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ABSTRACT

Title of Dissertation: **Occupational Safety and Health in the Maritime Industry:
A Case Study of Nigerian Ports Authority (NPA).**

Degree: **Master of Science**

Occupational Health and Safety (OHS) is critical to the success of a modern organisation and considered highly relevant for the Nigerian Ports Authority (NPA). Ports are exposed to severe hazards and risks that may endanger employees, the equipment used in handling port operations has attracted huge investment to mitigate any unprofessional practices that marred operations related to OHS. This dissertation examines OSH in the maritime sector with specific case study of the NPA. Comparative studies of the International best practices of OSH in Gambia, USA, Thailand and Egypt and onsite observations of the NPA OHS practices were interrogated and to provide lessons learned for the NPA to benchmark OHS practice. Findings from the study reveal many factors remain key drivers and causes of OHS practices that include technology and human errors. Besides, the present study contributes to regulatory compliance of ISPS code, ISM code towards safety and health standards and promotion of OHS in the port and prevention of harmful manner that causes death or serious injuries or damage to workers. Thus, the NPA management is advised to ensure entrenchment of international best practices related to OHS, increase training and awareness on work hazard and safety with rigorous monitoring and control.

KEYWORDS: Occupation, Safety, Health, Best practice, enforcement, control

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List of Abbreviations

OSH	Occupational Safety and Health
NPA	Nigerian Ports Authority
IMO	International Maritime Organization
ILO	International Labour Organization
LPC	Lagos Ports Complex
TCIP	Tin Can Island Ports Complex
CP	Calabar Port
DP	Delta Port
WP	Warri Port
OP	Onne Port
SOLAS	International Convention on the Safety of Life at Sea
ISM	International Safety Management Code
ISPS	International Ship & Port Facility Security Code
ILO-OSHM	Guidelines on Occupational Safety and Health Management system
OSHA	Occupational Safety & Health Administration
PPE	Personal Protective Equipment (PPE)
GPA	Gambia Ports Authority
PAT	Port Authority of Thailand
EPA	Egyptian Port Authority
SC	Safety Committee
HR	Human Resource
HSP	Health and Safety Policy
HSE	Health Safety
OHSAS	Occupational Health & Safety Management System
JHA	Job Hazard Analysis
WHA	Workplace Hazard Analysis
RA	Risk Assessment

1. CHAPTER ONE: INTRODUCTION

1.1. Background

The concept of occupational Safety and Health (OSH) is becoming widely accepted and practised in all modern organisations. Occupational Safety and Health is a multidisciplinary area of safety, health and welfare, aim at ensuring a stable, secure and inspiring working atmosphere (Friend & Kohn, 2018a). Studies observed that most employers have been neglecting the health and safety of their employees in the past (Lund & Marriott, 2011, Jilcha, & Kitaw, 2016). Due to lack of adequate health and safety measures in place at their workplace to safeguard their employees, many employees suffered health challenge and injuries because of work hazard (Cudjoe, S. F. (2011). The negative effect of OLS affects satisfaction in the workforce. The effects are both physical and psychological health problems such as health stress and fatigue that are detrimental to employees' health and safety (Akamangwa, 2016). Numerous studies indicate a significant proportion of work-related injuries and ill-health on ships are due to lack of regulatory control and ineffective management of Occupational Safety and Health (OSH) in the maritime industry (Smith et al., 2015) The effects of OSH on employees and the environment have been examined by various authors (Lu & Kuo., 2016; Muthuviknesh, R., & Kumar, 2014). Thus, established that a healthy workplace is a valuable tool for the development and strengthening of OSH standards that are continually improved. However, measures and strategies to prevent, control, reduce or eliminate occupational hazards and risks have been developed and adopted in relations to the evolving advancement in technology and economic changes (Beheary, M. S., Abdelaal, A., & Matar, S. M. (2020). Thus, OSH adoptions and compliance are expected of all organisation to safeguard employees, enhance recruitment and retention and job efficiency while nurturing sound OSH policy and practice (Boella & Goss-Turner, 2019). Organizations big or small are reaping benefits of adopting OSH by engaging in this new strategy by systematically integrating their health promotion safety and environmental programs, policies, and processes (Hymel et al., 2011). As a result, many activities were incorporated in OSH protection and promotion such as;

checking worker health status, identification of personal health risks, early recognition and treatment of injury or illness, job safety initiatives and creating safety culture as well as prevention and return-to-work programs, emergency preparedness planning, and behavioural health and environmental safety initiatives (Hymel et al., 2011).

Consequently, Port authorities and operators face several challenges concerning their role in the inspection of their workplaces for Occupational Safety and Health. Nigerian Port Authority, which has the responsibility of providing specific ports and harbour services for the country's maritime industry as well as the provision quays facilities, pilotage and towage services, is exposed to the challenges relating to health and safety of their employees. It is against this background; this study aims to fill a gap of assessing the Occupational Safety and Health System in the Nigerian Port Authority.

1. 2. PROBLEM STATEMENT

Ports are complex systems and important transportation hubs; their building and operations issues such as design, installation, operation and maintenance. More so, there are many areas of improvement in Occupational Safety and Health risk assessment, which is required to deal with risks, reduce them to an acceptable level and control.

It is generally recognised that over 80 per cent of all marine disasters occurred due to human error, specifically related to organizational practices (Ung, 2018). Hence, OSH is concerned with the safety, health, and welfare of people at work (Sorensen et al., 2018). Because work-related injury and illness are serious problems that place a costly burden on managers and policymakers (Matthews et al., 2016). Cases suicides prove that the mental health of seafarers is worrisome, deaths aboard merchant ships damage seafarers' families and ship owners, and organisations cannot be ignored (Sau & Bhakta, 2019)

Admittedly, conditions at work in relations to OHS have improved substantially during the past few decades across the globe but the overall global situation remains poor. There is no exception to industry and organisation, the Nigerian Ports

Authority is yet to meet up with the global best practices on OSH best practices (Samson-Akpan, & Akpan, 2010).

Port related incidents occur because of a lack of health & safety culture and training, and the International Maritime Organization (IMO) has taken some major players to promote OSH and overcome obstacles in the implementation of OSH in fulfilling its duty to regulate the maritime industry and improve working and living conditions for seafarers. Thus, there is a need to examine the significance of safety & health in an organisation, which is vital in boosting productivity and quality workspace. The big question to answer how effective OSH practices by organisation in are promoting safety policies and health awareness, which form the fulcrum of this research.

1.3. AIMS AND OBJECTIVES

The study aims to achieve the following objectives:

1. Highlight and assess international best practice in Occupational Safety and Health practices in the Nigeria Port Authority.
2. Identify causes, barriers, and drivers for Occupational Safety Health (OSH)
3. Propose far-reaching recommendations on effective OSH in the Nigerian Ports Authority.

1.4. KEY ISSUES OF DISCUSSION

The overview of the methodology in the current study is illustrated in the table 1. Below.

Table 1: Review of Methodology

PROBLEMS	METHOD	APPROACH
4. Q1. What is the nature of the Occupational Safety and Health at the NPA?	Qualitative	Benchmarking
1. Q2. How effective is the OSH currently in practice?	Qualitative	Comparative

(Source: Authors, 2020)

1. 5. STUDY AREA

The Nigerian Ports Authority (NPA) is an agency of the federal government, which regulates and operates Nigerian ports. The six seaports which are under the main control of NPA include; Lagos Ports Complex and Tin Can Island Ports Complex in Lagos; Calabar Port, Delta Port, Warri and Port Onne (Badejo & Solaja, 2017a). NPA also oversees cargo handling, quay and berthing facilities at the Lagos and Port Harcourt ports. In 1974, the Nigerian defence Ministry started a program to construct numerous barracks to accommodate nearly all of its troops. By the end of the year, the Ministry started a cycle of issuing cement supply bids to different firms.

NPA accelerated the expansion of port facilities and a ports reform plan was put in place during the presidency of Olusegun Obasanjo from 1999 to 2007 to reduce inefficiency at the ports. The result was the concession for a certain duration of approximately 24 terminals to private operators. Nevertheless, since 2005 the Nigerian Ports have been concessioned with the federal government's concession scheme, which is aim at improving productivity through public and private partnership (Sanni, 2017)

The Nigerian Ports Authority in the year 2009 officially created a Department called Safety Fire and Occupational Health (NPA,2020). The department has the mandate to ensure the development of guidelines and process to ensure the protection of lives and properties, organize relevant certification training for officers to raise Occupational Health and Safety awareness and consciousness in the Port limits. The present study focused on NPA western ports and headquarter office staff, the choices of this area are due to the number of tank farms and terminals, which pose both health hazards and personal safety of NPA staff.

1. 6. RESEARCH DESIGN

This research effort will be conducted via a comparative study that will highlight assesses the International best practices of occupational safety and health using the national standard practice of the Nigerian maritime industry. The examine OHS practices in Gambia, Thailand, Egypt and USA ports with a view to draw

comparative analysis to benchmark. OHS has been assessed in these selected countries and were observed to have improved OHS practice that can be replicated by other ports.

Besides, (Bhattacharya, 2009) research design is adopted consists of onsite observations, and document analysis. This onsite observation will seek to assess hygiene conditions at the ports, use of personal protective equipment, and housekeeping practices. Whilst, the document analysis will present an overview of international and national best practices on OHS policies and operational procedures on risk assessment.

1. 7. EXPECTED RESULTS

This research is expected to achieve the following results:

1. What is the current occupational health and safety practices in the Nigeria Port Authority?
2. Why barriers and drivers for Occupational Health Safety were not address?
3. How the NPA should adopt International Best practices to improve OHS practice and offer far-reaching recommendations to management towards implementing best and acceptable Occupational Health Safety in the Nigeria Ports Authority.

1. 8. KEY ASSUMPTIONS AND POTENTIAL LIMITATIONS

The research is an attempt to assess the best international practice on Occupational Safety and Health policies and practices in the maritime industry in Nigeria with a specific focus on the Nigerian Ports Authority. Hence, the success of this research depends on the guidance and support of the assigned supervisor. However, the research is limited by the available information and internal Occupational Safety and Health and other related policy documents of the NPA as well as budgetary constrained in carrying out the research study.

2. CHAPTER TWO: LITERATURE REVIEW

2.1. CONCEPTUAL DISCOURSE

This chapter provide background on Occupational Health and Safety (OHS), identify existing gaps and establish several factors OHS practice bearing on the current research. Past studies, output provides basis for comparative analysis to achieve research objective. Hence, this chapter synthesises various literature from books, peer-reviewed journals, conference proceedings and other relevant materials to build foundation that forms basis for the research.

According to International Labour Organization (ILO), every year millions of people are working under challenging condition that foster ill-health and or unsafe. As a result, some workers die from occupational accidents or work-related diseases or sustained serious injuries across the globe. These occupational accidents and diseases have negative impact employees' life and organisational productivity and profitability (ILO, 2008).

Therefore, occupational Health Safety (OSH) is associated with health and safety in the workplace (Jilcha & Kitaw, 2016). Spellman, (2017) defines OHS as the method of anticipating, identifying, assessing, and controlling workplace hazards and associated risks that may harm the health and well-being of employees. This implies improving working conditions and the environment against all hazards.

Human health and work-related injuries have increased in recent time and attracted the attention of many scholars and practitioners in the importance of OHS at work (Ng, & Hassim, 2015). This led to organizations implementing inspections, procedures, and training to raise awareness on OHS in keeping workers safe (Rahman, 2017). The benefits of initiatives have contributed to creating a healthy and safe working environment.

Recent studies show that OHS has improved working conditions in areas of productivity and operational performance. Thus, engaging skilled workers and

eliminating health and job hazard offers benefits to organizations (Antão et al., 2016). Since OHS is directly related to improving and quality working environment, organizations need to pay much more attention to this issue surrounding conducive work-life balance (Sousa, V., Almeida, N. M., & Dias, L. A., 2015).

However, the past two decades OHS have widely studied by researchers. Whereas several researchers concentrate on reviewing the OHS policies, procedures, and audits within the organizations. For instance. Tompa et al., (2016), have studied the scientific literature on preventive occupational safety and health activities in small enterprises. Tompa discovered that the evaluation of intervention studies on the effect and practical applicability of occupational health and safety is lacking and recommend for comparative analysis of the vulnerability in small to big organization. Tompa studies expose the vulnerability of many industries, specifically the port authorities that involve in managing many stakeholders within the port system. Port authorities are responsible for providing a conducive working environment for the port community and implementation of OHS to reduce the rates of injuries, incidents and environmental damage endangering workers (Walker et al., 2019a).

These accidents, injuries occurred due to tiredness, technical failures, fatigue and other environmental conditions, results in academics and maritime practitioners to pay attention to OHS important in keeping ships and crew safe, and port infrastructure safe. (Dalaklis, 2009). Bhattacharya & Tang (2013) explores the effects of work and safety policies in the supply chain from the participation of oil majors in the inspection/regulation of OHS on shipboards. He emphasizes that the shipping and ports sector need to improve the safety and health of mariners as well as participation in OHS. He concludes that the supply chain pressure cannot be sufficient without proper workplace health and safety management.

Nonetheless, in another research by Bhattacharya (2009,) explores the effect of the ISM Code on the management of occupational health and safety in the global maritime industry. This study adopted semi-structured interviews, observations and documentary analysis to assess perceptions of management and seafarers on health

and safety. The author discovered that the fear of job security among seafarers; low-trust work environment and lack of management support were the main impediments to seafarers' participation in OHS management.

These studies highlight the Important of OHS in the maritime sector, specifically in the port industry. That is why the International Maritime Organisation (IMO), saddled with the responsibilities of setting global standards in the shipping industry adopted International conventions, code and agreements on protection and improving workplace safety and health in the maritime sector. IMO adopted international conventions, treaties, codes and guidelines primarily to improve safety in the port environment such as International Convention on Safety of Life at sea (SOLAS), the International Ship and Port Facility Security Code (ISPS) and The International Safety Management Code (ISM) (Oltedal & Lützhöft, 2018).

Besides, the International Labour Organization (ILO) Convention provides guidelines and agreement on a safe working environment and quality life of the seafarers. Historically, ILO has adopted many international instruments on Occupational Safety and Health as far back as 1979 until the most recent revised 2016 ILO Code of practice on safety and health in ports. These works are in line with the ILO's health and safety mandate of helping workers, employers and governments respond to the challenges created by health diseases. Accordingly, ILO has conducted inspection on occupational safety and health (OSH) in the ports sector due to the importance of port to the national economy and employments (ILO, 2008).

Notwithstanding, state contracting members of ILO are increasing their efforts to prevent accidents and diseases at the workplace. The ILO works with them to strengthen national occupational safety and health (OSH) systems, including inspections, occupational injury reporting, training and information, and national OSH campaigns. The benefits of these policies ensure states uphold global compliance in a safe working environment and quality of life (Servais, 2017).

2. 2. INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA (SOLAS)

The International Convention on the Safety of Life at Sea (SOLAS, 74), SOLAS that aim to the protection of life at sea sets out minimum safety and security measures in shipping. This convention was adopted in 1974 and was amended severally to covers safety standards in the modern shipping industry.

The convention gave the port and flag States the responsibility of ensuring that ships under their flag meet the minimum requirements prescribed in the convention. Under this convention, state contracting parties are allowed to inspect ships and detain ships that failed short of the requirement Port State Control (Dalaklis, 2017). The requirements include stability, machinery, electrical installation, fire protection, and life-saving equipment.

2. 3. INTERNATIONAL SAFETY MANAGEMENT CODE (ISM)

The International Safety Management Code (ISM Code) often regarded as new dawn towards improving safety at sea and important pillars of quality navigation. As provided in chapter IX of the SOLAS Convention, IMO adopted the International Safety Management (ISM) Code tot provides an international standard for the safe management and operation of ships. The code was developed to deal with human errors related to maritime accidents (Dalaklis, 2017). According to Anderson (2015), the Code enunciates human factors and risk management as contained in ISO 9001 standards.

The ISM Code seeks to address issues surrounding substandard ships/owners/managers; human errors result from ship operation and cumbersome regulatory compliance. However, the ISM Code broadly identified and provide simplify set of procedures to comply with the industry requirement through the application of a safety management system (SMS).

The code encapsulated four key elements of quality ship operations, which include management, crew, equipment, and technical system and methods. These elements involve numerous written instructions and procedures to safeguard ship operations but sadly undertake each separate activities is daunting and tasking for seafarers as they connote command-and-control practice that was verified during State inspections. The ISM is a game-changer and defining factor for self-regulating to ensure safety at sea, to prevent human injury or loss of life and damages to the environment, particularly the marine environment and property (Karakasnaki, Vlachopoulos, Pantouvakis, & Bouranta, 2018). Therefore, the successful implementation of the code will improve the safety management system (SMS) and shipboard operations by owner/ship manager and regulatory authorities.

2. 4. INTERNATIONAL SHIP AND PORT FACILITY SECURITY CODE

The International Security Code for Ship and Port Facility (ISPS Code) came into after the September 11 terrorist attack on the twin towers in the United State. The code according to IMO defines as “the comprehensive set of measures to enhance the security of ships and port facilities, developed in response to the perceived threats to ships and port facilities in the wake of the 9/11 attacks in the United States” (Dalaklis, 2017). The code serves as a proactive consciousness of the maritime industry to protect major infrastructure including ships, port and people susceptible to external aggression and manage the risks of maritime terrorism as empowered by SOLAS 1974 Chapter XI2. The Code consists of two parts: Part A and Part B, the former is a mandatory requirement for comprehensive maritime and port protection while the latter provides recommendatory guidelines on fulfilling the mandatory obligations.

Moreover, ISPS Code applies primarily to passenger ships, cargo vessels of 500 gross tonnages and above: mobile offshore drilling units (MODUs) in transit and at ports excluding fixed and floating platforms and all port facilities. However, some

limitation depends largely on ship type, its cargo and number of passengers, as well as its sailing routes and the features of the port or port facilities visited by that specific ship.

Notwithstanding, the main objectives of the ISPS Code are to assess and detect potential security threats to ships or port facilities used for international trade and to implement preventive security measures against such threats (Onwuegbuchunam, Aponjolosun, & Ajayi, 2016). Besides, the requirements for ISPS Code include monitoring and controlling access; monitoring the activities of people and cargo; ensuring that secure communications are readily available (Dalaklis, 2017).

Therefore, the relevance of the OHS practices to the organizations underscores the previous studies and highlights the limited depth of the studies on ports, specifically the Nigerian Ports Authority (NPA). Thus, there is a need for this research to fill that gap by highlighting and assessing the international best practices in the NPA.

3. CHAPTER THREE: METHODOLOGY

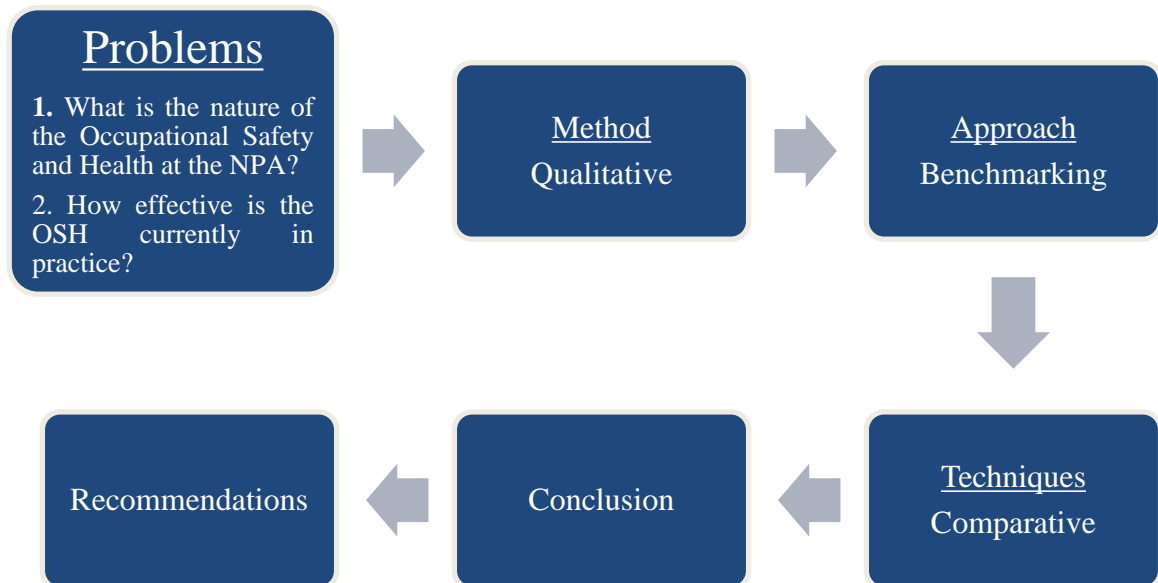
This chapter explain the approach used by the researcher to interrogate and answer the research questions in line with the objectives. The study uses a qualitative research approach to synthesise relevant literature and address the questions.

3.1. RESEARCH DESIGN

The research is designed to be both descriptive and exploratory. The main goal of adopting this approach is to describe the situation of the OSH as it relates the NPA. Moreover, the descriptive research enables the researcher to gain in-depth understanding of the topic (Creswell, 2007).

Consequently, the researcher proposed a methodological step undertake in the study as shown in figure 1:

Figure 1: Research Design and Flowchart



(Source: Author, 2020)

3. 2. BENCHMARKING INTERNATIONAL BEST PRACTICES ANALYSIS

The international best practices will be analysed as mentioned previously.

3. 3. INTERNATIONAL LABOUR ORGANISATION (ILO) GUIDELINES ON OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT SYSTEMS (ILO-OSHMS 2001)

Past marine accidents, which expose the hazards and ill health in ports has been an important subject for the ILO (Li et al., 2018). ILO adopted Convention on accident prevention in ports and made several recommendations to organisations aimed at tackling safety and health in ports. For instance, the first ILO Convention on safety in ports was the Protection against Accidents (Dockers) Convention, 1929 repealed in 1932. This was the first major milestones to address social and labour conditions in dock work as well as safety, health, welfare, and vocational training (ILO, 2008).

Similarly, ILO Port Safety and Health Audit Manual (2005) another instrument adopted to assist government and port authorities, employers, and others to assess compliance with ILO standards, company policies and national requirements. The manual articulates the strengths, weaknesses and gaps in national and port regulations/policies relating to occupational safety and health, enforcement, monitoring and reporting, facilities and services and human resource training and development. These instruments provide global strategy and framework for promoting OHS practices in the ports across the world. Besides, initial efforts were directed at inspection activities and identifications of high-risk sectors as against promoting OSH in the organisations.

Similarly, other key efforts are contained in the guideline (ILO-OSH 2001), which provides an international management system standards in line with the Occupational Safety and Health Convention, 1981 (No. 155) and the Occupational Health Services Convention, 1985 (No. 161). The ILO Guidelines encourage global adoption and integration of OSH-MS with other management systems as part of integrated business processes.

However, national adoption is rather weak due to lack ratification of some important international conventions, codes and guidelines mentioned. Notwithstanding some various effort were recorded in countries like Kenya, Nepal, the Philippines, Sri Lanka, Tanzania, Thailand, and Vietnam have successfully established OSH to workers in SMEs and the informal sector (Finnish Institute of Occupational Health, 2001).

3. 4. Occupational Safety and Health Administration (OSHA), United State

OSHA has recently updated the Guidelines for Safety and Health Programs, to reflect changes in the economy, workplaces, and evolving safety and health issues. Various stakeholders and government have accepted the new Recommended Practices. The Best Practices present a systematic approach to implementing the Occupational Health and safety program (OHSP), built around seven core elements. The primary aim of the OHSP is to prevent workplace injuries, illnesses, and deaths, as well as the suffering and financial hardship these events can cause for workers, their families, and employers. Thus, the benefits of the program include the following:

- Prevent workplace injuries and illnesses
- Improve compliance with laws and regulations
- Reduce costs, including significant reductions in workers' compensation premiums
- Engage workers
- Enhance their social responsibility goals
- Increase productivity and enhance overall business operations
- Improved employee recruiting and retention

According to the United State Occupational Safety and Health Administration (OSHA), the core elements of the safety and health program are highlighted in table 2.

Table 2: OHS Core Elements

<p>Management Leadership</p>	<ul style="list-style-type: none"> ▪ Top management demonstrates its commitment to continuous improvement in safety and health, communicates that commitment to workers, and sets program expectations and responsibilities. ▪ Managers at all levels make safety and health a core organizational value, establish safety and health goals and objectives, provide adequate resources and support for the program, and set a good example.
<p>Worker Participation</p>	<ul style="list-style-type: none"> ▪ Workers and their representatives are involved in all aspects of the program including setting goals, identifying and reporting hazards, investigating incidents, and tracking progress. ▪ All workers, including contractors and temporary workers, understand their roles and responsibilities under the program and what they need to do to effectively carry them out. ▪ Workers are encouraged and have means to communicate openly with management and to report safety and health concerns without fear of retaliation. ▪ Any potential barriers or obstacles to worker participation in the program (for example, language, lack of information, or disincentives) are removed or addressed.
<p>Hazard Identification & Assessment</p>	<ul style="list-style-type: none"> ▪ Procedures are put in place to continually identify workplace hazards and evaluate risks. ▪ Safety and health hazards from routine, non-routine, and emergencies are identified and assessed. ▪ An initial assessment of existing hazards, exposures, and

	<p>control measures is followed by periodic inspections and reassessments, to identify new hazards.</p> <ul style="list-style-type: none"> ▪ Any incidents are investigated to identify the root causes. ▪ Identified hazards are prioritized for control.
Hazard Prevention & Control	<ul style="list-style-type: none"> ▪ Employers and workers cooperate to identify and select methods for eliminating, preventing, or controlling workplace hazards. ▪ Controls are selected according to a hierarchy that uses engineering solutions first, followed by safe work practices, administrative controls, and finally personal protective equipment (PPE). ▪ A plan is developed to ensure that controls are implemented, interim protection is provided, progress is tracked, and the effectiveness of controls is verified.
Education & Training	<ul style="list-style-type: none"> ▪ All workers are trained to understand how the program works and how to carry out the responsibilities assigned to them under the program. ▪ Employers, managers, and supervisors receive training on safety concepts and their responsibility for protecting workers' rights and responding to workers' reports and concerns. ▪ All workers are trained to recognize workplace hazards and to understand the control measures that have been implemented
Program Evaluation & Improvement	<ul style="list-style-type: none"> ▪ Control measures are periodically evaluated for effectiveness. ▪ Processes are established to monitor program performance, verify program implementation, and identify program shortcomings and opportunities for

	<p>improvement.</p> <ul style="list-style-type: none"> ▪ Necessary actions are taken to improve the program and overall safety and health performance
Communication And Coordination	<ul style="list-style-type: none"> ▪ Host employers, contractors, and staffing agencies commit to providing the same level of safety and health protection to all employees. ▪ Host employers, contractors, and staffing agencies communicate the hazards present at the worksite and the hazards that work of contract workers may create on site. ▪ Host employers establish specifications and qualifications for contractors and staffing agencies. ▪ Before beginning work, host employers, contractors, and staffing agencies coordinate on work planning and scheduling to identify and resolve any conflicts that could affect safety or health

(Source: Occupational Safety and Health Administration, 2016)

The table 1 highlight the importance of leadership, information and monitoring for successful OHS practices in the organisation.

3. 5. THE GAMBIA PORTS AUTHORITY

The Gambia Ports Authority (GPA) located in the southern part of Banjul, the capital city of Gambia. It was established in the year 1972 and is now acknowledged as one of the nonviolent and well-organized ports in West Africa. The GPA is positioned at the latitude 13 degrees 27' North and Longitude 16 degrees 34'West and situated on the bay of River Gambia, 26 maritime miles away from the Atlantic Ocean, which is one of the world's busiest sea transport lane. It contributes to about 90% of Gambia's economy. Averagely, the port handled over thousands of containers in their premises and almost every other day three to five (3-5) cargos anchor at the ports for both loading and discharging. The number of employees in this industry numbered about

two thousand (2000) people. This figure does not include Dockworkers and stevedores, who add up to 350 (Gambia Ports Registry 2016).

The nature of work carried out in the port's present risks that potential causes occupational injuries to employees. Past accident investigation reports indicate that major marine accidents are caused by human and organizational factors (Arslan, Emek, Turan, & Wolff, 2016). Similarly, bad weather, inadequate awareness of safety, ineffective enforcement of personal protection equipment usage are some of the driving causes injuries (Lamin, 2017).

Despite the increases, number injuries at the GPA but lack of accurate incidents reports database add to the challenges of understanding the pattern of the OHS practice. Nevertheless, equipment performance, overloading, unprofessional practices, and disregards of navigational rules and fatigue are the leading causes of injuries in the ports (Strauch, 2015).

Notwithstanding, many international regulations have been drafted in response to past accidents, mainly on ship accidents (Woo, Wang, & Tae, 2016). GPA has ratified ILO conventions, which provides international labour standards on OSH (such as ratification information, the reporting requirements, comments) as well as national legislation protecting against particular hazards (ILO, 2020).

Gambia Ports Authority have developed a health and safety policy in 2012 but the implementation remains a challenge (Lamin, 2017). Training has been identified as a lacuna to the lack of implementations (Hinkka, Eckhardt, Pennala, & Mantsinen, 2016). Besides, barriers such as an individual's perception of hazards and risks that affect enforcement.

The staff of GPA have been provided with various kinds of personal protective equipment's (PPE), Boots, Helmets, Gloves, Reflectors, Jackets, Dust masks and Googles.

3.6. PORT AUTHORITY OF THAILAND

Bangkok Port is one of the five main ports in Thailand, located on the east side of the Chao Phraya River in Klong Toey District, Bangkok, and is under the jurisdiction of the Port Authority of Thailand (PAT). PAT set up OSH towards improving its safety,

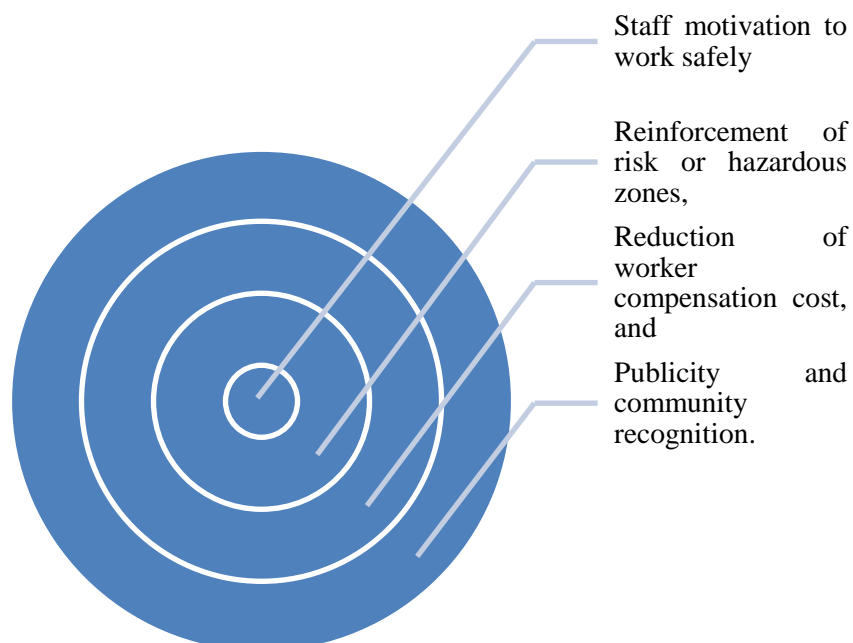
health and environment, following the 1991 chemical explosion, which caused the loss of life, cargo, property, and damage to the environment.

PAT OSH policies govern their workforce according to three fundamental principles.

- Occupational health and safety considerations are an integral part of all PAT activities.
- Provision of safe work practices and procedures are established for each activity where potential risks occur, and that each employee be required to follow those practices and procedures, and
- Training, quality information and protective equipment are the cornerstone for PAT to carry out activities safely and productively.

Per PAT's OSH policy, management recognises that the personal commitment and involvement of all employees are essential to establish and maintain a safe and healthy working environment. Besides, all employees undergo safety induction training.

Figure 2: The PAT's OSH policy trust



Source: (ILO, 2010)

3. 7. DAMIETTA PORT, EGYPT

Damietta Port located at 10 km to the west of the Nile River (Damietta Branch), 70 km to the west of Port Said and 200 km from Alexandria Port with total area 11.8 million m², and the land area represents about 7.9 million m² under the management of Egyptian Port Authority (EPA). The EPA adopted similar approach adopted in the current study to introduce OHS policies and programmes. This includes broadly; awareness campaigns on rights and responsibilities of employees and employer, wearing of PPEs, reporting procedures, training and monitoring, inspection and evaluations of the current system (Beheary, Abdelaal1 and Matar, 2020). In light of the above case studies, Kanaparo, (2008) identified four strategies groups of applying and managing OSH.

1. Modification of the physical working environment, such as the provision of machine guarding or the containment of toxic substance.
2. Assessment of the medical and biological condition of workers, and includes the screening, monitoring, and treatment strategies aimed at identifying workers who are susceptible to illness and treating those who succumb to such misfortunes.
3. Training and behaviour modification, based on expert models and management plans
4. Establishment of organisational structures to deal with health and safety issues i.e. policy formulation and the implementation of management programs

According to Beheary, Abdelaal1 and Matar (2020), the current best practices adopted at the port include wearing of personal protective equipment, rights and responsibilities, training, OHS policy and Monitoring, inspection, and Evaluations.

3. 8. PERSONAL PROTECTIVE EQUIPMENT (PPE)

The PPEs all worn at all times within the port premises, Damietta Port Authorities believe that PPEs helps to reduce the accidents and injuries. As highlighted by Beheary, Abdelaal1 and Matar, 2020, over 80% of the employees and stakeholders

wear PPEs in the field or any operations. These have reduced the accidents and injuries rates at the port and employees recognise its part of safe work culture as contained in the organisations' safe work culture titled “safety first”.

3. 9. RIGHTS & RESPONSIBILITIES OF EMPLOYEES & EMPLOYERS

Also observed by Beheary, Abdelaal and Matar, 2020, employees recognise that they have rights and responsibilities for adhering to the port OHS system and procedures. Employees maintained that wearing of PPEs, reporting near-miss condition and refusal to work in an unsafe environment is their rights. They equally appreciate the responsibilities of filling accident reports whilst the authorities maintain up to date records on OHS issues and provides relevant training to departments, units, and enforcement officials.

3. 10. SAFETY COMMITTEE (SC)

Damietta Port Authorities created SC with HSE department to study trends in accidents, make suggestions for improvements and police everyone concerned. They display and advocates for a safe and conducive working environment. The SC consists of representatives from each department, units and zones as well as terminal operators.

3. 11. TRAINING & EDUCATION

The port authorities also recognise the importance of training which is paramount for successful OHS practices. Damietta Port Authorities include all employees in safety training and occasionally conducted drills. Human Resource (HR) department coordinated regular sessions with supervisors, managers, and employees.

3. 12. HEALTH AND SAFETY POLICY (HSP)

The bedrock of all the Damietta Port OHS practices are guided by well documented and approved internal HSP, the port has HSP policy which is distributed across the organisations and employees refer to this important document to enforce their rights

and responsibilities. It established key deliverables and potentials goals of the entire OHS programme.

3. 13. MONITORING, INSPECTION AND EVALUATION

To ensure effective implementation of Damietta OHS, the authorities set up a mechanism for control. The mechanism led to the creation of the Monitoring team reporting to the evaluation subunit, they conducted monthly, quarterly, biannually and annually inspections and they also evaluation in the entire program to identify areas of the shortfall for corrective actions to be taken.

3. 14. BARRIERS/CAUSES OF THE OCCUPATIONAL HEALTH AND SAFETY PRACTICES

The Occupational Health and Safety is relevant to any organisation big or small and no matter the industry. The success of any establishment is attributed to professional competencies of their employees. Therefore, managers that recognise and appreciate the importance of creating conducive and hygienic working environment with high regards on workers safety and health are assured of better performance and workers productivity. Hence, elimination of possible barriers or causes that impedes effective OHS practice are desirable. The table below provide summaries of those identified barriers and causes of OHS practices.

Table 3: Barriers and causes of OHS practices

S/N	BARRIES/CAUSES	SOLUTIONS	SOURCES
1	Workers' perception of OHS risk	Awareness campaigns	Lingard & Holmes (2001)
2	Technological control	Effective management	Lingard & Holmes (2010)
3	Lack of auditing tools	Effective accidents record	Gallagher et al (2003)

4	Lack of understanding psychosocial risk Lack of enforcement	Safety awareness and drills Use of expert	Kortum et al (2010)
5	Lack of strategic vision for OHS	Effective leadership & vision	Oliveira et al (2010)
6	Lack of financial resources	Dedicated OHS funding	Nadae et al (2013)
7	Human errors (i.e fatigue, stress etc.)	Standard operating procedures	Holmes et al (2016)
8	Mechanical failures & Chemical hazards	Education and training	Holmes et al (2016)

4. CHAPTER FOUR: CASE STUDY OF NIGERIA PORTS AUTHORITY

4. 1. INTRODUCTION

This chapter deals with the analysis and discussion of the existing OHS practices in the Nigerian Ports Authority, landlord model of port management. Besides, there are 150 dockworkers, truck drivers and other support staff. Considering that a major part of the research was descriptive, descriptive analyses approach were employed and recent incidents and key projected will be discussed.

4. 2. EXISTING OHS SITUATION

NPA recognizes that excellence in HSE performance is critical to successful port operations that align with the corporate mission to deliver efficient port service in a safe, secure, and customer-friendly environment. Hence, all activities within its premises are conducted in a manner that minimizes adverse health, safety and environmental impacts with the ultimate goal of zero harm to people and the environment. NPA's Policy on HSE is benchmarked on the compliance with all international conventions, regulations, guidelines and national legislation on health, safety and environment, such as; Occupational Health and Safety Management Systems (OHSAS 18001), Environmental Management Systems (ISO 14001) and Safety of Life at Sea (SOLAS) as well as International Ships and Port Facility Security (ISPS) Code (NPA, 2020).

Table 4: NPA Accidents / Incidents Investigated and Reported

S/N	Accidents/ Incidents Investigation	Location
1	2	HQ
2	24	LPC
3	12	TCIPC
4	7	Calabar
5	7	Onne
6	2	Warri
7	6	PH

As illustrated in Table 3 above, Major safety accidents and injuries happen in the Lagos due to the number of traffic.

Table 5: Ongoing Projects within the NPA Port premises

S/N	Number of Projects	Location
1	2	Headquarters
2	1	Onne
3	1	LPC
4.	1	PH
5.	3	Calabar

Table 4. Depicted that more construction works are underway in Calabar and Head quarterly, these locations are susceptible to health hazards and potential risks of injuries. Based on the information obtained from NPA on the annual health and risk assessment (RA) report.

4. 3. OCCUPATIONAL HEALTH AND SAFETY POLICY

Ports are at high risk because of the geographical locations and activities conducted with the vicinity. Therefore, a strategic human resource management approach to OH & S that does focus on the common causes and trends of site accidents and injuries; assesses the associated costs, both human and financial; and develops appropriate preventative work

Systems and effective administration. Previously best practices around the world and the reports obtained from NPA shows a substantial gap in terms of OHS. However, OHS policies portent improvement on employee motivation to work safely as well ginger positive reinforcement of good policies and regulations, reduction of OHS in the NPA. Hence, risk or hazard endangered employees work morale, health and safety culture. The current system in place reveals that there is increase awareness on HSE programmes, 887 employees undertook the Health Assessment in April 2018 compared to 635 captured in 2017. This brings the total number of employees captured in 2018 Health Assessment programmes to 252,243 with 189 for Rivers,

Tin Can Island Port Complex and Onne Ports respectively. Although, NPA lack HSE policy despite an attempt to capture in 2018, 2019 appropriated budget.

Nonetheless, the majority of the staff confirmed that they are aware of NPA's policy on OHS while others do not know anything about the OHSMS policy. This shows how important it is for dockworkers to know the health and safety rules and regulations guiding the conduct of their work.

4. 4. HEALTH PROMOTION AND WELFARE FACILITIES

The report highlighted an increase in health awareness embarked by the HSE department to conduct routine exercises exacerbated by prevailing health challenges. Although, recently over 100 management staff have conduct health-related tests such as Diabetes, High Blood Pressure and hepatitis. For instance, Monthly BP Monitoring & Wellness checks for the Senior Management at HQ and Blood Pressure Monitor device were distributed to 100 Management staff consisting of Executive and Management staff and the Port Managers. Lack of adequate awareness of HSE over the years contributed to the deterioration of a safe working environment. Other areas in dire need to provide workplace Wellness facilities such as Kitchenette, Staff Lounge, Crèche at all our locations. Within the last five years, NPA commissioned well-equipped new gymnasiums in Rivers, Onne, Delta and Calabar Ports but this is largely restricted to senior management staff. Outstation staff were excluded from the programme. It is noteworthy that the wellness programme is extended to Eastern Ports. Sensitization on Occupational Hygiene practices was carried out with authorities, Oral Health, Ergonomic initiatives and Workers wellness and noise Induce Hearing Loss.

4. 5. HEALTH SURVEILLANCE

NPA comprehensive annual health assessment outline gaps identified on food and personal hygiene. HSE department work collaborates with Employee & Labour Relations, Facility Management departments and Seaview Properties to raise awareness on personal hygiene. Measurement was taken to reduce dust particles in offices and work environments; however, these efforts remain at large in the head

offices whilst other port locations remain vulnerable for health hazards and other health-related illness. The Organisation is still training Occupational Health officers on the use of Audiometer and Spirometry and the Radiation alert detectors and Humidity Meters. Notwithstanding, daily counselling of employees on a healthy lifestyle is desirable.

4. 6. TRAINING & EDUCATION

HSE has enough expertise to take up in house training, stakeholders and industry related in the following areas, firefighting, ballast Water Management and safety of workplace & Terminals. This underscores the need for effective training and information for all those working in the port sector is crucial, employees that are unaware of port working environment and the associated risks.

Training learning or development is the bedrock of an organization's success. Instituting a solid employee training program tailored towards company needs will provide any company with required standards as well as increased productivity, efficiency, and profitability. The training plan should be a well thought out realistic and flexible. Therefore training in the immediate (short term) should focus on the training plan for the immediate in the section you identify the immediate training need for management of Health and Safety in the organisation followed by a steps to achieve the training goal. Then you need to create a timeline. This will help to equip the workforce with the capacity to carry out assigned job task. The Medium-term training is necessary for improvement of company processes as regards management of Health and Safety. This will be a build-up on the short term and may not involve too many specific actions to be taken. This is the learning stage this is where training to develop frameworks for management of H&S is achieved. Long term training is done to achieve the big organisation goal. Here is the stage where you consolidate on gains from short and medium term. This stage helps to ensure all systems and procedures are working in line and to achieve overall goal of the company. This training equips the workforce with all the information and instructions required in driving the process.

5. CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

This chapter is the concluding chapter of the research. It summarizes the study findings and contains recommendations for decision-makers, port authorities and further research.

5.1. SUMMARY AND CONCLUSION

Eventually, the research effort attempts to assess practices of Occupational Safety and Health in the Nigeria Port Authority. Findings indicate that NPA has OHS structures that are not effectively coordinated. There exist hazards and risks with significant effects on the overall occupational and workplace in seaports in Nigeria. Therefore, an effective OHS is desirable for both the employees and employers to achieve their respective tasks.

Inspection of OHS practice are not enough to raise OSH standards, however, and there should be a genuine commitment to take preventive action and manage OSH effectively. Authorities should encourage ILO and IMO conventions compliance and a broader approach to implementation is needed that requires greater commitment to OSH from all concerned. Such commitment must come from top management and at senior level management. Several countries have successfully adopted national OSH programmes specifically for the ports sector, and this indicates a very positive way forward.

Given that NPA, have in place, a culture of accident reports, inspection and maintain records, providing education and training on safety and health issues and publishing safety notices are steps in the right direction. Additionally, the NPA safety committee creates co-operation between the employees and employers by studying accidents trends to make suggestions for corrective actions, an inspection of safety reports and avoid re-occurrence of accidents. Thus, employees need to comply with safety and health rules and must instil a responsible safety culture. Besides, employees have the right to reject any unsafe work or practices.

5. 2. RECOMMENDATION

In line with findings from this study, it is recommended that the authority should conduct compulsory Job Hazard Analysis (JHA), Workplace Hazard Analysis (WHA) and risk assessment (RA) periodically and designate responsible officer on this schedule. Mandatory use of personal protective equipment (PPEs) and other appropriate tools and equipment for the safe performance of their work must be vigorously pursued. The authority needs to make PPEs available to all employees both comfortable and suitable in appreciation of work schedules and routines.

In the application of global best practices, NPA should enthrone practices of putting hazard control measures to limit the risk of reoccurrence and set aside adequate funding to embark on hazard control and safety programmes. There should be regular training on HSE to improve safety culture, effective monitoring, inspection and evaluation of the safety practices is desirable. Safe work culture campaign is desirable to improve safety awareness and understanding. Air pollutants must be monitored due to the adverse health effect of these pollutants especially some pollutants concentration exceed the threshold limit as CO and PM. NPA is advised to monitor and measure the concentration of different air pollutants in the port regularly, to inspect and evaluate existing health and safety measures regularly for improvement and to assess. NPA should learn from European Ports by designating an emission discharge area, restrictions on certain pollutants considered harmful to health. NPA should adopt green strategies to reduce harmful effects of air emissions such as installing LNG infrastructure, alternative sources of energy such as wind, solar, as well as awareness on environmental agenda.

NPA should develop a national OSH programme for the port sector; such programmes should include inspection, audits, promotional activities and awareness campaigns.

There is need to have MoU with relevant authorities concerned with port and maritime safety and health, to ensure an efficient and effective liaison and cooperation between them and appointment of in-house specialist or experts on ports OHS matters should be considered.

REFERENCES

- Akamangwa, N. (2016). Working for the environment and against safety: How compliance affects health and safety onboard ships. *Safety Science*, 87, 131-143.
- Antão, P., Calderón, M., Puig, M., Michail, A., Wooldridge, C., & Darbra, R. M. (2016). Identification of occupational health, safety, security (OHSS) and environmental performance indicators in port areas. *Safety Science*, 85, 266-275.
- Badejo, B. A., & Solaja, O. M. (2017a). The Nigerian seaports and development (1900-2015): Historical perspectives and dynamics. *International Journal of Development and Sustainability*, 6(9), 1007-1024.
- Beheary, M. S., Abdelaal, A., & Matar, S. M. (2020). Occupational Health and Safety Practices Assessment in Damietta Port, North Egypt. *Asian Journal of Advanced Research and Reports*, 17-27.
- Bhattacharya, S. (2009). The impact of the ISM code on the management of occupational health and safety in the maritime industry Cardiff University.
- Bhattacharya, S. (2009). The impact of the ISM code on the management of occupational health and safety in the maritime industry Cardiff University.
- Bhattacharya, S., & Tang, L. (2013). Middle managers's role in safeguarding OHS: The case of the shipping industry. *Safety Science*, 51(1), 63-68.
- Boella, M. J., & Goss-Turner, S. (2019). Human resource management in the hospitality industry: A guide to best practice Routledge.
- Cudjoe, S. F. (2011). An assessment of occupational health and safety practices on job performance at the Tetteh Quarshie Memorial Hospital, Mampong-Akuapem (Doctoral dissertation).
- Dalaklis, D. (2017). Safety and security in shipping operations. *Shipping operations management* (pp. 197-213) Springer.
- Friend, M. A., & Kohn, J. P. (2018a). *Fundamentals of occupational safety and health* Rowman & Littlefield.
- Hinkka, V O, Eckhardt, J., Permala, A., & Mantsinen, H. (2016). Changing the training needs of port workers due to future trends. *Transportation Research Procedia*, 14, 4085- University of Ghana <http://ugspace.ug.edu.gh4094>. <http://doi.org/10.1016/j.trpro.2016.05.506>.
- Hymel, P. A., Loeppke, R. R., Baase, C. M., Burton, W. N., Hartenbaum, N. P., Hudson, T. W., ... & Konicki, D. L. (2011). Workplace health protection and promotion: a new pathway for a healthier—and safer—workforce. *Journal of occupational and environmental medicine*, 53(6), 695-702.
- International Labour Organization, (2008). *The inspection of occupational safety and health in ports: a review of existing guidance and practice*, International Labour Office. - Geneva: p. ISBN: 9789221210689.

- Jilcha, K., & Kitaw, D. (2016). A literature review on global occupational safety and health practice & accidents severity. *International Journal for Quality Research*, 10(2)
- Jilcha, K., & Kitaw, D. (2016). Lean influence on occupational safety and health in manufacturing industries. *Global Journal of Research In Engineering*.
- Karakasnaki, M., Vlachopoulos, P., Pantouvakis, A., & Bouranta, N. (2018). ISM code implementation: An investigation of safety issues in the shipping industry. *WMU Journal of Maritime Affairs*, 17(3), 461-474.
- Kim, Y., Park, J., & Park, M. (2016). Creating a culture of prevention in occupational safety and health practice. *Safety and Health at Work*, 7(2), 89-96
- Li, Y., & Guldenmund, F. W. (2018). Safety management systems: A broad overview of the literature. *Safety Science*, 103, 94-123.
- Lu, C., & Kuo, S. (2016). The effect of job stress on self-reported safety behaviour in container terminal operations: The moderating role of emotional intelligence. *Transportation Research Part F: Traffic Psychology and Behaviour*, 37, 10-26.
- Lund, F., & Marriott, A. (2011). Occupational health and safety and the poorest (p. 63). The University of KwaZulu-Natal, School of Development
- Muthuviknesh, R., & Kumar, K. A. (2014). The effect of occupational health and safety management on work environment: a prospective study. *International Journal of Advanced Research in Computer Science and Management Studies*, 2(6).
- Ng, R. T., & Hassim, M. H. (2015). Strategies for assessing and reducing inherent occupational health hazard and risk-based on process information. *Process Safety and Environmental Protection*, 97, 91-101.
- Oltedal, H. A., & Lützhöft, M. (2018). *Managing maritime safety* Routledge.
- Onwuegbuchunam, D., Aponjolosun, M. O., & Ajayi, O. S. (2016). Assessment of the effect of the implementation of international ship and port facility security (ISPS) code on port
- Rahman, S. (2017). Aspects and impacts of ship recycling in Bangladesh. *Procedia Engineering*, 194, 268-275.
- Samson-Akpan, P. E., & Akpan, E. A. (2010). Assessment of health promotion in Nigerian Port Authority Calabar. *Hamdard Medicus*, 53(1), 22-36.
- Sanni, T. (2017). The legal framework of concession agreements in Nigerian ports.
- Sau, A., & Bhakta, I. (2019). Screening of anxiety and depression among seafarers using machine-learning technology. *Informatics in Medicine Unlocked*, 16, 100228.
- Servais, J. (2017). *International labour law* Kluwer Law International BV.
- Smith, P. M., Saunders, R., Lifshen, M., Black, O., Lay, M., Breslin, F. C., Tompa, E. (2015). The development of a conceptual model and self-reported measure of occupational health and safety vulnerability. *Accident Analysis & Prevention*, 82, 234-243.
- Sorensen, G., Sparer, E., Williams, J. A., Gundersen, D., Boden, L. I., Dennerlein, J. T., Okechukwu, C. A. (2018). Measuring best practices for workplace safety, health and wellbeing: The workplace integrated safety and health assessment. *Journal of Occupational and Environmental Medicine*, 60(5), 430.
- Sousa, V., Almeida, N. M., & Dias, L. A. (2015). Risk-based management of occupational safety and health in the construction industry—Part 2: Quantitative model. *Safety Science*, 74, 184-194.
- Spellman, F. R. (2017). *Industrial hygiene simplified A guide to anticipation, recognition, evaluation, and control of workplace hazards* Bernan Press.
- Strauch, B. (2015). Investigating fatigue in marine accident investigations. *Procedia Manufacturing*, 3 (The), 3115-3122. <http://doi.org/10.1016/j.promfg.2015.07.859>.
- Studies.

- Tompa, E., Kalcevich, C., Foley, M., McLeod, C., Hoggâ€• Johnson, S., Cullen, K., Irvin, E. (2016). A systematic literature review of the effectiveness of occupational health and safety regulatory enforcement. *American Journal of Industrial Medicine*, 59(11), 919-933.
- Ung, S. (2018). Human error assessment of oil tanker grounding. *Safety Science*, 104, 16-28.
- Walker, T. R., Adebambo, O., Feijoo, Monica C Del Aguila, Elhaimer, E., Hossain, T., Edwards, S. J., Taylor, S. (2019a). Environmental effects of marine transportation. *World seas: An environmental evaluation* (pp. 505-530) Elsevier.
- Walker, T. R., Adebambo, O., Feijoo, Monica C Del Aguila, Elhaimer, E., Hossain, T., Edwards, S. J., Taylor, S. (2019b). Environmental effects of marine transportation. *World seas: An environmental evaluation* (pp. 505-530) Elsevier.
- Workforce. *Journal of occupational and environmental medicine*, 53(6), 695-702.