ship type and size	Discharge criteria
Within a SPECIAL AREA	Anywhere Oil tankers of all sizes and other ships ≥ 400 grt	NO DISCHARGE except when: (1) the ship is proceeding en route; and (2) the oil content of effluent without dilution does not exceed 15 ppm; and (3) the ship has in operation oil filtering equipment with automatic 15 ppm stopping device; and (4) for oil tankers the bilge water does not originate from cargo pump room bilges or is not mixed with oil cargo residue
	Within 12 nautical miles from land Ships <400 grt other than oil tankers	NO DISCHARGE except when the oil content of effluent without dilution does not exceed 15 ppm
	More than 12 nautical miles from land	NO DISCHARGE except when either: (1) the oil content of effluent without dilution does not exceed 15 ppm; or (2) (a) the ship is proceeding en route; and (b) the oil content of the effluent is less than 100 ppm.
Outside a SPECIAL AREA	Within 12 nautical miles from land Oil tankers of all sizes and other ships ≥ 400 grt	NO DISCHARGE except when the oil content of effluent without dilution does not exceed 15 ppm
	Other ships <400 grt	The conditions for ships ≥ 400 grt apply as far as practicable and reasonable.
	More than 12 nautical miles from land Oil tankers of all sizes and other ships ≥ 400 grt	NO DISCHARGE except when either: (1) the oil content of effluent does not exceed 15 ppm; or (2) (a) the ship is proceeding en route; and (b) the oil content of the effluent is less than 100 ppm; and (c) the ship has in operation an oil discharge monitoring and control system, oily-water separating or filtering equipment or other installation required by Regulation 16 of Annex I of MARPOL 73/78; and (d) for oil tankers the bilge water does not originate from cargo pump room bilges or is not mixed with oil cargo residue
	Other ships <400 grt	The conditions for ships ≥ 400 grt apply as far as practicable and reasonable.

Source: Sasamura, (n.d.)

1. "Special area requirements take effect in the Mediterranean Sea, Black Sea, and Baltic Sea area from the day of entry into force of MARPOL 73/78 and for the Red Sea and Gulf areas from the date established by IMO".

2. "Clean ballast" is the ballast in a tank which has been so cleaned that the effluent therefrom does not create a visible sheen or the oil content exceed 15 ppm (for the precise definition of "clean ballast," refer to Regulation 1(16) of MARPOL 73/78).

Table 3 SBT, CBT, COW, IGS and PL requirements

Type of oil tanker	Deadweight (t)	Existing ship	New ship ₃ under MARPOL 73 but existing ship under PROTOCOL 78	New ship ₃ under PROTOCOL 78
Crude oil tanker	DW ≥ 70,000	IGS SBT/CBT ₁ /COW	IGS, SBT	IGS SBT PL COW
	70,000 > DW ≥ 40,000		IGS SBT/CBT/COW	
	40,000 > DW ≥ 20,000	IGS ₂	IGS ₂	
	20,000 > DW	—	—	—
Product carrier	DW ≥ 70,000	IGS SBT/CBT	IGS, SBT	IGS SBT PL
	70,000 > DW ≥ 40,000		IGS SBT/CBT	
	40,000 > DW ≥ 30,000	IGS ₂	IGS ₂	
	30,000 > DW ≥ 20,000	IGS ₂	IGS ₂	IGS
	20,000 > DW	—	—	—

1. CBT is an interim measure accepted for a limited period; two years (DW ≥ 70,000) or four years (70,000 > DW ≥ 40,000) after the date of entry into force of MARPOL 73/78. For product carriers, CBT is accepted for an indefinite period.

2. If fixed high capacity washing machines are fitted

3. Definition of new ship:

	MARPOL 73	PROTOCOL 78
Building contract	31/12/75	1/6/79
Keel laying	30/6/76	2/2/80
Delivery	31/12/79	1/6/82

Source: Sasamura, (n.d.)

Tanker operations making use of the load-on-top procedure for voyages with long haul successfully eliminate the necessity for shore reception facilities. Be that as it may, load-on-top procedure can't be used for tankers on short haul voyages and those only occupied with exceptional areas. Besides, for some voyages, oil tankers may have problems entering an exceptional zone with only clean ballast on board (Hakapa, 2005).

MEPC noted with a great interest the inadequacy of oily waste reception facilities in most ports and terminals globally. Specifically, the absence of reception facilities in the port located within the Mediterranean Sea which should be used in the loading of oil has caused very big challenges for tankers in complying with the requirements of MARPOL 73/78 (Sasamura, n.d.). However, the following options would be open in such a situation:

- i. “To utilize SBT or CBT tankers;
- ii. To retain on board part of the cargo after unloading for use as ballast during the ballast voyage;
- iii. To retain on board dirty ballast and slops for subsequent discharges at ports where reception facilities are available;
- iv. To waive the discharge criteria for special areas; and
- v. To discharge dirty ballast and slops into the sea in contravention of the convention (Karim, 2010ba).

3.12 Discharge Monitoring and Control Systems of Oil

The major deficiencies of OILPOL 54/69 were the trouble in finding out that a vessel is discharging a mixture of oil according to the criteria set down in the convention. Thus, MARPOL 73/78 incorporated prerequisites for fitting oil discharge control and monitoring systems on oil tankers of 150 tons net tonnage or more. The most serious part of this system is the oil content meter to gauge the oil content of effluent. There was no dependable oil content meter on the market when the MARPOL conference of 1973 was held, yet there was this belief that an appropriate product could be accessible at the period of entry into force of the convention (IMO 2002)

From that time they have made significant developments in this area and various products were manufactured and given approval under the terms as provided by Resolution A393(X) of IMO. In one of the IMO meeting, OCIMF brought up the issue of inadequacy of the present equipment, particularly the inclination to over-read the oil content because of different contaminants, (for example, rust,) claiming that this was,

going to ridiculously hinder normal tanker operation, and subsequently proposed that the required rules for fitting oil discharged control and monitoring framework for not less than three years should be waved. MEPC did not acknowledge such a waiver but rather consented to a one year deferment of the fitting of the framework to new oil tankers, and also encouraged companies and governments to create appropriate equipment. However oil tankers are encouraged to work with equipment that may not be used as methods to ensure that MARPOL requirements are complied with (IMO 2013)

3.13 Summary

It can be observed and concluded from the above discussions that irrespective of the problems mentioned earlier, regarding the implementation of technical requirements, the entry into force and enforcement of MARPOL convention have made an important contribution to the reduction of oil pollution from ships. There is a need to say that the ultimate goal of eliminating operational marine pollution from ships could be considerably achieved in this era. It is, therefore, necessary to investigate the effectiveness of the implementation of the MARPOL 73/78 Convention in Nigeria as well. The next chapter discusses the methodology of this study to answer the research questions.

4 METHODOLOGY AND METHODS

4.1 Introduction

This study is conducted as an analytical study that is aimed at assessing the effectiveness of implementation of MARPOL 73/78 Convention. Therefore, the study is designed to analyze prevailing trends and assess the strength of strategies for solving identified problems within the scope of the study.

The distinctive areas to be mentioned in this section incorporate selection of participants, the data sources and data gathering process, the research instruments utilized data analysis and ethical issues.

4.2 Sources of data

Most data collected for use in this research is secondary data that was backed with primary data.

Secondary Data refers to published data and the information gathered in the past or by different parties. These data were obtained from NIMASA, NPA, Terminal operators, oil and gas platforms, related literature, IMO conventions, reports and proceedings. Other sources include implementation strategies adopted by sovereign nations e.g. United Kingdom for enforcement of IMO rules, and other Federal Government of Nigeria legislations on Maritime environment management and Control. Both published and non-published materials were used as the foundation for the review of literature.

Primary data refers to the original information gathered for a particular research objective (Primary Data Collection Methods, n.d.).

In this type of data collection, the information is gathered using various, methods for example, interviews and questionnaires. There are numerous techniques for gathering this type of data, as e.g. observed or gathered specifically from first-class experience.

Survey research in view of the administration of semi-structured interviews was conducted in order to obtain primary data.

Interviews were granted to some staff of the Federal Ministry of Transportation (FMT), ACL, Shipping Companies, Nigerian Ports Authority (NPA) Terminal operators and Nigerian Maritime administration and Safety Agency (NIMASA) that were viewed as experts in the study area.

Interviewing is a procedure or technique that is essentially used to acquire knowledge of the hidden reasons and inspirations for individuals' states of mind, inclinations or conduct. Interviews can be attempted on an individual coordinated premise or in a gathering. It can also be conducted through telephone calls (Primary Data Collection Methods, n.d.).

4.3 Selection of participants

The researcher used a nonprobability sampling technique in the selection of respondents for this study, based on his assessment. The reason for non-probability sampling was to limit participation to persons in the department of marine environment of the NPA, F.M.T, NIMASA, and ACL etc who are familiar with the enforcement and implementation issues of MARPOL 73/78. This method of sampling doesn't provide all the people in the public a similar shot of being incorporated into the sample (Kumar, 2008).

Nonprobability sampling involves the selection of a portion of the finite population being studied. This sampling method does not endeavour to choose an arbitrary sample from the populace of interest. On the contrary, subjective techniques are used to choose which elements are incorporated in the sample.

The use of this sampling technique helped the researcher in selecting participants for this study as he needed to talk with people who have a good knowledge about the subject of study.

4.4 Research instrument

The instrument is the device or means used for gathering information or data with the intention to measure an event or a fact by recording and collecting data; (Abawi, 2013). The approach used for this study was the mixed methodology, comprising both quantitative and qualitative data.

This type of data has to do with open-ended questions which lack definite answers; on the contrary, qualitative research is scientific in nature. Scientific research comprises an investigation that:

- i. collects evidence
- ii. systematically uses a predefined set of procedures to answer the question
- iii. produces findings that were not determined in advance
- iv. seeks answers to a question
- v. Produces discoveries that are relevant beyond the prompt limits of the investigation. Qualitative research shares these qualities. Moreover, it tries to comprehend a given research issue or subject from the points of view of the local populace it includes.

Qualitative research is particularly effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of a given population (Impunity, 2007).

This type of research has a tendency to have closed-ended questions with no definite answers. Consequently, survey research was used by the researcher to organize interviews. This approach helped the researcher to have an in-depth knowledge into diverse areas, in this manner bringing about the collection of more robust data. Moreover,

showing the findings of the study was more analytical and indicative. At the end, a more comprehensive perspective was achieved from the participants in the interviewees.

4.5 Semi-structured interview

Semi-structured interviews were conducted as part of the research to capture quality and rich information, which is considered sensitive, from 41 selected and experienced respondents. The selected and interviewed participants were people who have spent 10 years and above and who are seen to be knowledgeable in the study area. This selection also depended on long time established official relationships. The selected interviewees were from Federal Ministry of Transportation (FMT), Nigerian Ports Authority (NPA), Nigerian Maritime administration and Safety Agency (NIMASA), shipping two companies ACL, and United Kingdom.

Research has revealed (Ball, 2013) that United Kingdom government achieved effective MARPOL 73/78 implementation strategies by adopting an integrated approach, they brought together all stake holders on a round table and deliberated on how full compliance could be given to the provisions of the convention. On these note, the researcher resolved to use the UK method as a comparison with Nigeria method.

The researcher approached and informed the participant about the research topic which they agreed to participate in since according to the participants, this issue is a concern to them; the face-to-face interviews were conducted for about 35 to 43 minutes for each participant. This helped the researcher in comprehending, translating, and breaking down or analyzing the answers.

For the sake of getting the rich and quality data from these experts and for lucidity purposes, consent was looked for from them to record the interviews on an advanced voice recorder. The recording helped the researcher to tune into the interviews as much as he wanted and select out important information for analysis and categorization.

4.6 Ethical issues

It is vital for researchers to dependably err in favor of caution with regards to protecting their participants. In the course of conducting a research interview: a researcher is expected to honestly and accurately report the information obtained during the interview (i.e. must be reported verbatim without identifying by name unless this is waived by the interviewee), must obtain proper consent before the interview starts, respect the cultural norms of the community of interest by avoiding difficult or taboo topics. If taboo topics must be approached, the researcher must do so carefully and appropriately, always respecting privacy by not asking questions that involve hypersensitive information, and the data collected must remain confidential and protected from any access by third parties (UNITE FOR SIGHT, n/d) Refer to page 79 to 81 of this research for the interview guide, as included in the appendices, including the consent form used.

The researcher considered issues related to ethics and the security of information gathered as critical to this work, thusly, the fundamental standards of ethics associated with all research, for example, evasion of damage, secrecy and informed consent, were taking into consideration in this study. The WMU Ethics committee gave approval to the instrument and research process before the researcher began gathering data. This qualified the research process an expert one.

The researcher went as far as seeking the approval of participants before conducting interviews. The consent gave all the respondents the opportunity to either participate or withdraw from participation at any time. This was to respect the respondents; their cultural norms avoid any harm or dishonesty and respect their privacy. All data was handled with confidentiality.

4.7 Demographics of the interviewees

4.7.1 Data Collection

4.7.1.1 Demographic Information

An aggregate of fourteen (14) questions were given to participants during the semi-structured interviews. A sum of 27 males and 14 females represented a group of officials,

comprising of 9 NPA, 9 NIMASA, 9 Ministry of Transportation, 9 ACL, and 3 Grimeadi Deep Sea Shipping company, and 2 Northern Marine Management Clydebank Scotland. The reason for the imbalance in the number of participants among the MDAs was because some shipping companies withdrew from participating in the study for reasons best known to them.

The information gathered on the ages of the respondents demonstrated that 25 percent were between the ages of 21 - 30; 41percent ran between the ages of 31 - 41, while 20 percent and 14 percent were around the ages of 42 - 50 and 51 and above. A large number of the respondents to be precisely, 50 percent hold a Bachelor's degree, 18% hold a Master's degree, while 32 percent hold a Diploma; no respondent holds a doctorate degree.

Table 4 Academic Qualification and age distribution of respondents

Qualification	No. of respondents	Age	No. of respondents
Diploma	13	21-30	10
Bachelor	21	31-41	16
Masters	7	42-50	8
Doctorate	0	51 and above	7

Source: The Author

4.7.1.2 Work experience:

40 percent of the respondents showed that they have worked in the Maritime Industry for 20 - 30 years; 16 percent have worked for more than 11 years while 32 percent have worked for 30 - 40 years in the organization. 11% did not give answers to this question.

Table 5 Information about the interviewees

Interviewees	Organization	Type of services Offered by the participants	Years of work experience	Level of Responsibility
Interviewee 1	FMT	Assist in IMO matters, and monitoring of Reception Facilities in Ports and Terminals	Over 30 years	Management
Interviewee 2	NIMASA	Assist in pollution control, prevention and management	above 29 years	Management
Interviewee 3	NPA	Direct the administrative activities and environmental protection process	Over 20 years	Management
Interviewee 4	ACL	Terminal operators	Over 11 years	Management
Interviewee 5	Grimaldi Deep Sea Shipping Company	Master	Over 30 years	Management

6	Northern Marine Management Clydebank Scotland	Captain	Over 30 years	Management
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Source: Author

Table (5) above contains a summary of the information about the professional background of participants that were interviewed during the study. The names of the interviewees are not revealed in order to protect their privacy.

4.7.1.3 Data Analysis

This research relies on both quantitative and qualitative analysis as a major aspect of a mixed methodology used in this investigation. Reactions from the participants were broken down and analysed in light of the demographic expertise of the respondents using comparative analyses of their age, sex, academic qualification and years of experience. This quantitative nature of data analysis helped the researcher to understand how individual's views can be represented as an organization.

Tables and texts were used for describing the responses from the interviewees.

The researcher received an in-side understanding of the topic with the use of qualitative analysis. Themes were made in connection with the emphasis or repetition of specific statements by the respondents. Responses were broken down in accordance with comparative analysis in relation to the respondent's experiences and their degree of involvement or impact in the affairs of the MARPOL 73/78 implementation issues.

The following are the research questions that guided this research work:

- (a) What are the functions of MARPOL 73/78 regulation in Nigeria?

(b) Are the challenges faced by Nigeria in the implementation of MARPOL rules unique to Nigeria or do they have international precedents?

4.7.2 Limitations of the study

The potential limitation on this research exercise is the proximity of the World Maritime University (WMU) Malmo, to the area of study for the research, which is Nigeria. In a sense, granting of interviews required the researcher to travel to Nigeria and these interviews were conducted on unsuitably scheduled periods during the research exercise. This had set some limitations on this research exercise.

Furthermore, as a result of seeking vital and sensitive data, the selection of sample size for the study was limited to participants that were viewed as maritime experts in the topic of research. Along these lines, the sample size did not really reflect the population. In addition, time impediment was a factor that the researcher needed to battle with amid the research.

In actuality, the researcher could accomplish, to a substantial degree, the objectives set out for this study in spite of the limitations.

4.7.3 Summary

For the researcher to examine the theme of this research and furthermore get answers to these study questions, he used the mixed method approach, which is comprised of both quantitative and qualitative instrument. A detailed Semi-structured interview was used for this study.

The selection of participants for the research was achieved by employing a non-probability sampling technique, precisely, the expert and criterion methods of purposeful sampling. This helped in limiting the people who participated in the study to the individuals who have good knowledge of the effectiveness of the implementation of MARPOL 73/78 with the target of getting quality data.

Moreover, an analysis of data was done in light of comparative analysis of the demographic information of respondents, their experiences and the degree of their impact or involvement in the implementation of MARPOL 73/78. The discoveries gathered from the data acquired are discoursed in the following sections.

5 ANALYSIS OF DATA, RESEARCH FINDINGS AND DISCUSSION

5.1 Introduction

This chapter contains two parts, where part one (I) presents analysis of the data and findings and part two (II) contains research findings and discussion.

5.2 Analysis of Data, and Findings

The literature review revealed that when a Government (like Nigeria) accepts an IMO Convention, it agrees to make it part of its own national law and to enforce it just like any other law. The problem, however, is, that some countries sometimes lack the expertise, experience and resources necessary to do this properly. Others perhaps put enforcement fairly low down their list of priorities. In view of the research questions, this section endeavours to corroborate the original data for this study through semi-structured interviews.

The semi-structured interview questions were administered to seek the views of people from the Nigerian maritime industry, shipping company and other sovereign nations e.g. United Kingdom as regards the effectiveness of the strategies adopted for the implementation of MARPOL 73/78 rules and on how to improve them in this new era.

The following categories of people were interviewed – port operators, harbour master, inspectors, and ship operators, head of environmental department, port reception facilities

operators and the Permanent Secretary. The semi-structured interview questionnaire was designed in two sections.

Section 1 looked for the biographic data of the considerable number of respondents who participated in the study, for example, sex, age, academic qualification and years of work experience.

Section 2 accommodates the information that the respondents have about the effectiveness of implementation of MARPOL 73/78 Convention.

The reason for conducting the interviews was for the researcher to capture detailed information in respect of the study, which would not have been taken into consideration in secondary data. Accordingly, a number of major industry players who work in the Nigeria maritime industry were interviewed.

5.3 Knowledge about the functions of MARPOL 73/78 Convention

This question was posed to find out the degree to which the respondents are acquainted with the MARPOL 73/78 Convention. The rating of their insight or knowledge on this question ranged from None, Basic, Good or Very Good.

A considerable number of respondents sampled for the study, represented 21 (48 percent), have good knowledge on how the MARPOL 73/78 Convention functions; 14 (32%) evaluated their knowledge as very good and 7 (16%) appraised it as basic. Three of the participants did not respond. It is critical to feature here that the majority of the respondents showed a good knowledge of how the MARPOL 73/78 regulation functions in Nigeria.

The responses from the interview, indicate that all the interviewees, had good knowledge about the functions of the MARPOL 73/78 regulation. They showed this by explaining that the MARPOL 73/78 regulation was mainly concerned with setting out criteria for the discharge of oil from ballast water and tank washings of oil tankers, and from machinery room bilges of all ships that call in Nigeria Ports. They also expressed that it lays down requirements for the construction and equipment of ships, including oily-water separating

and filtering equipment, oil discharge monitoring and control systems, segregated ballast tanks (SBT), dedicated clean ballast tanks (CBT), and crude oil washing systems (COW).

5.4 Part II: Research Findings and Discussion

5.4.1 Introduction

This part introduces the outline of the key discoveries or findings of the study conducted to assess the effectiveness of the implementation of the MARPOL 73/78 Convention; the case study of Nigeria with the following fifteen (14) research questions as a primary concern:

- a) *What are the functions of MARPOL 73/78 regulation in Nigeria?*
- b) *According to your knowledge, do you think the reception facilities provided by the Government in ports are adequately prepared to attend to the waste disposal needs of ships calling in without causing undue delay? (If Yes/No describe your explanation)*
- c) *In your experience as a Ship Master, do you think the port reception facilities provided by Nigeria ports are sufficient enough to meet the ships needs without any delay and as specified by IMO convention? (If Yes/ No explain)*
- d) *In your opinion, how does the government manage and upgrade existing port waste reception facilities?*
- e) *According to your experience, do you think the challenges faced by Nigeria in the implementation of MARPOL rules are unique to Nigeria or do they have international precedents?*
- f) *According to your knowledge, do you think the United Kingdom is facing the same challenges in the implementation of MARPOL 73/78 as that of Nigeria? (If Yes/No describe your explanation).*
- a) *“According to your experience, how effective is the current domestic legislation in enforcing and implementing marine pollution rules and how does the government respond to detected violators of MARPOL within the Nigeria marine environment?”*

- b) According to your knowledge, where do you presently dump both solid and liquid wastes?*
- c) In the case of oil spills or of other dangerous or harmful or hazardous substances, how do you handle them?*
- d) According to your opinion do you think all the ships plying the Nigeria waters meet MARPOL Annexes I, II, III, IV, V, and VI standard? (If Yes/ No explain).*
- e) According to your knowledge, how do you assess the level of compliance MARPOL 73/78 by ship that call in?*
- f) According to your experience, do you communicate with the ship operators on the need to keep your marine environment clean? What is your means of communication?*
- g) According to your knowledge, is the quality and quantity of manpower available in Nigeria for the implementation of the provisions of the MARPOL Convention sufficient and as specified by IMO convention?*
- h) In your experience, what are the main challenges faced by port reception facilities operators and how do you address them?*

5.4.2 Findings from the study

The Nigeria Perspective

Question 1

What are the functions of MARPOL 73/78 regulation in Nigeria?

From the analysis, it is apparent that 95% of the respondents have a good knowledge about what MARPOL 73/78 Convention stands for and how it functions. It ought to likewise be expressed here that the exhibition of knowledge about the work of the MARPOL 73/78 Convention by the other respondents shows the benefits or significance of the Convention as it serves the entire maritime industry, shippers and the public.

Question 2

According to your knowledge, do you think the reception facilities provided by the Government in ports are adequately prepared to attend to wastes disposal needs of ships calling in without causing undue delay? (If Yes/No describe your explanation)

In this study adequate facilities will be defined as those reception facilities that have been carefully tailored to local needs and meet the operational requirements of the vessels using the port without any delay.

Overall, the result from this question indicate that the waste reception facilities in Nigeria Ports are adequately prepared to attend to waste needs of ships calling in to ensure that the marine environment is always kept clean.

According to respondent 3 and 4, the Facilities generally possess state-of-the-art equipment in line with international best practice with which they carry out their activities. This equipment includes: Incinerators, Liquid Storage Tanks, Isuzu Garbage Trucks, Waste Compactor truck, Tankers, Waste Collection Carts, Flat-bed Waste Collection trucks, G-Force Plant Oily Water Separators, Drum Crushing & Scrubbers, Flat-bed Waste Collection trucks, Balers & Hoppers, Man Sorting Stations, MARPOL Vessel Maizube I, MARPOL Vessel Maizube II, Shuttle Boats, Liquid Storage Tanks, Waste Sorting Machine; TSS 6-Man Sorter (Newly Installed), 4X4 Service Vehicles, Weight Scanner, Bailer, Bob Cat SI30, Oil/Water Tanker and Sorting Plant (6 to 8 Man) Part of the reception facilities and a theme of inspectors from FMT can be seen from a to h below:

Figure 1 (a, b) Reception facilities use for the implementation of MARPOL 73/78 convention in Nigerian Ports and Terminals



Source: Author

Figure 2 (c to h) Reception facilities use for the implementation of MARPOL 73/78 convention in Nigerian Ports and Terminals



Source: Author

Question 3

In your experience as a Ship Master, do you think the port reception facilities provided by Nigeria ports are sufficient enough to meet the ships needs without any delay and as specified by IMO convention? (If Yes/ No explain)

The findings on this showed that, the reception facilities provided at the ports are responding to ship needs without any delay and are in accordance with IMO specification.

According to interviewee 6, “*yes the port reception facilities are sufficient enough to meet the ship needs without delay and according to IMO specification, although we cannot ignore the fact that an increase strong capacity will be a major improvement.*”

Interviewee 5 said “*yes in Nigeria the port reception facilities are well located in each of TTS 4 of the main navigational districts, with adequate manpower, equipment such as Compactors, MARPOL reception vessels and state of the art waste processing plants etc.*”

Based on the above responses the researcher is of the opinion that the nature of facilities provided in the ports and terminals does not have any negative impact on the enforcement of the provisions of the MARPOL 73/78 Convention in Nigeria.

Question 4

In your opinion how does the government manage and upgrade existing port waste reception facilities?

According to the information obtained from 90% of respondents, the African Circle Pollution Management upgrade, existing port waste reception facilities by acquiring new equipment. The Federal Ministry of Transportation carries out regular Audit, facility inspection, and monitors and regulates the activities of ACL regarding upgrading of existing port waste reception facilities to ensure the adequacy, prompt response and replacement of bad equipment.

However, the researcher notes that facilities within the period of this study have neither experienced a miss nor accidents, indicating a good safety culture within the Port Reception Facilities. The facilities are also operational and within the Ports premises.

Question 5

According to your opinion do you think all the ships plying the Nigeria waters meet MARPOL Annexes I, II, III, IV, V, and VI standard? (If Yes/ No explain)

From the analysis, it was evident that the majority of respondents were of the opinion that, most of the foreign vessels plying the Nigerian waters meet the required standard of

the six Annexes, while some; especially indigenous vessels were seen to be the major defaulters.

According to interviewee 3, and 4 *“Most of the foreign vessels plying the Nigerian waters meet the required standard but our major defaulters are indigenously owned vessels as most, if not all of them, are still outdated with phased out system”* while interview 3 responded that, *“ to a large extent yes except for some coastal vessels”*.

From the researcher’s point of view, the compliance level of the provisions of annexes I, II, III, IV, and VI of MARPOL 73/78 convention by ships is low. Thereby I recommend that all defaulting vessels should be banned from using the Nigeria waters until such a time where they are able to meet the required MARPOL 73/78 specifications.

Question 6

According to your knowledge, how do you assess the level of compliance of MARPOL 73/78 by ship that call in?

It was the view of some of the respondents that the level of MARPOL 73/78 compliance by ships is assessed on a scale of 1-10 at 8, the level of awareness and compliance as exhibited by vessels crew.

Following the above response from the respondents and for the sake of clarity, the researcher came up with a follow-up question:

In your experience, what do you understand by scale of 1-10 at 8, the level of awareness and compliance?

According to Interviewees 4 and 2, *“the scale of 1-10 represents the level of ship operator’s awareness and compliance. While 1 represent low level of A & C, 10 represent an excellent level of A and C , while 8 represent very high level of A and W among the vessel crew in areas of compliance with MARPOL 73/78 regulations in respect of availability and utilization of the port reception facilities”*.

Question 7

“According to your experience, how effective are the current domestic legislations in enforcing and implementing marine pollution rules and how does the government respond to detected violators of MARPOL within the Nigeria marine environment?”

In this study, effectiveness of the current domestic legislation will be referred to, as the strength of the current domestic legislations.

According to responses from 98% of the interviewees backed up by Ibokwe (2017), the existing national legislations in Nigeria used for the implementation of MARPOL 73/78 are grossly inadequate and ineffective. It is likewise clear that from all the Conventions on pollution prevention which Nigeria has not endorsed or implemented, its current national legislation and regulations relating to pollution prevention are out dated and are not in line with current global pollution control, prevention, liability and compensation.

The researcher is of the view that the problem is not associated with the dearth of legislation on the subject; rather the problem lies with the enforcement of the legal instruments in domestic jurisdictions. The effect of ineffective enforcement strategies and implementation, as well as the slow pace of domestication of National laws in Nigeria is that the provisions of the conventions are unenforceable in court. For instance, the search power of the officers of National Environmental Standards and Regulations Enforcement Agency (NESREA) is deficient in making provisions for an order of court before a search can be conducted on any vessel or premises. This causes the arbitrary exercise of powers by the officers. Failure to state clearly the punishment and penalties for violating these guidelines and regulations creates the impression that compliance is optional.

This has rendered the implementation process ineffective. The enforcement agencies; the court, the police, the local and the state government lack effective enforcement strategies for the implementation of the laws.

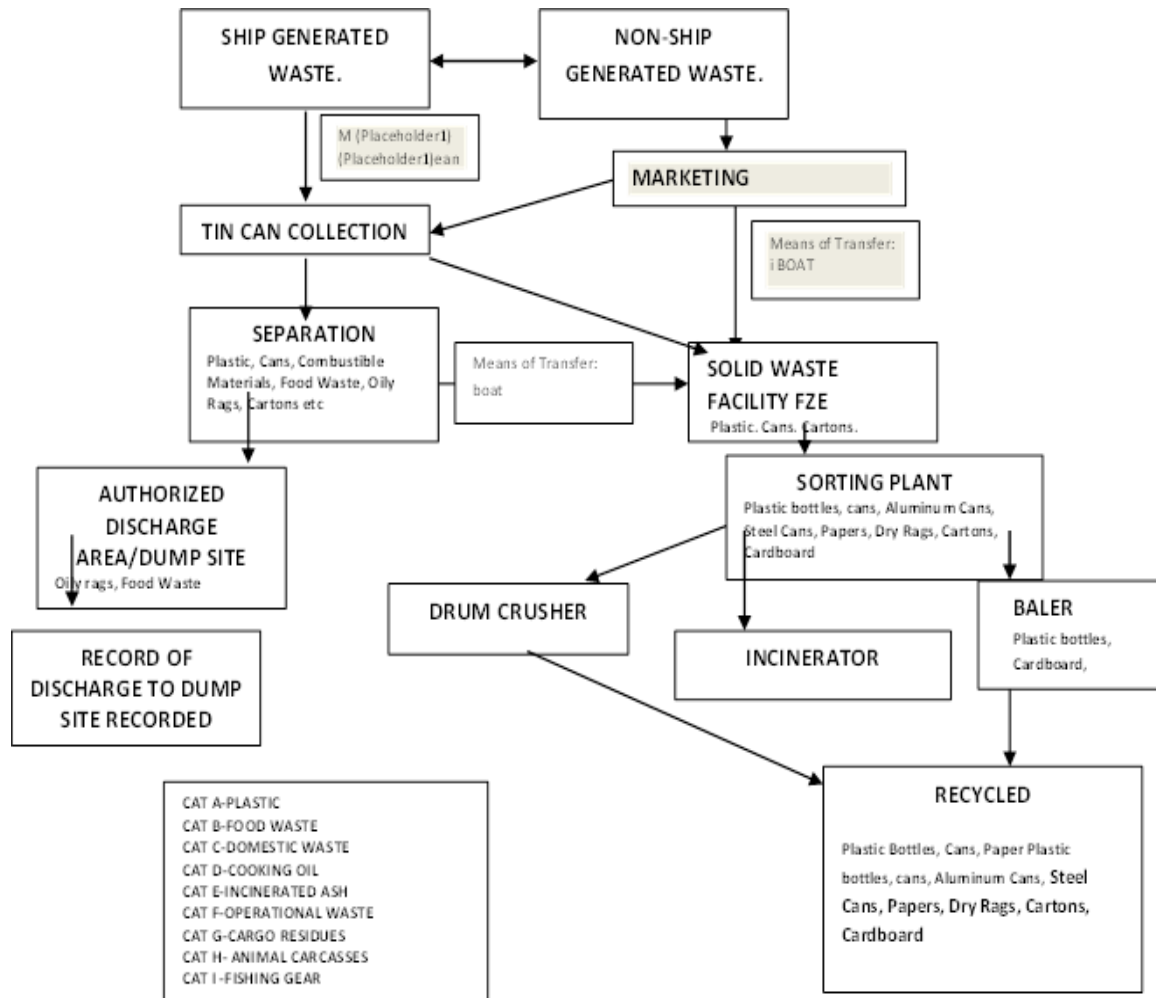
Question 8

According to your knowledge, where do you presently dump both solid and liquid wastes?

The study revealed that the non-recyclable material is given to the Port District State Waste Management Authority for appropriate disposal; the recyclables are treated in their facilities treatment plants before handing over to third party agents for re-use, while e-wastes are given to Port District State Environmental Protection Agency.

Figure 2 below is meant to show how the Facility provider African Circle Pollution Management (ACL) handle their solid waste and in conformity with MARPOL specification.

Figure 3: Facilities chart showing African Circle solid waste management plan



Source: FMT

Question 9

In the case of oil spills or of other dangerous or harmful or hazardous substances, how do you handle them?

The findings on this showed that there is always an internal measure in place to avoid spill, but recently, stock pile was installed to help in this regard. The respondent further said they also run quarterly inspection with NOSDRA as part of their contingency arrangement; this involves drill exercises in these areas.

Question 10

According to your experience, do you communicate with the ship operators on the need to keep your marine environment clean? What is your means of communication?

The information gathered from this enquiry revealed that the Facility provider, African Circle Pollution Management (ACL), communicates with the ship operators on the need to keep the marine environment clean through direct dialogue on-board vessels, door to door sensitization campaign of Port and Terminal operators, organizing stakeholder's seminars, creating awareness of available services through social media platforms, internet feedback forms and services rendered with the help of NPA.

Since the researcher wanted to have a good insight into how they communicate with ship operators on the need to keep their environment clean, a follow up question was necessary:

According to your experience and response above, how do you select your stakeholders for these seminars?

According to the respondent 2 and 3, the selection of stakeholders follows the distribution of invitation for seminar attendance to all the active shipping agencies that are registered with the Port Authority within the period under review and this is also made available on the port website.

Question 11

According to your knowledge, is the quality and quantity of manpower available in Nigeria for the implementation of the provisions of the MARPOL73/78 Convention sufficient and as specified by IMO convention?

Some of the respondents were of the opinion that, the quality and quantity of man power available for the implementation of MARPOL 73/78 rules is sufficient, while others said that while the quality and quantity of man power available is sufficient, there is need to enlighten worker by organising intermittent training.

The findings on this showed that the quality and quantity of manpower used for the implementation of the MARPOL 73/78 is sufficient and does not have a negative impact on the implementation level.

Question 12

In your experience, what are the main challenges faced by port reception facilities operators and how do you address them?

The study revealed that the main challenges faced by the reception facilities operators is that of space/land to mount the newly acquired equipment, timely prior notification for waste evacuation from vessels and lack of policy enforcement particularly with coastal vessels who are seen to be the major defaultant of MARPOL 73/78 . However, some respondents said the small space available is being put into effective use to perform the appropriate job; with the hope that NPA will resolve the land issue soonest.

Question 13

According to your experience, do you think the challenges faced by Nigeria in the implementation of MARPOL rules are unique to Nigeria or do they have international precedents?

Some of the information gathered from this enquiry revealed that the challenges faced by Nigeria in the implementation of MARPOL are local and unique to the country entirely while others revealed that some of the challenges have international precedents.

According to interviewee 1, “*I do not think those issues have International precedents as one unique problem facing the MARPOL 73/78 implementation is the enforcement of the laws on defaulting vessels and shipping companies*” while interviewee 3 said, “*no it isn’t unique to Nigeria, I believe other Countries have gone through this challenges, it’s left for Nigeria to do the right thing*”.

From the researcher’s point of view, the challenges lie within the low level of enforcement of laws on defaulting vessels and shipping companies therefore, are local and unique to the country.

Research has revealed (Ball, 2013), that the UK government achieved effective MARPOL73/78 implementation strategies by adopting an integrated approach consisting of the following three major elements:

- i. Making control more effective by improving regulations and their enforcement;
- ii. Improving the facilities for the legal disposal of waste in ports;
- iii. Increasing the penalties for illegal discharge and
- iv. Revoked and replaced the early legislation on waste reception facilities with Merchant Shipping Regulation of 1997.

In the case of Nigeria, according to respondents and Ibokwe, (2017), the existing National legislation and regulations used for the implementation of MARPOL 73/78 are grossly inadequate, out-dated, and ineffective. E.g. the enforcement Agencies such as the Court, the Police, and the local and state government lack effective enforcement strategies for implementing the laws. In addition, the penalties and punishment for illegal discharge of waste by ships are very low; thereby living defaulters with the impression that compliance is optional. This is contrary to the UK strategies.

Question 14

According to your knowledge do you think United Kingdom is facing the same challenges in the implementation of MARPOL 73/78 with that of Nigeria? (If Yes/No describe your explanation)

The UK Perspective

Due to the lack of financial resources, the researcher could not go to UK ports to conduct face-to-face interviews but resolved to use secondary data to determine the answer to this question.

There are more than 600 ports and harbours in the UK, taking care of half a billion tons of cargo each year, representing 95% of trade in UK by volume, and 80 percent by value. 20 ports handle more than 5 000 tons every year and each of these port has a good method of vessel traffic and usage. Thusly, most of the ports are using the same method to meet the requirement of their waste management under the MARPOL 73/78 convention by encouraging contractors who have waste disposal licences to provide services to the shipping industry.

These services are arranged through ship' agents on a general or sporadic basis. On the other hand, an agreement for the removal of common user waste may exist between the port or terminals and the contractor where the contractor is paid by the authority for some or every service provided. Notwithstanding the contractual agreement, the obligation regarding a definitive evacuation of waste as per national legislation and local authority stipulations depend on the waste contractor (Ball, 2013).

General UK strategy

The Government of the United Kingdom made laws that require port operators, harbours, marinas or other docking facilities to provide sufficient waste reception facilities for waste produced by ships and to set up a waste management plan according to MARPOL 73/78 provisions on port waste reception facilities. This obligation regarding port and harbour authorities' structures is part of a major initiative to prevent pollution from all sizes of leisure and commercial ships that call in UK ports.

Fundamental to the planning procedure is the prerequisite for port and harbour authorities to consult with their clients so facilities can be customized to the necessities of port users, accordingly taking away any incentives for waste to be released wrongfully at sea. Lord Donaldson in 1993 conducted an enquiry into all aspects that have to deal with marine pollution prevention from merchant shipping; on this note the UK Government

introduced a consultation exercise that was carried out throughout 1995. This exercise resulted to the announcement of means designed to address the impacts of pollution generated from ships waste. Since waste is not only disposed by commercial shipping activities but also arising from other types of maritime activities, there was no solution to this problem (Ball, 2003).

The United Kingdom, consequently, applied an integrated approach comprised of the following:

- i. “ making controls more effective through improving regulations and their enforcement;*
- ii. improving the facilities for the legal disposal of waste in ports; and*
- iii. increasing the penalties for illegal discharge”*

The requirement for ports and harbours to prepare a port waste management plan is in accordance with the second activity, and is arguably the most vital of the measures reported. The Merchant Shipping Regulations of 1997 made this procedure mandatory.

Prior legislation, on port reception facilities was revoked and replaced by this Regulation, re-introducing the current prerequisite for harbour and port authorities to conform to the provision of adequate reception facilities in their ports for waste produced by ships in accordance with MARPOL 73/78 arrangements (Ball, 2003)

Most of the UK ports and harbour authorities have been using port waste management planning on their own since 1996, following initial guidance issued by the department of Environment, Transport and the Regions as a Merchant Shipping Notice (No. MI659). Besides, steps have been embraced in the Merchant Shipping and Maritime Security Act 1997 to make this procedure mandatory with regulation (Ball, 2003).

Moreover, guidance to complement the Merchant Shipping Regulations of 1997 is provided in a Merchant Shipping Notice (No. M1709) and in a booklet containing guidelines called Port Waste Management Planning how to do it. The rules have been

drawn up by the DETR, with contribution from its Marine Pollution Advisory Group in view of best practice provided amid the voluntary era.

“The consultation exercise brought together the views of the many different organizations that were involved, or had an interest in the operation of ships and their impact upon the marine environment

Remarkably, some of these organizations had not consulted with one another prior to the exercise. In order to promulgate and ensure the continuation of useful dialogue between these bodies following the consultation period, the MPAG was formed to consider maritime pollution issues, chaired by officials of the DETR. The group consists of representatives from government departments and agencies, maritime and ports associations, local authority associations, environmental organizations and representatives of seafarers, although membership of the forum extends to a larger pool of expertise, upon which the DETR may call as appropriate to the issues under discussion (Ball, 2003).”

Meetings are held after every nine months to encourage the submission of papers to the MEPC. Normally the MP AG remit is to advise the government on issues that deal with the prevention of operational pollution from ships and all other seagoing vessels, the provision and use of port waste reception facilities, and any other aspects of maritime pollution which may be referred to the forum.

In the UK's point of view, adequacy is not assumed in light of the fact that there is extra capacity in the already produced reception facilities or because of the absence of complaints from ships using the ports with respect to individual facilities.

The UK reasoned that there was no basic arrangement which would guarantee both better provision and use of port reception facilities. Since sea pollution is produced by all maritime activities including commercial shipping, the UK has in this way built up an integrated approach to deal with this issue, in light of a package of measures aimed at all types of port and harbour authorities and vessels (Ball, 2003).

Table 6 Comparison of Strategies Adopted for the Implementation of MARPOL 73/78 Regulations between United Kingdom and Nigeria

S/N	UNITED KINGDOM (UK) PERSPECTIVE	NIGERIAN PERSPECTIVE
1	The existing laws used for the implementation of MARPOL73/78 regulations are adequate;	The existing national legislations in Nigeria used for the implementation of MARPOL 73/78 are inadequate;
2	Improving the facilities for the legal disposal of waste in ports;	Improving facilities for the legal disposal of waste in ports;
3	Making control effective through improving regulations and their enforcement thereby, encouraging full compliance; and	Slow pace of enforcing the legal instrument in domestic jurisdiction thereby, discouraging effective control and making compliance optional; and
4	Putting the penalties for illegal discharge high.	Putting the penalties for illegal discharge very low.

Source: The Author

In view of the above comparison between UK and Nigeria, and considering the responses from 98% of the respondents and the contributions made by other authors on this subject, the strategies adopted by the Government of Nigeria for the implementation of MARPOL 73/78 regulation are inadequate and ineffective while that of UK are effective.

6 RECOMMENDATIONS AND CONCLUSION

From the revisions, surveys and especially from the outcome of the interviews, it has become obvious that the liberal nature of enforcement for IMO rules in Nigeria and the little progress made in its domestication within national laws presents the toughest challenges faced in the implementation of most IMO regulations. The pace of domestication has been very slow compared to UK and even current government policies that encourage ship-owners to obtain waivers on supposedly deficiencies that require rectification before legal operations. This flexible enforcement and issuance of waivers has persistently aided the prevalence of challenges in enforcement of MARPOL rules and has rendered almost all strategies for achieving compliance to be ineffective which creates the impression that compliance is optional.

However, there are various major requirements in ensuring that ships comply with the prerequisite of MARPOL 73/78 to discharge waste in port and there are as follows:

- i. it is imperative that a sufficient space/ land are provided for the installation of new purchase reception facilities.
- ii. it is imperative that a complete picture of the availability of facilities is collected and maintained by the Nigeria Port Authority (NPA), which is made accessible to all vessels through a database of the 6 commercial ports in Nigeria.

This would help vessels to report accordingly to IMO once there is any inadequacy of port waste reception facilities.

Vessels ought to maintain a more comprehensive and accurate records of waste produced and disposed, especially on account of smaller vessels. A system of record books is vital in producing this record, containing data on the levels of waste produced through normal operations. Extra records would likewise be necessary for cargo waste.

Regarding the prerequisites for ports, Nigeria ports ought to give the IMO exact, exceptional data on both the cost and availability of facilities, and would need to present all measures taken to extend the availability or type of facilities provided to IMO.

Nigerian ports should keep records on ships that advise an intention to use the port and on the quantity of waste that they discharge. Records will likewise be required for ships that do not need to give notice ahead of time. In the two cases, records can assist to determining the impact of the implementation of MARPOL 73/78 convention in the marine environment, and moreover use as a part of conjunction with the inspection framework. Nigeria ports should give managerial help to guarantee that auditors are informed of ship movement. Thirdly, The Nigeria Government, in this manner, ought to receive an integrated approach comprising of the five components:

- i. improving the facilities for the legal disposal of waste in ports;
- ii. increasing the penalties for illegal discharge or violation;
- iii. making controls more effective through improving regulations and their enforcement and facilitate the process of domestication of National laws.
- iv. Stop issuance of wavers to IMO faced out vessels and completely stop them from operating Nigerian waters; and
- v. the Government of Nigerian (GON) should also concession/privatize the Nigerian Ports Authority (NPA) Plc.'s marine services to private operators.

It is expected, that this will offer opportunities for imports of marine equipment and services. It is to be noted that marine services are part of NPA regulatory function/roles; however, subsequent to concession of the ports, NPA assumed the role of landlord and as such divested itself of its port operations functions.

To round it all, if records are properly gathered from vessels, Nigeria would have the capacity to evaluate the circumstances in regards to illegal dumping at sea in an appropriate manner, and this data ought to give prove if there is any reduction. Up-to-date, accurate information on availability of facilities can likewise be used to identify how effective the MARPOL 73/78 has been in promoting usage of facilities, and to

distinguish those vessels which neglect to comply with MARPOL specifications. Evidence of reduction in the levels of pollution and increased availability would allow Nigeria to claim that the ratification of MARPOL 73/78 and the implementation had an effect in protecting the Nigerian waters from ship-source waste.

The researcher is with the opinion that the MARPOL 73/78 has a noteworthy part to play in the prevention of waste disposal at sea and that the EU Directive could fill in as the reference point for legislation in Nigeria.

In this thesis the implementation of MARPOL was investigated. A detail case study has been carried out focusing on the prevailing trends and strength of strategies for solving identified problems in Nigeria. The approach used for this study was the mixed methodology, comprising both quantitative and qualitative data. The main outcome and results are as follows:

- i. The existing national legislations in Nigeria used for the implementation of MARPOL 73/78 are inadequate;
- ii. Facilities for the legal disposal of waste in ports are improved;
- iii. The pace of enforcing the legal instrument in domestic jurisdiction is slow, thereby, discouraging effective control and making compliance optional; and
- iv. The penalties for illegal discharge of ship- source waste are very low.

This study is a unique contribution to the evaluation of the effectiveness of implementation of the MARPOL73/78 regulations in Nigeria as no other author has written on the topic. The author deserves commendation for venturing into this groundbreaking research that will be the foundation for the further development of this study area.

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APPENDICES

Appendix A Questionnaire Concerning the Effectiveness of Implementation of the MARPOL 73/78 Convention in Nigeria.

Considering the challenges faced in the implementation of most IMO regulations which has rendered the strategies used for the domestication of MARPOL 73/78 ineffective. It would be of a great interest to look at the strength of existing national legislations used for domestication of MARPOL 73/78 in Nigeria and the strategies adopted by sovereign nations for enforcement of MARPOL 73/78 rules. This has prompted the researcher's quest to discuss the specific question to be analyzed in this Thesis.

Views from experts are collected in form of semi-structure interviews which are conducted as a part of data collection in addition to literature review.

In other to avoid faulty or incomplete data collection, the researcher, will use a recording device as a means of data collection.

Semi-structured interview Question

- What are the functions of MARPOL 73/78 regulation in Nigeria?

PART 1

Background Review

Professional Background

- Where do you work at a moment and tell me what how many years you have been working in the Maritime industry?
- What is your experience and how is your work related to MARPOL 73/78 Convention?
- Which skills have you acquired in your present or previous position that relate to MARPOL 73/78 Convention?
- Are you a Harbour Master, surveyor/Inspector, captain, Head Department, director, ship operator or permanent Secretary? If yes how many years do you have this experience?
- How often do you train in a year? Do you need more training?
- As regard the topic of MARPOL 73/78 do you consider your technical abilities basic, intermediate or advance?

PART 2

- What are the functions of MARPOL 73/78 regulation in Nigeria?
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- The IMO has recognized that the provision of port waste reception facilities is crucial for effective MARPOL 73/78 implementation; the MEPC of the IMO has strongly encouraged member states, particularly those parties to the MARPOL 73/78 as port states, to fulfill their treaty obligations on providing adequate port waste reception facilities. The adequacy of the port waste reception facilities as used in the MARPOL 73/78 Annexes, means that port reception facilities must meet the needs of ships using the ports without causing undue delay.
- “According to your knowledge, do you think the reception facilities provided by the Government in ports are adequately prepared to attend to wastes disposal needs of ships calling in without causing undue delay? (If Yes/No describe your explanation)
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- In your experience as a ship operator, do you think the port reception facilities provided by Nigeria ports are sufficient enough to meet the ships

needs without any delay and as specified by IMO convention? (If Yes/ No explain)

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- They MEPC of the IMO prepared guideline which provides information relating to the on-going management of existing facilities, as well as for the planning and establishment of new facilities.

“In your opinion how does the government manage and upgrade existing port waste reception facilities?

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- According to your experience, do you think the challenges faced by Nigeria in the implementation of MARPOL rules are unique to Nigeria or do they have international precedents?

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- According to your knowledge do you think United Kingdom is facing the same challenges in the implementation of MARPOL 73/78 as Nigeria? (If Yes/No describe your explanation)

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- Port States are charged to ensure that their domestic legislation provides suitable powers and infrastructure to implement, administer and enforce MARPOL 73/78. Those who fail to comply with appropriate domestic legislation should be open to prosecution by the port state. “According to your experience, how effective are the current domestic legislations in enforcing and implementing marine pollution rules and how does the government respond to detected violators of MARPOL within the Nigeria marine environment?

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- According to your knowledge, where do you presently dump both solid and liquid wastes?

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- In the case of oil spills or of other dangerous or harmful or hazardous substances, how do you handle them?

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- MARPOL Annex I require oil tankers to be provided with slop tank arrangements, an oil discharge monitoring system, and an oil-content meter. Also, it is mandatory for oil tankers to have double hulls as well as segregated ballast tanks or dedicated clean ballast tanks. “According to your opinion do you think all the Ships plying the Nigeria waters meet the above standards, as it is included in annex 1 of MARPOL? (if Yes/No describe your explanation)

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- According to your knowledge, how do you assess the level of compliance of MARPOL 73/78 by Ships that called in?

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- According to your experience, do you communicate with the ship operators on the need to keep your marine environment clean? What is your means of communication?

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- According to your knowledge, is the quality and quantity of manpower available in Nigeria for the implementation of the provisions of the MARPOL Convention sufficient?

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- In your experience, what are the main challenges faced by port reception facilities operators and how do you address them?

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Appendix B WMU Research Consent Form

Dissertation Description

An Examination of the Effectiveness of Implementation of the MARPOL 73/78 Convention in Nigeria.

IMO encouraged contracting Governments to ensure that their domestic legislation provides suitable powers and infrastructure to implement administer and enforce MARPOL 73/78. It further advises that those who fail to comply with appropriate domestic legislation should be open to prosecution by the port state. Port states are charged with the ultimate responsibility of ensuring that adequate port waste reception facilities are available to ships calling at their ports, and that they are to ensure the provision of port waste reception facilities that are adequate and capable of handling the discharge of waste from regular port users. Port states are also encouraged to ensure the provisions of proper arrangements to consider and respond appropriately and effectively to reports of inadequacies.

IMO was established to adopt legislation and contracting Governments are responsible for implementing it. When a Government (like Nigeria) accepts an IMO Convention, it agrees to make it part of its own national law and to enforce it just like any other law.

This research is a critical analytical study that is aimed at examining a prevailing situation with its associated challenges. This will then be followed by assessing the effectiveness of strategies adopted for tackling the challenges. In this regard the research is designed to analyze prevailing trends and investigate the strength of strategies for solving identified problems within the scope of the research. Most data slated for use in this research are secondary data that will be backed with some primary data to be obtained through semi-structured interviews from stake-holders in maritime environmental management and administration in Nigeria.

Declaration Confidentiality

I consent to my personal data as it is stated in the information sheet bellow been used for this research. I am aware that all personal data and responses that have to do with respondents are process and held with full confidentiality. On this note, all answers obtain will not be traced back to participants. I should be held responsible if there be any breach of confidentiality.

Appendix C: Email to Participants

Dear Sir/Madam

My name is Akpama Ikpi Ofem, an MS.c student with specialization Ocean Sustainability Governance, and Management, at World Maritime University year 2017. My research focuses on an Examination of the effectiveness of implementation of the MARPOL 73/78 Convention in Nigeria. This research is a critical analytical study that is aimed at examining a prevailing situation with its associated challenges. This will then be followed by assessing the effectiveness of strategies adopted for tackling the challenges. In this regard the research is designed to analyse prevailing trends and investigate the strength of strategies for solving identified problems within the scope of the research. Most data selected for use in this research are secondary data that will be backed with some primary data to be obtained through semi-structured interviews from stake-holders in maritime environmental management and administration in Nigeria through phone calls and face to face.

The interview is completely voluntary and should not last for more than 20-25 minutes. You can also withdraw your participation at any time. All data collected will be anonymous and will not be traced back to you.

Please your cooperation is highly needed.

If you have any question or comments don't hesitate to contact me at s17116@wmu.se/ ikposeakpama@yahoo.com. You can as well message me at +4679684678. I will also be happy to give you a call. You can also contact my supervisor, Micheal Baldaulf, at mbf@wmu.se