



A Critical Survey on the Challenges and Prospects of Shipbuilding and Ship Repairs Services in Nigeria Shipyards

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ABSTRACT:

This study “A critical survey on the challenges and prospect of Shipbuilding and Repairs services in Nigeria Shipyards” reviews some of the trend and problems associated with shipbuilding industry in Nigeria. The study considered some selected shipyards such as, Nigeria Naval Shipyard Port Harcourt, West Atlantic Shipyard, Nigeria, Starz Marine and Engineering Limited, Onne Oil and Gas free Zone and critically examined and analysed the major challenges facing the shipbuilding and repairs operation in Nigeria, and identified some of these challenges as, lack of modern equipment, Obsolete maintenance equipment, lack of trained staff in modern technology, lack of shipyard capacity, political interference, lack of financial grant from the government, Government Maritime policies. The study also identified some key factors that promotes and have positive impact on the shipbuilding market in Nigeria. This study made use of the interpretative techniques in order to examine and identify key issues confronting ship repairs and maintenance services in selected shipbuilding yards. The findings from participants indicates that shipbuilding and repairs services are heavily overwhelmed with key challenges, which stands for 53.334% after adding up three items out of seven stated in the study.

Introduction

The maritime industry has for long been seen as one of the viable vehicles to facilitate economic prosperity in the world. It is one of the channels of transportation of goods most especially for littoral countries and the largest carrier of freight worldwide. The whole idea of maritime transportation as the catalyst of developing the economy is not a new theory as Adams Smith saw the maritime transportation as a stepping stone to economic growth and major driver of globalization. He then stated that: A business working in a country town without links to the outside world can never achieve high levels of efficiency because its small market will limit the degree of specialization. Consequently, this has led to phenomenal discovery, innovation and development of different types of shipping structures and equipment (Kambase, 2020).

Amongst the various means of transportations of goods, the marine transportation is the most preferred mode of transportation in the global merchandise trade. In fact, 90 percent of the world 10.702 billion tons of international trade is been transported by sea. According to a report published by the United Nations Conference on Trade and Development (UNCTAD) revealed that developing economies in 2019 accounted for the largest share of global seaborne trade, both in terms of exports and imports (UNCTAD/RMT/2018).

The rapid growth in the global trade is directly proportional to the expansion and effectiveness of the sea borne transportation. An increase in the world trade, will automatically stimulate an increase in demand and supply for shipping to convey large volume of goods from one point to the other point. As the demand for shipping increases more than the supply, the freight rates also rise hence shipowners and operators will be acquiring and deploying more vessels in order to earn high freight rates (Kambase, 2020). According to Yousef Alhouli “as the world trade continues to grow, the maritime shipping industry transports the largest share of the world trade, which has resulted in the expansion of the shipping industry around the globe. However, it always has an inevitable disadvantage in shipping. It usually characterizes by shipping cyclicity, bringing about over capacity and low demand when more newbuilds are delivered into the already existing fleet thereby leading to freight rates fall (Alhouli, 2011).

In the maritime sector, ship repairs and maintenance services are seen as one of the essential sectors that contribute significantly to the rapid development of the industry. This is made manifest through revenue generation, job creation and transfer of technology via the rendering of effect and efficient ship repair and maintenance services to shipping company. In recent times, the need for effective management of shipyards all over the world has been at the front burner of international maritime discuss. Despite, the progresses recorded in terms of contribution of shipyards to national development, the sector is equally faced with some bottle-neck. As a matter of fact, good number of developed and emerging economies such as Europe and Asia have taken major steps to address these issues, in order to find a sustainable ship repairs and maintenance industry so as to sustain the growth of their economies and development (ECORYS Consulting and Research, 2009).

Nigeria as a developing nation, is not left out in terms of improving its shipbuilding and ship repair sector. Like any other country, this segment of the maritime industry has received tremendous attention which has triggered the expansion and contributing to the rapid growth of the Nigerian economy. Nevertheless, like every other business entity, the ship repairs and maintenance sector in Nigeria, faces many challenges.

Statement of Problem

The shipyards and ship repair services are a unit in the maritime industry plays a central role in the global economy. The sustainable management of shipyards, ship repairs and maintenance services has not been satisfactory chiefly due to inconsistent government policies, lack of modern shipyard equipment and technologies etc. The contribution of shipyard and ship repair sector to nation building and economic development especially in the developed nations are vital notwithstanding the concurrent existing challenges. As countries all over the world, particularly advanced countries, have developed models to solving the issues confronting their shipyard and ship repair sectors, the developing nation, like Nigeria seems to drown with these challenges.

Presently, lack of capacity, obsolete maintenance equipment, lack of equipment, inadequate skilled labour, are some of the major challenges confronting the ship maintenance and repair services in the Shipyard. The continual existence of these unsolved challenges either in the past or present, directly and indirectly affects the economic, social and environmental aspects of ship maintenance and repair services as well as its sustainable development. Therefore, this study is intended to examine the challenges facing shipyards and repairs in Nigeria logically and impartially in order to also contribute to the sustainable management and development of Ship repairs and maintenance services in Nigeria.

An Overview of the Nigeria Maritime Industry

The maritime industry is international in nature and its acknowledgement to be a very dynamic component in the socio-economic configuration of any given maritime nation. Nigeria is no exception. One major problem that has continued to plague the industry is the issue of adequate policy formulation and implementation; hence the contribution of shipping to economic growth has therefore been a subject of debate. The Nigeria shipping industry has come of age. Historically, it dates back to the period of the discovery and exploration of Africa by the colonial masters in which some of their journeys were made by sea from Europe and the Americas and by Rivers within Africa (Asokuka, 2003).

However, the revolution of Merchant shipping in Nigeria could be traced to the early 20th century with the activities of three British companies namely; Elder Dempsey Agency, United Africa Company (UAC) i.e., the successor to Royal Niger Company and John Holt Company (Liverpool) Ltd. Though these companies were mainly trading groups carrying their own merchandise from Europe with their own ships rather than being shipping companies rendering freight services were however attributed to the UAC when in the early 50's, it set up the palm line Ltd. to provide shipping service mainly on the west Africa – United Kingdom route. There was effort by Nigerians to eke out a living from the maritime trade but this was opposed by the colonialists (Asokuka, 2003).

The Nigerian National shipping line (NNSL), which was formed in 1959, signalled the birth of indigenous shipping in Nigeria. Credit however ought to have been given to Messrs Patrick Osolea and Sons who in 1957 made bold efforts to enter the shipping trade but these efforts died almost immediately due to stifling environment created by the colonialist (Abiodun, 1996). At independence in 1960, Nigeria inherited a maritime trade system which was almost totally controlled by foreign ship owners. There is no record to show that any Nigerian individual acquired any ocean-going vessel until about 1972 when the Nigerian Far East company owned by late Henry Fajemirokun blazed the trail. Many other followed suits. Nigerian Green Lines was established by Wahab Folawiyo, Niger Brass by Mahmud Waziri, African Ocean line by Late Bashorun M.K.O Abiola and late Major General Shehu Yar'adua, Brawal Lines and Bulkship Nigeria Limited among others (Abiodun, 1996). The next generation of ship owners came after the establishment of the ship Acquisition and ship Building Fund (SASBF) in 1994. However, there were practically no ship repairs facilities in Nigeria then. Hence ships involved in the shipping business in Nigeria had to be repaired outside the country.

SHIP REPAIR YARDS AND DRY DOCK IN NIGERIA

There are about 10 ship repair yards/ dockyards in Nigeria with only 6 of them operational. They include the following

1. Nigerian Naval Dockyard, Victoria Island, Lagos
2. Nigerian Naval Shipyard, Port Harcourt
3. Niger dock Nigeria Plc. Snake Island, Lagos.
4. West Atlantic Shipyard, Nigeria, Onne oil and Gas free Zone
5. Starz Marine and Engineering Limited, Onne oil and Gas free Zone
6. Continental Shipyard Limited, Apapa, Lagos
7. Technitrade, Warri
8. Niger Benue Transport Company Limited, Warri
9. Shipside Drydock (Nestoil), Port Harcourt
10. West African Dockyard, Onne, Rivers State

Shipyards Capacity and Location in Nigeria

Charts of shipyard in Nigeria and their capacities

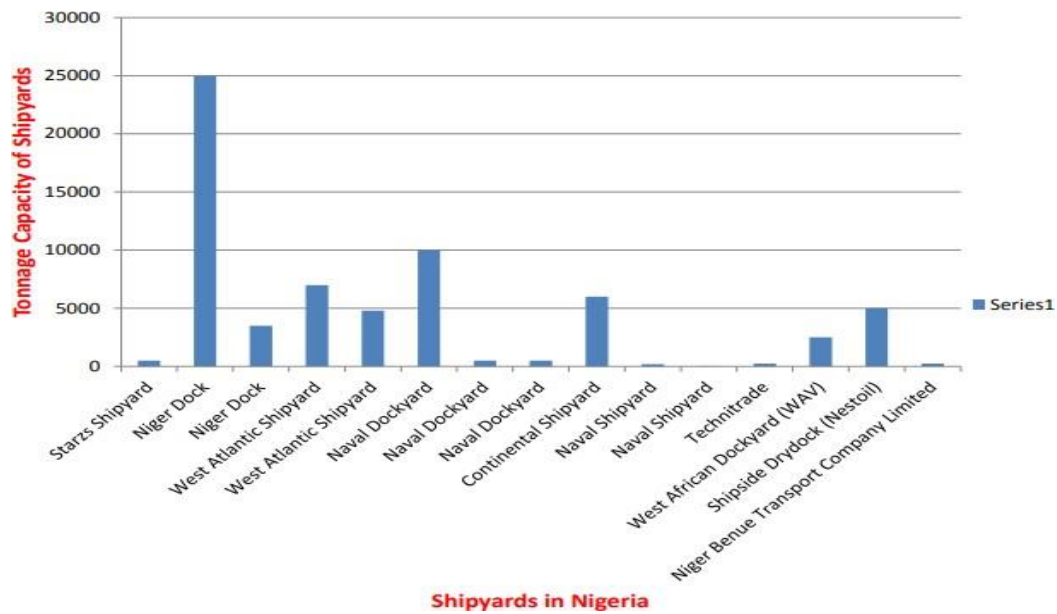


Figure. 1 Charts of shipyard

The maximum available capacity for ship repairs in Nigeria is 25000 tons. This is the graven dock of Niger Dock Plc located in Lagos State. It is closely followed by the graven dock of the Nigerian Naval Dockyard which has a capacity of 10000 tons also located in Lagos state. All other shipyards in the country fall below 8000 tons and are located in Rivers State.

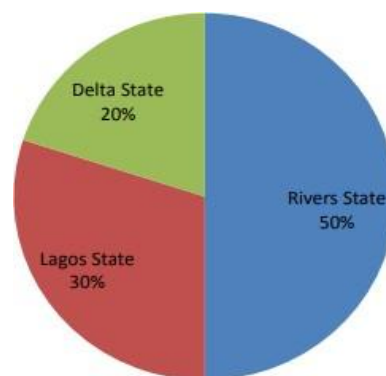


Fig. 2. Geographical location of Shipyards in Nigeria

SHIP REPAIR FACILITIES

There are a number of ship repair facility in the industry. these include dry dock, graving dock, Floatingdock, Slipways and Synchro lift system.

1. **Dry Dock:** A dry dock is a narrow-structured area wherein construction, repairs and maintenance of merchant vessels and boats are carried out. This unique construction or arrangement allows the water to be filled up in an area, also known as a lock so that vessels can be manoeuvred in and out of the area. Once the vessel enters the dry dock, the gates are closed and the seawater is drained out so that the hull and other parts of the ship, which have been exposed to seawater for a long time are exposed for carrying out maintenance and repair

works.

2. **Graving Dock:** This type of dry dock is normally constructed on land near the coastal waters with a rectangular solid concrete construction with blocks, walls, and gates. The vessel is shifted inside the dry dock and rested on the blocks. After the ship is in the required position, the gate is closed and water is removed.
3. **Floating Dry Dock:** A floating dock is in the form of a "U" structure which is mainly used in salvage, to carry ships that have met with an accident and are damaged to an extent that has made them unable to sail further to a coastal dock. However, now many regular sea-going, small and mid-size vessels are also dry docking in a floating dock. Several "U" type floating docks can be joined to carry a large vessel.

The ship is brought near the channel where the floating dry dock will partly submerge itself and the ship slides inside the dock. Once the ship is in the position, the floating dock is then de-ballasted to drain the water from its hollow floors and walls to support the vessel on the blocks arranged on the floor of the floating dock.

4. **Synchro lift:** A synchro lift is a system that is used to lifting boats and ships out of the water for maintenance work or repair. The vessel is maneuvered over a submerged cradle, which is then lifted by a set of synchronised hoists or winches. The vessel can be worked upon in place, or it can be moved inland so the synchro lift can be free for other use. The largest synchro lift can lift vessels up to 100,000 tons. Because of this capacity, synchro lift has almost completely supplanted the older dry dock systems, most of which could handle only one vessel at a time.
5. **Slipway:** A slipway, also known as boat ramp or launch, is a ramp on the shore by which ships or boats can be moved to and from the water. They are used for repairs of smaller boats.

The state of ship Repairs and Maintenance sector in Nigeria

Apart from the foregoing, there are other shipyards that are doing well but they specialized in building small boats in composite materials. Such yards as Modant Marine Limited in Port Harcourt, Rivers' state and Almarine in port Harcourt and so many others, which specialize in the use of glass reinforced fibre in boat construction. Shipyards such as Modant Marine Limited and Almarine are specialized in the use of glass reinforced fibre in boat construction. They are doing well but they specialize in building small boats in composite materials. Their patronage and profitability come from the sale and maintenance of boats for local transporters along the local water ways. Also, information gathered from some of the shipyards like West Atlantic shipyard reveals that they have up to 200 ships in dock with a work force of over 200 workers. It is also emphasized that even the best facility amongst those listed lacks what it takes to build the kind of ships that could effectively engage in the cabotage trade. All of the facilities have limitations.

Accordingly, from the foregoing it could be said that dry dock facilities in Nigeria are inadequate both in number, capacity and capability. This if compared with some nations such as Taiwan that has about 140 shipbuilding yards including two large Chinese shipyards, indicates that there is a possibility of having more ship repairs facilities in Nigeria. A few of the dry-docking facilities listed earlier that have managed to maintain acceptable levels of performance have done so because they played down on ship repairs and focused on construction and maintenance of platforms for oil and gas industry leaning on the Local Content Act of 2010. The local content Act and the policy before it, emphasized oil and gas industry and hence the shipyards took advantage of the situation and began to shift attention to servicing equipment deployed in the oil and gas industry. Shipbuilding, ship repair and maintenance therefore suffer as a result. It would have been nice if the shipyards had expanded by developing capacity to serve the oil and gas industry without sacrificing the growth of their ship repairs capability. It would be emphasized here that, without a good shipbuilding and ship repair infrastructure in the country, there is very little that could be achieved in enforcing the provision in the Cabotage Act and the Local Content Act on shipping. There must be an effort at developing the shipbuilding and ship repairs industry in order to drive the process for achieving the objectives of the Cabotage Act. Nigeria's lack of adequate ship repair facilities explains the lack of local capacity to handle the shipping for export of the nation's oil and gas products, provision of maritime related services for shipping (i.e., tug services, anchor handling and cable/pipe laying vessels, logistics support vessels).

Research Methodology

The research method deployed in this study is a combination of both quantitative and qualitative approach. The essence of choosing the quantitative data is simply because, it can handle numbers which can be analysed using statistical tools whereas, the qualitative data processes the data of respondent's judgements, ideas into more detailed description without the use of numbers. The data obtained for this study came from two major sources, namely, primary and secondary sources. Primary source data are obtained from questionnaire and in-depth interviews conducted with captains of the maritime industry and stakeholders in the Nigeria maritime organizations. While, the secondary data was obtained from research literature, reports google scholar etc. with intent to accomplishing the set objectives.

Data Presentation

In this study a self-developed closed-ended 30 item research questionnaire titled A critical survey on the challenges and prospect of ship repairs and maintenance services in Nigeria Shipyards was developed and distributed, and interviews were conducted with targeted groups to seek for their opinions and expertise on the challenges and prospects of ship repairs and maintenance operations in selected Nigeria shipyards in order to achieve the set objectives. The selected shipyards are; Nigeria Naval Shipyard Port Harcourt, West Atlantic Shipyard, Nigeria, Onne Oil and Gas free Zone, Starz Marine and Engineering Limited, Onne Oil and Gas free Zone. This section further presents and analyses the data collected based on the problems confronting Nigeria shipyards operation.

Analysis of the Interviews

This study made use of the interpretative techniques in order to examine and identify key issues confronting ship repairs and maintenance services in selected shipyards in Nigeria. The results of the findings were presented in summary of three different tabular presentation as shown below.

Table 1 showing the profile of the respondents, a brief summary of the fit back provided by the respondents and the major function of a typical shipyards.

Table 1. Below, showing the Profile of Respondents.

Respondents' particulars:	Respondents' particulars:
Number of Respondents	30
Age range	30-60
Position/Rank/Cadre in the company	<ol style="list-style-type: none"> 1. The Executive Member/CEO of STARSZ Marineand Engineering Ltd. 2. Project Planning & scheduling Manager NigeriaNaval Shipyard Dockyard Supervisor 3. Port Inspector/ Marine SurveyorTechnical and Tertiary <p>Roles/Responsibilities: The Executive member of STARSZ Marine and Engineering Ltd. Managin company's overall operations, directing and delegating, policy formulation and plans for th company</p> <p>Responsibilities: Nigeria Naval Shipyard's Project Planning & Scheduling Manager: Developin projectplans, implementing the plans, Evaluating & Coordinating, responsibilities-and-skills.</p>
Educational Background and Responsibilities	<p>Responsibilities Dockyard Supervisor: Oversees and evaluates all activities of the Dock and dock employees, ensuring safe and efficient loading and unloading of all freight. Conduct daily inspection, ensuring compliance with international practice.</p> <p>Responsibilities Port Inspector/ Marine Surveyor, West Atlantic Shipyard: Conduct thorough and extensive survey of vessel including Inspection Documents of Compliance (DoC) Safety Management Certificates, working charts. Flag State Surveyor etc. in accordance with Article 94 of the United Nations Convention on the Law of the Sea (UNCLOS) 1982 which outlined the duties of the FlagState as follows</p> <p>1) Every state shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag</p>
Years of work Experienced	<p>The results of individual work experience are as follow: The Executive member/CEO of STARSZ Marine and Engineering Ltd., above 15 years' experience, Nigeria Naval Shipyard's Project Planning & Scheduling Manager, above 15 years. Dockyard Supervisor, 15 years working experience. Port Inspector Marine Surveyor, West AtlanticShipyard, Nigeria, 5 years' experienced.</p>

Table 1 Shown above, represents the particulars of respondents, which gives a brief description of the targeted high-ranking officers working at different offices and departments in the shipyard, including captains of the shipping industry, dockyard supervisor, project planning and scheduling manager, Port Inspector were interviewed during the study, in order to get more insight. The above-mentioned officers are one way or the other directly or indirectly involved in ship design and construction, ship repairs and maintenance operation, training of personnel, which are key to the maritime industry. This is aim at acquisition of useful and reliable information contribute to knowledge both in the academia and industry.

Table 2, below revealed the primary Roles of ship repair and maintenance services in the selectedshipyard in Nigeria.

Division	Sub-Division: Function
	Performs two basic functions
Ship maintenance	In Shipyard: ship must be dry docked for major overhaul. In harbour: medium maintenance.
Ship Repair	Main functions of ship repairs include: Steel and Surface preparation i.e., sandblasting, hull preservation, drillingworks, welding /join & cutting of steels.
Others	Training of Personnel

Table 3. The table below shows the summary of the responses provided by the respondents on topical challenges and bottlenecks confronting ship repairs and maintenance in the selected shipyards in Nigeria.

Table 3. Key Challenges and Bottlenecks confronting Ship Maintenance and Repairs in NigeriaShipyard.

Responses	Number of Responses	Percentage of Respondents
Lack of modern Equipment	6	20%
Obsolete Maintenance Equipment/Machinery	5	16.667%
Lack of Trained Staff in Modern Technologies	5	16.667%
Lack of Shipyards Capacity	4	13.333%
Lack of Financial grant from Government	3	10%
Political interference	3	10%
Government Policies/Regulations	4	13.333%

Table 3 as shown above is a summary response from participants. The results from the participant revealed that 20% of 6 stated lack of modern equipment and facilities as the key challenges facing the shipbuilding and repair industry in Nigeria, followed by obsolete maintenance equipment and machinery and Lack of Trained Staff in Modern Technologies 16.667% of 5 while the other challenges include, lack of shipyard capacity 13.333%, Lack of Financial grant from Government and political interference 10%, Government Policies 13.333%. The total sum of the first three challenges made up the highest percentage of 53.334% which means that there are problems facing the shipbuilding and repair market in Nigeria.

Analyses of Key challenging factor facing the Nigeria Shipbuilding and Repairs services in Nigeria.

1. Lack of shipyard Capacity.

Research has shown that, in recent times there has been a rapid increase in the number and sizes of the global merchant fleet as a result of economic growth and technological improvement in maritime industry. According to the UNCTAD findings, which reveals that within Jan.,2017 & 2018 more than 1100 ships were added to the global fleet figure. The finding further indicates that, on the 1st Jan.,2017, a sharp increase was experienced in the global commercial fleet has from 93,161 ship with a combined tonnage of 1.86 billion deadweight-tonnes to 94,171 ships with a combined tonnage of about 1.92 billion deadweight-tonnes in 1st Jan., 2018. 2018 (UNCTAD/RMT/2017 & UNCTAD/RMT/ 2018. This has significantly affected shipyards in terms of growth and development and in relation to equipment and infrastructure worldwide to effectively handle the fast-growing number of commercial merchant fleets globally. Four respondents out of the total number of thirty participant that took the survey stated that limited capacity nature of the berths and docks, by providing that; the shipyards did not possess enough space and deeper draught berths and docks to receive sufficient vessel at same time.

Hence, this has made shipyard operators to lose ship repair clients to other company.

2. Obsolete Maintenance Equipment/ Machinery

A retrospective of the selected shipyard in this study, shows that the equipment used in ship repairs and maintenance operations are no longer fit for purpose, thus making it unsafe to provide the needed services to clients. In some shipyards, the physical facilities are in a terrible and sorry state as a result of corrosion of the sea water and lack of maintenance culture.

Due to technological advancement and the installation of modern equipment such as the use of cofferdam, in the ship construction industry, ship repairs and maintenance service has shifted from the traditional style to a more sophisticated one. The installation and use of cofferdam in ship construction sites is aimed at prevention and control of pollution from ship operation. More so, the information revealed by the 2nd respondent shows that key equipment used for lifting operation i.e., crane, folk lift, winches are totally broken down for a very long time without being repaired and some other outdated equipment which sometime results to delay in delivery date of vessel.

3. Lack of Equipment

The increasing number of old and malfunctioned equipment in shipyard has led to lack of equipment, which is one of the primary challenges confronting shipyard industry in Nigeria. Participant in this study stated that, shipyards lack modern equipment such as folk lifts and CNC machines to carry out specific tasks. According to the respondent, shipyards can be likened to a white elephant and has no spare part, which implies that facilities in the yard are practically empty. This has made clients provide for the spare parts in some cases.

4. Lack of Skilled Labour

The lack of skill has been a major challenge not only in the shipbuilding industry. Almost every sector in world is struggling with supply of inadequate manpower and skill to properly perform tasks. Generally, the rapid increasing of age population and workforce in relation to the current condition and future continuous to pose an ever-increasing threat to the ship construction and repair industry. It is projected that condition will worsen in the nearest future unless something is done substantially. Take for the case of south Koreans' growing age population was projected to increase from 46% to 50%. (ECORRYS Consulting and Research, 2009). The lack of skilled labour has led to low productivity which turn resulting to loss of revenue to the shipyard and the Nigeria economy, safety risk of ship which undertake repair services at shipyards.

Factors promoting ship repairs and maintenance service

From the data provided by respondents' it shows that the shipyard market is been confronted with overwhelming challenges, thus, providing solution can change the present state.

1. International Seaborne Trade

Recent research has revealed that, international seaborne trade is rapidly increasing at an unprecedented manner which has influenced on the shipbuilding and ship repair market and other area of the global market. It is projected that Shipping and seaport sector will continue to carry the 90% of the global world's growth of about 10.702 billion tonnes of international seaborne commodity trade (Alhouli, 2011) and UNCTAD/RMT/ 2018).

According to the United Nation Conference and Trade Development UNCTAD findings, which reveals that within Jan.,2017 & 2018 more than 1100 ships were added to the global fleet figure. The finding further indicates that, on the 1st Jan.,2017, a sharp increase was experienced in the global commercial fleet has from 93,161 ship with a combined tonnage of 1.86 billion deadweight-tonnes to 94,171 ships with a combined tonnage of about 1.92 billion deadweight- tonnes in 1st Jan., 2018. 2018 (UNCTAD/RMT/2017 & UNCTAD/RMT/ 2018. This has significantly affected shipyards in terms of growth and development and in relation to equipment and infrastructure worldwide to effectively handle the fast-growing number of commercial merchant fleets globally. These gestures are targeted at building a viable economy of the global merchant fleet which has direct impact on shipbuilding industry. As ECORRY Consulting and Research stated that: "Worldwide, the annual turnover in ship repair has been estimated at USD 10 - 12 billion (ECORRY Consulting and Research, 2009.)

2. Shipping Regulations

Nations all over the world are finding it difficult to properly regulate her shipping activities, due to disjointed and variation of legal administration at international levels to synergise deal with pollution emanating from marine and other related operations. The processes of implementing and enforcing Annex VI. of International Convention for the Prevention of Pollution from Ships MARPOL 1973, modified 1978/1997 directly and indirectly increase shipbuilding and repair services in shipping industry, because some ships must do repairs of scrubber's installation to make them compliance.

Conclusions.

Based on the data made available by participants and analysed, the shipbuilding and repair market contribute heavily to the growth and development of the maritime industry and the global economy. The rapid increasing number, sizes and blend of technological advancement in the shipbuilding industry progresses, so do the challenges facing the industry globally. Unarguably, Nigeria is not left out of this international maritime group. This also has to do with deliberately, the shipbuilding and repair industry and other related areas of shipping and seaborne trade to grow and develop its maritime industry and economy.

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