Promoting maritime safety through ‘findings’ of accident investigations, surveys and audits in the Pacific: the case of Papua New Guinea

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Promoting Maritime Safety through ‘Findings’ of Accident Investigations, Surveys and Audits in the Pacific:
The case of Papua New Guinea.

by

CONNY RALPH HAUSENG

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

MASTER OF SCIENCE
In
MARITIME AFFAIRS

(MARITIME SAFETY AND ENVIRONMENT ADMINISTRATION)

2020

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DECLARATION

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

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

(Signature): .................................................

(Date): .....................................................

Supervised by: ..............................................

Supervisor's affiliation: ....................................

World Maritime University .................................................
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I also would like to express my sincere and heartfelt gratitude to my supervisor, Prof Dr Hebbar, Head of Specialization Prof Dr Baumler and the MSEA Team for their continued support throughout the entire study period impacted by the unprecedented global pandemic nevertheless, the year accomplished with new record online learning.

Special thank you goes to Prof. Dr Hebbar for guiding me along to do the write up of the research paper and providing the greatest and helpful guidance whole throughout the period from conceptualizing, literature reviewing, theoretical framing and finally to a conclusion. His endless weekly supervision drive motivated and inspired me to proceed with this research paper, therefore, I am so grateful for his endless encouragement and inspiration.

I am also very grateful to my family, especially my parents [Mr/s Hauseng] who have always put me in their prayers for I was exposed to the pandemic in WMU Sweden. My wife and my children for holding on and living with my absence but continuously praying for my safe return. Also, I extend my sincere thanks to my siblings; Robin, Manuel, Christopher, Salpious, Nason, Jeffery Hauseng, Hindo of Tau and my Gawanga Tribes for their valuable support and prayers for my safety and wellbeing during the entire study period during the spread of the global pandemic, COVID 19 which has been their endless concern.

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Thank you All

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CONCEPTUAL FRAMEWORK

Niugini Tripod Conceptual Framework


The flag administration bears the core responsibility for the entire maritime safety issues. It has the primary obligation to promote maritime safety and, prevent environmental pollution while supporting maritime economic growth. However, there are also external impacts that exert push and pull on the Administration and determine the operational process of its prime objectives. The dynamic principle of auditing, surveying and safety (accident) investigations provide monitoring mechanism to gauge the performance of the flag administration. The findings not only help to determine amendments to existing legislation but assist and develop new instruments to enhance maritime safety. Additionally, it facilitates continuous improvement in the performance of flag administration. This, in essence, is the conceptual framework underpinning the thesis and termed, "Niugini Tripod Conceptual Framework". Therefore, an Organization is only as good as the people who live and work in it (Dee Hock)
ABSTRACT


Degree: Master of Science

The objective of this dissertation is to study the main causes of inadequate maritime safety on the flag registered vessels in the Pacific Island Countries taking into consideration Fiji, however, centred on the flag state of Papua New Guinea.

The paper takes into account three main obligations of the flag administration in tiers as demonstrated in the conceptual framework. First-tier looks at promoting maritime safety, protecting environment pollution while encouraging economic interest in the industry. Second-tier looks at employee socialisation network, impacts of different cultural backgrounds and symbolic influences while the final tier examines the control and monitoring aspect of the functions through safety investigations, surveys and audits.

The analysis reveals that the flag administration of PNG has more than half the international instruments to rectify, important national regulations are delayed passing through legislative processes to become law due to stakeholder influences. Unregulated second-hand ship purchasing contributes to poor safety and waste management onboard and finally, ships become wrecks and dumped in the harbours and waterways. Although it’s a coastal state issue nevertheless it causes environmental pollution as well as creates a safety hazard to marine traffic. External impacts like social networks, cultural differences and symbolic prestige tend to drive off the flag administration from achieving its objective of Safety First. This research also reveals that the flag state (PNG) does not have trained officers to perform audits and safety accident investigations, additionally, there is evidence of inadequate record keeping. Moreover, this dissertation also reveals that flag administration objective is being hampered by certain managers micromanaging and interfering with the surveys and inspections functions which is the control and monitoring arm of maritime safety through social networking for commercial interest. Above all the paper reveals that training and capacity building for national employees for organizational success through the engagement of foreign technical experts at senior positions have since then not proven its purpose thus require review on the terms of engagement.

Therefore, regular review of operational procedures with the legal department is needed so to improve on the weaknesses while technically a proper control mechanism is needed to minimise the external influences impacting the function of surveys and inspection. Finally, the audits and safety investigation branch to be established so to effectively promote maritime safety in the region, the case of Papua New Guinea.

Key Words: Pacific, PNG, Fiji, Surveys, Ship inspection, Safety investigation, Flag state, Audits, Maritime safety authority, Flag administration.
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<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ANU</td>
<td>Australian National University</td>
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<tr>
<td>APCIS</td>
<td>Asia Pacific Information System</td>
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<tr>
<td>BKI</td>
<td>Biro Klasifikasi Indonesia</td>
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<tr>
<td>BV</td>
<td>Bureau Veritas</td>
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<tr>
<td>CoI</td>
<td>Commission of Inquiry</td>
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<tr>
<td>CSR</td>
<td>Closed Ship Registry</td>
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<td>DPA</td>
<td>Designated Person Ashore</td>
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<td>FSI</td>
<td>Flag State Implementation</td>
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<td>HFACS</td>
<td>Human Factors Analysis and Classification System</td>
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<td>HSC</td>
<td>Convention of the High Seas (High Sea Convention)</td>
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<td>HSCS</td>
<td>Harmonised Survey and Certification System</td>
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<td>HSS</td>
<td>High Safety Standards</td>
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<tr>
<td>IACS</td>
<td>International Association of Classification Society</td>
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<td>IMSAS</td>
<td>IMO Member State Audit Scheme</td>
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<tr>
<td>LSS</td>
<td>Low Safety Standards</td>
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<td>MAIB</td>
<td>Maritime Safety Investigation Board</td>
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<td>MSAF</td>
<td>Maritime Safety Authority of Fiji</td>
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<td>MSG</td>
<td>Melanesian Spearhead Group</td>
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<td>MSSR</td>
<td>Merchant Shipping Safety Regulation</td>
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<td>NCV</td>
<td>Non-Conventional Vessel</td>
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<td>NKK</td>
<td>Nippon Kaiji Kyokai</td>
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<td>NTCF</td>
<td>Niugini Tripod Conceptual Framework</td>
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<tr>
<td>OIC</td>
<td>Officer in Charge</td>
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<td>PIMLAWS</td>
<td>Pacific Island Maritime Laws</td>
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<td>PMC</td>
<td>Pacific Maritime College</td>
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<td>PNG</td>
<td>Papua New Guinea</td>
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<td>PNGMC</td>
<td>Papua New Guinea Maritime College</td>
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<td>PSC</td>
<td>Port State Control</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<td>PSG/R</td>
<td>Peer Support Group/Review</td>
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<td>QMC</td>
<td>Quality Management Committee</td>
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<tr>
<td>RCO</td>
<td>Risk Control Options</td>
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<td>RINA</td>
<td>Registro Italiano Navale</td>
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<tr>
<td>RO</td>
<td>Recognised Organisation</td>
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<tr>
<td>SPC</td>
<td>South Pacific Countries</td>
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<td>SSM</td>
<td>Safe Ship Management</td>
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<tr>
<td>SSS</td>
<td>Satisfactory Safety Standards</td>
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<tr>
<td>TMoU</td>
<td>Tokyo Memorandum of Understanding</td>
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<td>USDoE</td>
<td>United State Department of Energy</td>
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CHAPTER 1 - INTRODUCTION OF RESEARCH

1.1 Background

Maritime safety in Papua New Guinea (PNG) is inadequate, therefore, this research is needed to establish the cause of an increase in maritime accidents involve with PNG flag registered vessels resulting in many lives lost. Additionally, triggering public opinion on ship safety, environmental pollution and creating marine traffic issues (NMSA Search and Rescue, 2019). The country is an island state located in the Pacific Ocean sharing a land border with Indonesia and sea borders with Australia and the Solomon Islands. The country has a population of eight and a half million people with a landmass of 462,800 km². Two-thirds of the population live on the coast and the islands and commute regularly by maritime transport.

Sea accidents have been occurring in the region and PNG recorded its worst with the sinking of passenger ferry, Mv Rabaul Queen in February 2012 with the loss of over 300 with less than 10 deaths recovered (The National, 2016). This accident was preventable if all safety warnings were considered by operator and ship crews (Varitimos, 2012). Commuting by sea through maritime transport is unavoidable because it is the livelihood of commerce and service delivery. However, there is inadequate safety for commuters to travel by sea while air transport becomes very expensive and not readily available for small and remote villages along the coastline and the islands. As a consequence, many accidents do occur, but not all are reported or investigated to establish root causes. There is a need to establish a monitoring mechanism to ship safety for commuters of sea transport.

Since PNG is a member state to the United Nation and so IMO the obligations of the flag state are elaborated in Article 94 of the United Nation Convention of the Law of the Sea, UNCLOS (1982), also stated in the IMO Instrument Implementation (III) Code.
Therefore, flag states can promote maritime safety together with the ship-owners and operators by conducting safety accident investigations and report deficiencies leading to accidents to IMO by way of good working relationship between ship-owner or operator and the flag administration (Schroder-Hinrichs, et al. 2011).

1.2 Aims and Objectives

The research aims to assess the inadequate safety standards on board the PNG registered flag ships of 150 gross tons and above for the last eight (8) years from 2010 to 2018. The 150 to 500gross tons managed by the flag is identified as regularly used category of vessels for movement of cargoes and people within the flag administration while those above 500 gross tons’ trade within and abroad. Even though, operations are mostly along the coast and within the islands, accidents are still occurring in the Country (NMSA Search and Rescue, 2019). The scope of research includes; Accident Investigation, Surveys/Inspections, Audits, Ship safety, Environment and Economics through the following international and national instruments and scholarly literatures;

a. Acc. Investigation\(^1\)
b. Surveys\(^2\)
c. Audits\(^3\)
d. Safety\(^4\)
e. Environment\(^5\)
f. Economics\(^6\)

---

\(^1\) IMO Casualty Investigation Code, 2008 MSC 255(84)
\(^2\) IMO-RC Code, 2013 Res MSC 349(92)
\(^3\) IMO III Code, 2013
\(^4\) IMO SOLAS Convention, 1974
\(^5\) Wreck Removal, 2007/National Law
\(^6\) UNCTAD, 2019 Report p18
Accident Investigation is researched through the lens of IMO Casualty Investigation Code. Accident Investigate takes into consideration the casualty reports. The survey is looked at through the lens of IMO-RO Code and that is how the survey is conducted in the flag administration considering delegation of functions to the ROs and also the performance of the flag surveyors. Additionally, how the national regulations regulate the performance of the flag surveyors.

Finally, the objective of the research is to use the findings from the safety investigations, surveys and audits in to propose a practicable monitoring system. The flag state administrations may utilize and facilitate surveys and inspections regime and alleviate the inadequate maritime safety issue onboard the nationally (PNG) registered vessels.

1.3 Expected Results

After completing this paper through the Qualitative method, it should identify and reveal the underlying reasons for non-applicability of findings in accident investigations, surveys and audits in the maritime sector of the pacific especially Papua New Guinea. Safety covers the standards applied onboard, ships investigations should reveal the efficiency and effectiveness to uncover causes of maritime accidents, while survey and audits should establish how well, the safety standards are maintained, controlled and monitored. Finally, auditing should indicate whether the administration is well placed to perform its mandated functions in promoting maritime safety while identifying and eliminating external influences suppressing safety effort.

---

7 Already produced for the incident and accident that occurred in the last eight years from 2010 to 2018 and the lessons learnt.
1.4 Key Assumptions and Potential Limitations

The research is aimed at identifying and gauging the safety level adopted and enforced by the maritime administration as assumed being properly monitored by the flag state control and its monitoring system. The general assumption is that it is challenging to gather the necessary data that would be needed for this research paper. The reasons would vary from one ship-owner or operator to another, however, the target group of this research are the seafarers, institutional staff, students and the administration officials of Fiji and PNG.

The obvious and the greatest limitation that lays ahead for the preparation of this dissertation document is the distance involved in collection of data and completing the research. Financial backing for travel to and from the country to carry out the research is unavailable thus will limit the types and quality of data collected, testing of the thesis, increase the time required to collect and to process the data. The imaging limitation is the spread of the global pandemic, Corona Virus which has impacted countries and causing lockdowns as such data collection has been really troublesome.

1.5 Chaptering

Chapter 1: Lays out the objective of the dissertation in five chapters introduces the topic and the background information of Papua New Guinea and the objectives of researching inadequate safety on the flag registered vessels. Therefore, it contains information on the geographical location of the country, its problems and what has been done to address the problem.

Chapter 2: Is the literature review and connects inadequate safety (problem statement) issues to the adopted international instruments and national regulations and furthermore to the literature that is already written by scholars on similar issues. The literature review also contains the theoretical and the methodological inputs taking into account, findings of past research done on maritime safety.
Chapter 3: Research Methodology details how the research was conducted with the flag state of PNG and Fiji and the method(s) used to gather the relevant data. The methodology used here is a qualitative method. The primary sources include interviews and survey questionnaires which were sent to both countries while secondary sources of data were gathered from previous researches, journals, books and reports of investigations, surveys and audits from the flag and IMO websites. The research targeted surveyors, seafarers’ onboard ships, students and staff of maritime institutes and the employees of respective flag administrations.

Chapter 4: The discussion part of the research paper discusses the findings of the data collected from PNG and Fiji in relation to the objective which in this research is ‘promoting maritime safety through findings of survey, audit and investigation findings.’ The questionnaires and interviews conducted and literature by scholars is analysed to give weight to the objective. Based on the analysis of the data collected the outcome is assessed and accompanied by the recommendation as a way forward to alleviate the inadequate safety issue in the pacific region, especially in PNG.

Chapter 5: Summarizes and recaps the research findings in tier one, two and three and concludes with recommendations on the areas identified for improvement. The recommendation is tailored to assist the ship inspection and survey regime and the research is summed up and concluded.
CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

Ships do not sink because of the water around them but the water that gets in them (Osteen, 2015). This raises the question, how much is the flag administration doing to ensure maritime safety is adequate? Under article 94, paragraph one specifies the functions of the state\(^\text{a}\). However, external impacts like social, cultural and symbolic largely contribute to inadequate ship safety in PNG which will be discussed through Bourdieu (1986) theory of stratification and deals with status and power with economic interest as the driver.

Therefore, improvement of inadequate maritime (ship) safety can be done through the application of international conventions, national regulations and supporting scholarly literature at the flag administration both onboard the non and conventional size vessels as depicted in Figure 2.1 theoretical framework adopted from Rasmussen.

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\(^\text{a}\) Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag.
2.2 Ship Safety

While maritime safety is a growing concern, SOLAS convention as initially developed in 1914 after the sinking of Titanic has been adopted by member states in relation to construction, equipment and seaworthiness of ships. The convention is only applicable to vessels over 500 gross tons, however, an exception is given to vessels of 150 gross tons for radio communication. SOLAS is not applicable to vessels of primitive build, non-propelled by mechanical means and recreational vessels not engaged commercially.

The theoretical framework adopted from Rasmussen depicts and elaborates on safety management systems, (ISM) and safe ship management system (SSM) for conventional and non-conventional vessels respectively and registered in PNG. Implementation of the respective safety management systems is dependent on the ship
crews with the assistance of a qualified designated person ashore (DPA) whom the communication is linked through to the top management (Pun, Yam R.C.M, & Levis, 2003). Furthermore, the flag administration as a regulating body is responsible to control and monitor ships through the inspection regime to ensure an appropriate level of safety is maintained. Failure to maintain safety standards often results in accidents prompting a public outcry for new regulations or amendments to existing laws by the government through the flag administration. However, stakeholders with economic interest often interfere and influence the functions of the flag administration(s).

Since manning ships with crews of different cultural background affect the level of safety onboard (Havold, 2000), flag state administration with multiple nationalities are likely to face the same. The poor working relationship and administration management issues at the flag administration often reflect on the inadequate safety standards onboard nationally registered vessels and impacted by external influences.

2.3 Environmental Safety Hazard

Because SOLAS refers to the safety aspect of the shipping industry from when the ships are built to when they are put in the water and operated, disposal after the usability period and or illegal dumping (wrecks) is a growing concern for the coastal state. Nevertheless, flag and coastal states need to work together as wrecks often cause a traffic hazard and become an environmental concern. The issue is captured in the framework of laws disallowing dumping at sea. The London protocol\(^9\) significantly strengthens dumping controls in the protocol states which Papua New Guinea is a signatory. On the other hand, national laws supersede international rules and standards which contracting states have agreed and adopted\(^10\).

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\(^10\) Article 210 of UNCLOS (1982)
PNG is not a party to Nairobi Convention (2007), therefore, the coastal and flag states with their respective national regulations can regulate the purchasing, registering, operation and dumping of wrecks in the harbours, national waters and territorial seas.

2.4 Economics

As dumping of the ship becomes the end life of its usefulness in performing and promoting maritime economic, it is shipping that move 90% of world freight. However, not every country in the world or region effectively contributes to tonnage transportation. The United Nations Conference on Trade and Development (UNCTAD), reported that the pacific region is identified as the region with the lowest shipping connectivity. (UNCTAD, 2019 p18).

Papua New Guinea liner fleet has been greatly impacted by the competition put up by the international players, especially in the East Asian Region. As such international fleets continue to decrease as indicated in the port state inspections reports (Tokyo Memorandum of Understanding [TMoU], 2018). However, the flag state yet again focusses on the national fleets with operations to meet the growing demand for cargo and passenger transportation. Additionally, aviation is considered expensive and not readily available, therefore, promoting safety in the flag registered vessel in the country is identified very critical so as not to cause another disaster like the Rabaul Queen in 2012.
2.5 Accident Investigation

With the 2012 ferry disaster down in the record for PNG and the royal commission of inquiry being conducted by investigators from abroad, the administration has an incomplete function as per the UNCLOS\textsuperscript{11}.

Accident investigations always conclude with the perception that someone has done wrong and must be responsible. That is usually the master and or the crew member onboard. However, it can be said that the operating procedures for ships in terms of safety management is the direct input from shore. According to Stoop (2003) investigations always focus on trying to establish what really went wrong by analysing the events, however, the origin of safe operation manual is not liable to an investigation.

Nevertheless, there is limited research done on the utilization of findings and recommendations from accident investigations to prevent reoccurrence in the literature. According to Lundeberg (2012), improving safety through accident investigation is important to prevent reoccurrence in the future. For example, Lundeberg analysed eight accident investigation manuals which revealed that the scope for recommendation to fix the errors seemed too generic. As such rectification of findings and recommendations is more or less voluntary as perceived (Luttendoerger, 2012). Additionally, Schroder-Hinrichs et al., (2011) also reviewed 41 maritime-related accident investigation reports found that organizations contribute to accidents\textsuperscript{12}. Therefore, the function of the flag administration to regulate safety is not investigated during the accident investigations as such flag administration is limited to being investigated under the IMO guidelines except audit of the survey functions in assessing safety.

\textsuperscript{11} Each State shall cause an inquiry to be held by or before a suitably qualified person or persons into every marine casualty or incident of navigation (Article 94, para 7).

\textsuperscript{12} Organizational factors are not investigated by maritime accident investigators to the extent which the IMO guidelines is expected.
2.6 Survey Functions

Accidents are the result of inadequate safety hence flag state has the obligatory function to survey and issue certificates for proof of compliance (UNCLOS, 1982). It again depends so much on the availability of resources in the organization\textsuperscript{12}. States may yet again delegate the function of ship survey to an external source like the recognized organizations (RO) (Mansell, 2009). Delegation of responsibility comes with requirements and one such is the Contractual Agreement and the set of functions delegated to the ROs. Whether it be non/conventional vessel survey, the task is needed to be monitored and audited by the flag state without external influences and guided by the IMO and national regulations.

2.7 Flag State Audits

With IMO III code as the latest instrument in the current list introduced by the member states through the Organization it establishes audit standards. However, most flag states had an issue with the capacity to implement international instruments\textsuperscript{14}. The instrument also underwent several changes and during the 28\textsuperscript{th} Session held in December 2013, the assembly approved the framework and the procedure to the current version through Resolution A.1067 (28) (Basaran, 2016). The instruments (III Code) finally became mandatory\textsuperscript{15}. Even though the code aims to assist with the implementation of international instruments, flag administration also has the obligation to monitor external influences hampering the flag state functions with which numerous research have been done by scholars and documented in the literature.

\textsuperscript{13} Under the provision of Article 94 (UNCLOS), 217 of LOSC and the III code (IMO, 2013a).

\textsuperscript{14} III Code largely become applicable for capacity building (IMO III code, 2013).

\textsuperscript{15} Res A.1070 (28) and further refining of all the modifications come to the current version (IMO III code, 2013c)
2.8 Supporting Literature

In addition to international instruments and national regulations, scholarly literature also provides useful leads to improving inadequate maritime safety. The research captures the flag administration of two island states specifically, Fiji and PNG. Both are members of South Pacific Community (SPC) (Fry, 1997) and the Melanesian Spearhead Group (MSG) (Lawson, 2016). Both flags still require technical expertise to improve maritime safety, however, external impacts are still yet to overcome.

McGregor (1960) authoritarian (X) and participatory (Y) theory may be an old fashion, however, it still prevails in some cultural settings whereby most employees do not speak up against the boss or students do not argue with the teachers thus allow orders to freely flow from top-down (White, 2007). Top-down orders often create a window of opportunity for inadequate safety in the maritime sector in the context of Melanesian Culture. The coastal pacific island states of Fiji and Papua New Guinea cultural norm of never to talk against the leader exists and is intuitive in the Melanesian communities including Solomon Island and Vanuatu as stated by White (2007) in his study of Melanesian Culture.

Because of the loss of lives at sea brings distress among families the public, it at the same time tests the flag administrations procedures to proactively investigate and put in place measures to prevent recurrence. Moreover, the first catastrophic ferry accident had a commission of inquiry done external sources (Varitos, 2012). The flag involvement was limited\(^{16}\). As stated by Luttenberger (2012), by improving ship safety through findings from past events can prevent a recurrences nevertheless, accidents still occur even with the investigated reports of findings and, therefore, risks can only be reduced with risk barriers set up together with appropriate control and continuous monitoring measures (Schroder-Hinrichs., 2012).

\(^{16}\) Lack of resource capacity (safety investigators) to perform safety investigations.
For the purpose of conducting safety investigations, analysis of data and accurate reporting in accordance with recognized best practices all depends on the availability of resources hence requires continuous development and monitoring (Lutendberger, 2012). Often near-misses and accidents are visual signs of underlying factors as in the theory of omission or iceberg stated by Hemingway cited by (Swuste, Gulijk, & Zwaard, 2010) which depicts the underlying cause for inadequate safety.

The findings from the accident investigations, surveys and audits are indicators of the underlying issues. Whether or not deficiencies are rectified, it is entirely dependent on the shipowner and or operator. Bairnes, (2017) of South Florida Water Management stated that to be effective, audit reports must be implemented and periodically monitored by having the officers from the surveys department go out and ensure the implementation of the recommendation continue and encourage their completion. Therefore, findings from the safety investigations of accidents, surveys and Audits must be reported to the flag state and follow-up be done and records maintained.

A model example employed in the Safety Investigation of Finland as well as Maritime Safety Investigation Board (MAIB) in the United Kingdom termed as Human Factors Analysis and Classification System (HFACS) also utilizes the reviewed accident reports for continual improvement. The implementation procedure must be documented and maintained that deviations will be limited or not be possible by an individual(s) with vested (economic) interests (Mazaheri, 2015).

The principle of wealth or capital, identified as external impacts often hampers the implementation of findings and recommendations. The three elements stated are believed to be affecting the decision-making process in different ways as captured and defined by Bourdieu (1986) and various other literature.

Cultural Wealth is defined by Bourdieu (1986) as credentials, qualifications and titles one holds from an organisation. According to Yosso (2005), cultural wealth is an
"array of knowledge, skills, abilities and contacts used for survival in different communities" which is again emphasized by Lareau and Horvat (1999) that, 'value of the cultural wealth is dependent on the social setting. A research conducted by Baker and Palmer, (2009) on how culture affects managers' decision making shows that culture can still affect working hours, conditions and expected rewards resulting in low esteem and poor work output.

Social Wealth, on the other hand is defined as 'network of people and community resources' therefore, it is the value of possessions to meet social needs (Yosso, 2005). It is often related to connections between whom one connects through frequent interactions either directly as in face to face or indirectly through email, telephone calls and other distant modes (Glazer & Karpati, 2014). They could be relatives, present and past co-workers and or friends (Waters & Waters, 2016) while in the capitalistic society, symbolic wealth also interchangeably termed as status wealth by Kenton, (2020) signifies high social and economic positions. The positions are frequently used to manipulate the system, neglecting safety and causing vessels to be vulnerable and susceptible to maritime accidents of which the decision-makers livelihood is not impacted in terms of maritime transportation in the Melanesian society (country) like Papua New Guinea (White, 2007).

On the contrary, when the safety standard onboard the ship is improved, it brings to the crew the message that the company cares for them. Such feelings will increase working morale and confidence (Fenwick, 2006) as such can result in higher turnout and lesser accidents (Hitessh, 2019). Accordingly, the flag administrations have challenges for every manager to identify from subordinates how best to engage and accomplish tasks. MacGregors authoritarian (x) and participatory (y) theories of the sixties may be very old, however, it is still evident and unfoundedly applicable to some extent depending on the regions, cultural settings and organizational policies.
Therefore, cultural backgrounds, social settings and symbolic status shouldn't be the basis to rest management decisions to work towards achieving the organizational objective which is safety first\textsuperscript{17}, hence, the following are the three thesis questions that will be examined in the discussion;

I. Is PNG flag administration doing enough to promote maritime safety in terms of safety and environment protection while promoting business in the industry?

II. Are the external factors termed as culture, social and symbolic principles affecting the flag state ability to function independently and make safety-related decisions?

III. Is the flag state utilizing the investigation, audits, survey and inspection findings to gauge its overall performance and establish monitoring mechanisms for flagships?

\textsuperscript{17} Promoting Maritime “Safety First” in the Flag Administration, the case of Papua New Guinea.
CHAPTER 3 - RESEARCH METHODOLOGY

3.1 Introduction

The methodology explores maritime safety through surveys, audit and investigations findings, however, centred on Papua New Guinea. The schematic representation, Figure 2.1 shows the theoretical framework adapted from Rasmussen (1997) for the purpose of clarity and logical understanding while the conceptual framework, Figure 3.1 is the authors own work. Methodology, therefore, comprises of the Research Approach, Research Methods, Sampling Criteria, Data Collection and Analysis and finally Ethical Concerns and Limitations.

3.2 Research Approach (Qualitative)

The three thesis questions stated in chapter two layout the approach of the dissertation and is as outlined in the “Niugini Tripod Conceptual Framework” shown in Figure 3.1.

Figure 3.1 - Niugini Tripod Conceptual Framework
The general approach of the dissertation begins with the flag administration, as it has the primary obligation to oversee the maritime safety issues. The PNG flag administration has the responsibility to in-cooperate the international instruments into national laws for maritime safety at the same time develop its own regulations.

In the case of safety, the survey deficiency findings from the flag states and the Tokyo MoU annual port state control reports will be used while for audits the external IMSAS audit\(^{18}\) conducted in 2017 will be studied. The accident investigation will be researched through the records from the flag administration, IMO GISIS and the survey questionnaires and interviews. Additionally, UNCTAD and APCIS information sources will be used to gather or verify data for this research.

Nevertheless, when severe accidents occur, there is always a public outcry and as a safety organisation, such approach from the public is a reminder to consider amendments and or deliberating on new laws so to prevent recurrences. However, the external impacts largely exerted by the business community (ship-owners) is a major challenge to promoting safety. The primary government responsibility to pass laws is prematurely hindered by interest groups through external impacts, for example, delaying appropriate regulations such as safe ship management (SSM) in PNG.

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\(^{18}\) See appendix 11 - Disclaimer, IMSAS audit report denied as per email correspondence.
As indicated in **Figure 3.1** external impacts are rooted from culture, social and symbolic wealth and driven by shipping economics, hence, greatly influences the functions of flag administrations as shown in **Figure 3.2**.

Cultural Wealth is looked at in three components and include; embodied, objectified and institutionalised. Embodied factors include languages and the ability to effectively communication while objectified features gifts and benefits which become an appreciation for favours done. Finally, institutionalised refers to degrees and experiences gained which are often used to downplay others of minor cultural groupings such as the Melanesian people in the Pacific (White, 2007).

Social wealth on the other hand is seen as the total value of resources to meet emotional needs and often associates with the cultural setting through embodied and objectified features. Social wealth is established through various communication modes...
between individuals. Finally, economic wealth as the main driver directly coincides with the symbolic or status of an individual. Functions of maritime safety administration are greatly hampered when government ministers, ship owners and managers or prominent figureheads directly socialise and influence the flag administration resulting in decisions for economic gain instead of improving safety.

The consequence is rippled through the recruitment and development of subordinate employees. Recruitment guidelines are not abided by, hence friends and cronies are employed which is wholly determined by economic interest.

3.3 Research Methods

The dissertation employs a qualitative approach to accomplish the task. The data sources are categorized as primary and secondary\(^\text{19}\). Moreover, the research is targeted on flag administration and maritime training institutes. Therefore, **Table 3.1** shows the target groups that will take part in the data collection. A total of seventy-two participants were engaged from PNG, Fiji and Australia which six are interviewees\(^\text{20}\).

\(^{19}\) Hence include interviews and survey questionnaires while the secondary sources include a review of past research papers, internet websites, book reviews, journal articles, newspapers and other electronic sources.

\(^{20}\) Participants Interview Transcripts (P1 - P6) - appendix 9
Table 3.1 - Data collection sample and the target groups

<table>
<thead>
<tr>
<th>Target Groups</th>
<th>Departments</th>
<th>Country</th>
<th>Country</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Ship Surveyors/Inspectors</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Environment Protection</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Ship Registry</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Legal</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Qualification</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Human Resources</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Institution</td>
<td>Staff</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Students (Officers)</td>
<td>5</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Former Students (Seafarers)</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Interviewees</td>
<td>Surveyors, Seafarers, Inst</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>36</td>
<td>36</td>
<td>72</td>
</tr>
</tbody>
</table>

The information in Table 3.1, data collection and target groups demonstrate how the survey for the dissertation was carried out. The table has three sections, first the flag administration next, the training institutions where the targeted participants relating to the safety aspect of the maritime industry are trained and examined for the skill set required. The ship inspectors and surveyors were surveyed in terms of safety aspects. The officers from environmental protection and ship registry assisted to determine the causes of ship dumbing leading to environmental pollution and traffic hazards.

Finally, the training institutions that train the seafarers who then connect the institutions to the administration and the ships, therefore, the training institutions are as such captured in this survey.
3.4 Sampling Criteria

Since research participants are purpose related, survey and interview questions were focussed. However, due to the limitations of distance, time constraints, coronavirus pandemic causing the country to go into lockdown, only the sample data was gathered with some interviews. The drive to carry out research into promoting maritime safety at the flag administration emerged when PNG and Fiji were listed in the blacklist of TMoU for the 2018 annual report as such the two countries were sampled for this research.

3.5 Data Collection and Analysis

Data collection was through primary and secondary sources. The primary data was collected by means of sample questionnaires and interviews. However, a formal request letter was delivered to the respective flag state authorities of Fiji and PNG to seek clearance. Data was collected through participatory methods of interviews and sample questionnaires from the focus groups indicated in Table 3.1. The analysis of safety data is assessed in the first and third tier as demonstrated in the Niugini Tripod Conceptual Framework (NTCF) while the second tier is driven by economic interest. All are analysed through the theoretical framework on system design adopted from (Rusmussen, Duncan, & J. Leblat, 1997).
Table 3.2 - Data samples send and received from participants.

<table>
<thead>
<tr>
<th>Target Groups</th>
<th>Departments</th>
<th>Sample Size</th>
<th>Send</th>
<th>Recvd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Ship Surveyors/Inspectors</td>
<td>10</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Environment Protection</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Ship Registry</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Legal</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Qualification</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Human Resources</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Institution</td>
<td>Staff</td>
<td>6</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Students (Officers)</td>
<td>20</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Former Students (Seafarers)</td>
<td>20</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Interviewees</td>
<td>ROs, Captn, C/E, Lectures</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>72</td>
<td>61</td>
<td>22</td>
</tr>
</tbody>
</table>

With due consideration for participant consent, a sample size questionnaire of sixty-six and six interview was planned. Disseminated 55 and received 16 out from the total. Additionally, interview participants include 3 x PNG, 2 x Australia, 1 x Fiji which all data collection was done in the period of five weeks commencing 01/07/20 easing on Friday 07/08/20 prior to analysing, tabulation and graphing.

3.6 Ethical Concerns and Limitations

While data was needed for dissertation writing the principle of informed consent was equally important. Participant privacy was considered supreme as it would make a lot of difference in their employment and family livelihood. Reassurance to maintain the confidentiality of the information gathered was clarified and maintained as per the WMU research data protocol form. Permission to engage was obtained from participants prior to handing the questionnaires or commencing interviews. On the other hand, the greatest and obvious limitation was lockdown of the university and the countries of
interest for data collection, therefore, data collection was the toughest task in writing up this research paper.

Other limitations that were encountered during data collection include; participants’ unwillingness to partake even with numerous follow-ups, evading from answering or providing the necessary information due to limited maritime background knowledge while others withheld information so as not to reveal incompetence or irrelevant actions in the respective scenarios hence did not respond.
CHAPTER 4 - DISCUSSIONS

The research discussion elaborates on the three tiers of the conceptual framework;

1st Tier: Safety, Environment & Economic

2nd Tier: Externalities (Cultural, Social and Symbolic)

3rd Tier: Safety (Accident) Investigation, Ship Surveys and Audits.

4.1 Introduction

Tier one discusses safety of crew members, ship and the cargoes, Environment focusses on the damages caused by unregulated ship purchasing, operation and disposal driven by economics created by gaps in the national legislation. Tier two elaborates on external impacts in the context of culture, social and symbolic driven by economic interest thus interfering with the obligation of the flag administration. Tier three looks at surveys and inspection to gauge the performance of ships from a technical perspective, audit establishes the monitoring at the administrative front and acc. investigation sums up the unforeseen events that result in damages to the ship, its crews and or the environment. Therefore, chapter four discusses the theme of inadequate maritime safety in PNG.

4.2 Safety: Flag States Obligation -Tier 1

Flag state came into existence as a result of the usage of the flag as a symbol for nationality or tribe by ships until 1921 when the initial registry of ships began (Louis, 2019). With varying reasons for the registry, financial entities only wanted to finance ships identified with state ownership especially when emergency situations arise (Ehlers, Lagoni, & Miriam, 2010). Ships from then began trading across seas and each
was identified with the flags (Marten, 2014). However, the foundation of every flag is the national laws and international regulations stated in article 94 of UNCLOS (1982).

The maritime administrations of the small Island states in the Pacific, example Fiji and PNG have their national laws setting the foundation. In addition, each country adopts and transposes international instruments into the National Legislation to administer the respective flag state obligations as stipulated in Table 4.1.

**Table 4.1 - Flag State Obligation in accordance with international Laws**

<table>
<thead>
<tr>
<th>Flag State Obligations</th>
<th>International</th>
<th>PNG National Laws</th>
<th>Fiji National Laws</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adopt Laws, Regulations Prevent Pollution</td>
<td>SOLAS, Marpol Annexes I - VI</td>
<td>SOLAS 74, MarPol Annex I-V, MSA Ch. 371-s1-24</td>
<td>SOLAS 74, MarPol Annex I – V 'III MAT s 128 - 153</td>
</tr>
<tr>
<td>2. Maintain Register of Ships by IMO or Flag Number</td>
<td>IMO SOLAS XI-1/3</td>
<td>MSA s23</td>
<td>SHR Act s4-22 (s11)</td>
</tr>
<tr>
<td>3. Assume Jurisdiction over Registered Ships</td>
<td>UNCLOS 1982 Article 94/ColReg</td>
<td>MSA s13</td>
<td>SHR Act s4-22 (s12)</td>
</tr>
<tr>
<td>5. Cooperation, Carryout Accident Investigations</td>
<td>IMO Accident Investigation Code</td>
<td>MSA s166 - 167</td>
<td>MAT s 45 - 47</td>
</tr>
<tr>
<td>6. Assess and Satisfy Candidates Seafarers</td>
<td>STC Conv.78, 95, 2010 Amendment</td>
<td>STCW 78</td>
<td>MAT s 25 STCW Conv. 2014</td>
</tr>
</tbody>
</table>

The legislation gives the administration the power to manage its own affairs. Fiji is guided by its national law, Maritime Transport Act 2014 (amended) with its Regulations and PNG is equally guided by the Merchant Shipping Act 1975 and its subordinate regulations. However, ship safety is incomplete with just ratification of conventions and incorporation of regulations but most important is the application of the instruments in the industry.

For example, in the interview with participant five (P5) an important point was made on PNGs Merchant Shipping Safety Regulations (MSSR). According to P5, the
regulation does not clearly specify about slipping vessels and performing thickness gauging\textsuperscript{21} (see appendix 9 - Quest 3,C5).

Therefore, maritime safety authority of PNG has the task to re-visit the purpose of the regulations, the aspect of safety involved and prepare instruments accordingly. It is better done with involving the end-users (seafarers) and industry technical personal.

4.2.1 Ship Safety Requirement

Since shipping is the worlds' oldest international means of transportation and at the same time, one of the most dangerous, its yet to establish a total safe working system. As ships trade around the world, it is appropriate to establish regulations that are followed by all nations. The sinking of Titanic in 1912 and the investigations carried out established the initial SOLAS convention in 1914. The Inception of International Maritime Organisation (IMO) in 1959 as United Nations special agency was to monitor and regulate maritime affairs, additionally, it boosted the convention for Safety of Life at Sea (SOLAS) forward until the current version became adopted in 1974.

The convention is, however, only applicable to passenger and container Cargo ships while tankers are exempted as they are classified as special ships because of dangers associated with the cargoes carried onboard. For example, construction and installations of ships other than tankers must comply with inter/national regulations and class rules. Therefore, IMO develops conventions, codes and regulations and ensures member states implement and enforce by in-cooperating them in their national laws (UNCLOS, 1982).

\textsuperscript{21} MSSR is not specific enough, its' too open for interpretation and one of the aspects, there is nothing specific about when the ship has to go dry or when you have to pull the tail shafts out, when and or how you can do the thickness measurements. P5 further went on to state that; there is nothing in the regulation clearly stating when and or what should be done.
4.2.1.1 IMO Instruments

Since convention evolve SOLAS was finally adopted by IMO in 1974, however, poor management was still evident especially in the part of management. As a consequence, the maritime safety committee (MSC) then in 1987 developed guidelines in relation to the shore-based management for the safe operation of ro-ro ferries. The International Safety Management system (ISM) was finally adopted in its mandatory form in Res. A741 (18) later came into force in 1998, even then was driven by 1994 incident of Herald of Free Enterprise.

The main purpose of SOLAS is an improvement of safety which emphasis is put on the life-saving equipment, fire-fighting and the means of communication are the focal points of safety at sea after sinking of Titanic and still prevail today with subordinate conventions and regulations. Therefore, member states to IMO now have the obligation to adopt and further transpose them in the national legislation to have effect during implementation at the respective states hence, PNG still has pending ratifications.

*Table 4.2 - Ratification of IMO Instruments Comparison Table (TMoU, 2019)*

<table>
<thead>
<tr>
<th>IMO INSTRUMENTS</th>
<th>FIJI</th>
<th>PNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAD LINE 66</td>
<td>29/11/72</td>
<td>18/05/76</td>
</tr>
<tr>
<td>LOAD LINE 88 Protocol</td>
<td>28/07/04</td>
<td>--------</td>
</tr>
<tr>
<td>SOLAS 74</td>
<td>04/03/83</td>
<td>12/11/80</td>
</tr>
<tr>
<td>SOLAS 78 Protocol</td>
<td>28/07/04</td>
<td>--------</td>
</tr>
<tr>
<td>SOLAS 88 Protocol</td>
<td>28/07/04</td>
<td>--------</td>
</tr>
<tr>
<td>MARPOL 73/98</td>
<td>08/03/16</td>
<td>25/10/93</td>
</tr>
<tr>
<td>STCW 78</td>
<td>27/03/91</td>
<td>28/10/91</td>
</tr>
<tr>
<td>COREG 72</td>
<td>04/03/83</td>
<td>18/05/76</td>
</tr>
<tr>
<td>TONAGE 69</td>
<td>29/11/72</td>
<td>25/10/93</td>
</tr>
<tr>
<td>MLC 2006</td>
<td>21/01/13</td>
<td>--------</td>
</tr>
<tr>
<td>AFS 2001</td>
<td>08/03/16</td>
<td>--------</td>
</tr>
<tr>
<td>CLC 92 Protocol</td>
<td>30/11/99</td>
<td>23/01/01</td>
</tr>
<tr>
<td>BWM 2004</td>
<td>08/03/16</td>
<td>--------</td>
</tr>
</tbody>
</table>
Fiji on the other hand, has ratified almost all the instruments while PNG only has about half ratified. The question now is, how effective is the implementation of the conventions with regard to the availability of the resources? Diving a little deeper, PNG and Fiji are again being listed in the blacklist of TMoU (2018) report. Since PNG had less than 30 ship inspections in three years (rolling average) the country didn’t get listed in the blacklist, however, both countries had three years rolling detention rate of 31.82% (TMoU, 2019 p37) so deemed to be in the blacklist which will be further discussed in surveys and inspections. Ratification of international instruments and development of national regulations is great but when the implementation does not coincide with the image of the ratified instruments than the purpose is not served.

Therefore, monitoring mechanism clearly stipulated in the national regulations is required in the flag administration to oversee and ensure ship-owners, operators and surveyors fully comply and uphold measures to ensure safety onboard registered vessels is maintained.

4.2.1.2 Safety Management System (SMS): Conventional Vessels

As discussed earlier, the International Safety Management (ISM) Code designed for the conventional ships, adopted and made mandatory by IMO in 1998 alleviates the problem of poorly managed shore-based management operations. An interview participant (P4) describes SMS as a “bible for maritime (ship and Crew) safety” (see appendix 9 - Q3 A1)

PNG and Fiji both have adopted and transposed the code into national regulation, however, ships are still being detained. Figure 4.1 shows the inspections and detentions of conventional vessels, which supposedly should comply with the safety management system operated by the shipping company in the respective countries. Both countries had detentions during the PSC inspections conducted by other flag states operating under the Tokyo MoU regime, therefore, raises the question on the efficiency of the system (SMS) in the industry. This concludes that better monitoring
from shipping companies and at large by the flag state administration is very much required.

Additionally, the safety management system cannot be very effective without the commitment from top-level management as noted in the preamble of the ISM Code. Implementation, however, is entirely reliant on individuals that operate in the system. A closer assessment on the code also reveals element of competence, attitude and even commitment to ensuring that the code requires effective implementation and monitoring to achieve results. The foundation of effective SMS lies on the qualification, training and competence of the ship’s crew. At the same time, the person who performs the role of designated person ashore (DPA) will as much as possible require the backing of the top-level management.

For instance, DPA must be a trained and qualified person and possess the following basic attributes; qualification, training and the necessary experience as listed in Table 4.3 in order to perform effectively and promote maritime safety.

*Table 4.3 - Attributes of designated person ashore (MSC-MEPC.7/Circ.6)*

<table>
<thead>
<tr>
<th>Qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• qualifications from a tertiary institution recognized by the Administration</td>
</tr>
<tr>
<td>• qualifications and seagoing experience as a certified ship officer (STCW), 1978</td>
</tr>
<tr>
<td>• practical senior level experience in ship management operations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>• knowledge and understanding of ISM Code, mandatory rules and regulations;</td>
</tr>
<tr>
<td>• applicable codes, guidelines and standards as appropriate;</td>
</tr>
<tr>
<td>• assessment techniques of examining, questioning, evaluating and reporting;</td>
</tr>
<tr>
<td>• technical or operational aspects of safety management and Audits system;</td>
</tr>
<tr>
<td>• appropriate knowledge of shipping and shipboard operations;</td>
</tr>
<tr>
<td>• effectively communicate with shipboard staff and senior management.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>• present ISM matters to management and gain support for safety improvements</td>
</tr>
<tr>
<td>• determine whether SMS elements meets the requirements of the ISM Code</td>
</tr>
<tr>
<td>• determine the effectiveness of the safety management system</td>
</tr>
<tr>
<td>• assess the effectiveness of SMS and verify compliance with the rules.</td>
</tr>
<tr>
<td>• identify practices recommended by the Organization, Administrations, ROs.</td>
</tr>
<tr>
<td>• analyze data from hazardous situations, accidents and apply the lessons.</td>
</tr>
</tbody>
</table>
International instruments are often ratified and transposed into national regulations to meet the requirements of a state party to the instruments, however, if the ultimate purpose of the instrument is not served than the flag state has not achieved its goals. This is evident with the flag registered vessels of PNG as well Fiji as they often get detained by port state control officers in the Tokyo MoU regime (TMoU, 2018).

![Table of Flag States Inspection and Detention]

*Figure 4.1 - Flags State Inspection and Detention Listing (TMoU, 2018)*

When conventional ships are detained, an alarm should immediately be raised and question be asked regarding the function of the safety management system. Safety management code is generic and it’s the responsibility of the shipping company to ensure it's completed to the specific requirement of its fleet, therefore, it is not exhaustive to any one requirement in the SOLAS convention already adopted by the flag states.

According to Kristiansen (2013), SMS should not be totally relied on, instead, ship owners and or operators develop management guidelines to meet safe ship conditions of international and or flag state standards at the same time entirely dependent on the
management and the operational staff especially the DPA (Kristiansen, 2013). Therefore, an effective safety management system is one that is open to identifying risks and lessons learnt with continuous monitoring on the operations to prevent losses.

According to interviewee six (P6), a Recognised Organization surveyor commented that “ships can’t comply with the safety standards if SMS is not specific to the equipment fitted onboard.” After all, compliance largely depends on the ratification of instruments and proper RO agreements in the delegation of responsibility is important. On that note, PNG has listed seven ROs as shown in Table 4.4.

<table>
<thead>
<tr>
<th>Ships</th>
<th>ABS</th>
<th>DNV-GL</th>
<th>LOYDS</th>
<th>NKK</th>
<th>RINA</th>
<th>BV</th>
<th>BKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions Authorized</td>
<td>Not Authorized</td>
<td>Not Authorized</td>
<td>Authorized 07/12/16</td>
<td>Not Authorized</td>
<td>Authorized 031/03/17</td>
<td>No Record</td>
<td>No Record</td>
</tr>
<tr>
<td>No of Staff</td>
<td>Not Confirmed</td>
<td>Not Confirmed</td>
<td>Not Confirmed</td>
<td>Not Confirmed</td>
<td>Not Confirmed</td>
<td>No Record</td>
<td>No Record</td>
</tr>
<tr>
<td>Min Standards Set</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Not Confirmed</td>
<td>Confirmed</td>
<td>Not Confirmed</td>
<td>No Record</td>
<td>No Record</td>
</tr>
<tr>
<td>Agreement Signed</td>
<td>No Agreement</td>
<td>Un-signed Agreement</td>
<td>No Agreement</td>
<td>Confirmed 25/08/15</td>
<td>No Agreement</td>
<td>No Record</td>
<td>No Record</td>
</tr>
<tr>
<td>Authorization given (Flag)</td>
<td>Yes</td>
<td>Not Indicated</td>
<td>Yes</td>
<td>Yes</td>
<td>Not Indicated</td>
<td>No Record</td>
<td>No Record</td>
</tr>
</tbody>
</table>

It is evident from Table 4.4 that the administration has a lot to fix up. The main responsibility of the flag administration to assess the ROs competence, meeting the minimum requirements with necessary technical staff prior to delegating functions is non-existent. In terms of agreements, it appears that none of the ROs has received and or signed any contractual agreement with the flag state. Nevertheless, authorization is granted by the flag to ABS, LLOYDS and NKK while DNV-GL and RINA have not received. Bureau Veritas (BV) and BKI have no record of documents.
A peer support review conducted by Singapore, New Zealand and Malaysia on the 14 to 17 May 2018 also noted and stated in recommendation five\textsuperscript{22} (see appendix 12). On the other hand; findings and recommendations from the IMSAS audit were unobtainable as requests made to have access were denied (see appendix 11 - Disclaimer).

4.2.1.3 Safety Management System: non-Conventional Vessels

While ISM emphasizes on the conventional vessels, flag states also have non-conventional vessels which transport cargoes and passengers around the islands, along the coastlines and inland waterways such as rivers and lakes. Having the conventional ships detained by other coastal states during the port state inspections raise the question, how safe are the ships below 500 gross tons (NCV), fully monitored, surveyed and maintained by the flag administration with respect to safety compliance? The question now lies between the ship-owner or operator and the maritime administration of each country to consider.

A grey area exists here and requires the full attention of the flag administration to ensure safety is improved. Again this category of ships largely involves transportation of lives and cargoes therefore it is very critical. An effort initially made by the South Pacific Community (SPC) in 2002 to develop Pasifika Safe Ship Management (PSSM) Code did set a good foundation. The code\textsuperscript{23} (see appendix 13) was later reviewed with the Pacific Island Maritime Laws [PIMLAWS], (2017) which Fiji has captured in 2014.

\textsuperscript{22}See appendix 12. There is evidence to indicate that not all Recognised Organizations have signed the RO agreement with the administration. It is also noted that there is no oversight programme and system for authorization for ROs under Flag State Authority.

\textsuperscript{23}The owner shall maintain and operate the ship in compliance with the requirements of the Pasifika Safe Ship Management (PSSM) Code. The Pasifika Safe Ship Management Code provides a standard for the safe management and operation of ships and for pollution prevention, which is tailored to smaller ships of below 500 gross tons.
Similar to the regional group in the European Community, the Pacific Countries have the South Pacific Community (SPC) based in Fiji. The Pasifika Safe Ship Management (PSSM) Code eventually got adopted by countries in the region. For example, Fiji Maritime Transport Act, 2014, Reg. 30 is the in-cooperation of SSM specifically for the ships below conventional size. However, in-cooperating regulations don’t make much impact on improving safety standards on the vessels fully maintained, surveyed and inspected under the jurisdiction of flag states.

Non-conventional ships are still very risky as depicted in Figure 4.2 & 4.3. A ship recently detained by the flag state inspector in Papua New Guinea after finding pinholes in the engine-room side shell plating just above waterline reflects inadequate safety. The Load Line and the Safety Certificates were immediately withdrawn and the owner advised to do a new survey (see appendix 02b).

![Pin Holes found on the shell plates in the Engine-room](image)

3. About the holes, as you can see from my report, when vessel was on the slipway in October, November, there was some still work done. The request was the have the thickness measured of all bottom shell. The owners and PPL slipway manager confirmed that they did the measurements and all are in good order.

*Figure 4.2 - Flag state detention after being surveyed (NMSA, 2019)*

Logically speaking, thinning of shell plating does not happen in just a few months. Such findings should draw the attention of the flag state on the competence of the non-
exclusive (flag registered) surveyors who should perform their functions with due diligence. Additionally, criteria to determine who becomes a surveyor should be controlled and monitored. In the survey conducted (Q1, Appendix 08) for control and monitoring of surveyors, over 90% indicated monitoring is needed.

Point number three (3) of the attending surveyor as underlined in Figure 4.2 indicates that the safety survey hasn’t been carried out, instead a bare assumption. This will be further discussed in surveys and inspections for control and monitoring of safety standards on the flag registered vessels.

Similarly, a year after the PSSM was incorporated into the Fiji national law, a ferry Mv Sullivan gradually took in water and sank in Suva Harbour (Fiji Sun News, 2015). The vessel built in Norway in 1974, operated in Scotland, New Zealand and later to Fiji and sank with up to thirty-four people onboard.

![Image of MV SUIVEN](image)

*Figure 4.3 - Inter-island ferry Mv Sullivan sank (Fiji Sun News, 24.11.15)*

The 41 years old ferry again registered with Fiji ship registry has a similar issue of owners buying very old ships which seem a common trend in the Pacific. The incident
again raises the question, who is responsible for such occurrences and how effective are the safety regulations to make shipping safe for commuters?

Noting the earlier happenings as consequences, it can be stated that, regardless of whatever safety management system put in place to enhance maritime safety, the onus still lies in the application part of the system. The ship crews have the responsibility to make the safety management system function. Crew competence to maintain safety onboard again depends on the quality of the training acquired from the training institute which was commented by an interviewee\textsuperscript{24} as not meeting required standard.

For instance, a study by Batalden and Sydnes (2014) on ISM code basing on casualties and incidents found that the greatest challenge lies in how the ship operational plans are designed, who is managing the plan and the ability for the company or the management company to ensure safety is upheld. Noting the stated events, PNG and Fiji have to verify any deviation from best practices and standards in order to uphold and promote maritime safety.

Therefore, the flag state is responsible to establish control and monitoring mechanisms while at the same time utilizing lessons learnt and continue to promote maritime safety in the flag administration.

4.2.1.4 Safety Management System and National Laws

As indicated in Table 4.2 every international treaty and or convention is adopted through the depository of instruments and then effected after a set period of time. The flag states of PNG, similarly Fiji has adopted the SOLAS 1974 Convention\textsuperscript{25}.

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\textsuperscript{24} (P6) stated as “crew standard has dropped as compared to last ten years” (See appendix 9 – Participant 6, Q1A5)

\textsuperscript{25} On the 12\textsuperscript{th} February 1981 and 04\textsuperscript{th} of March 1983 respectively through accession which ISM is captured for management of safety onboard conventional ships.
Furthermore, as stated earlier SPC accordingly developed a safety management regulation in 2007 for the pacific island states. The states are to adopt and implement on the non-conventional vessels listed in the respective ship registry.

However, researching into the National Laws of both countries, it is evident that Papua New Guinea is yet to adopt the non-SOLAS (vessels below 500gt) safe ship management (SSM) regulation or develop something similar. According to a legal officer in the administration, the SSM regulation instrument initially developed in 2007 is still in its draft format till this date. Part III of the SSM Regulation is applicable to non-conventional ships including those that travel beyond the territorial seas of the flag state. The regulation includes fishing vessels and barges of 24 meters and states;

For whatever reason the regulation is held back, ship owners have taken greatest advantage and at the same time risking the lives of the travelling public. The sinking of Rabaul Queen (Varitimos, 2012; Graue, 2012) can be somewhat rested on the delay of such regulations. This research identified the SSM system as a way forward for the ship surveyors and inspectors to gauge the performance of the non-SOLAS vessels in the flag registry. An interviewee (P4) who works as a surveyor pointed out that, the omission of SSM regulation was the influence of the ship owners owning and operating old ships. The onus is now on the Maritime Authority of PNG to critically consider the regulation and make it become legally binding to improve ship safety in the country.

Nevertheless, Fiji has captured the Pasifika Safe Ship Management in the National Laws in 2014. The Act generally emphasizes on the safety management requirements for coastal and domestic fleets to ensure safety on the inter-island routes is safe for business. However, the sinking of the ferry, Mv Suilven in 2015 disregards the SMS and requires regular updating with time and happenings. SMS is only as good

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26 Section 17 (1), every owner of a ship or Company shall develop and implement a Safe Ship Management (SSM) system for any vessel to which this Part applies, while sub-section (2) reads, "the owner or operator of a ship or a Company owning one or more ships to which this Part applies shall request, in writing, that the Authority approve that owner's or Company’s SSM system. Furthermore, section 18 refers to the condition of the vessel to enter and remain in the safe ship management system."

27 Maritime Transport (MAT) Act of 2013. Section 39, Reg. 30 and 65
as the crews that serve on board the ships, therefore control and monitoring mechanism are required to continually review the system to suit the operation (Batalden, 2014).

4.2.2 Environmental Protection

While ship safety at large refers to the cargo and the wellbeing of a person(s) on-board, flag state also has the responsibility to prevent pollution to the marine environment. Marine environment Pollution is vast; however, this research emphasizes on the measures taken to manage disposal or abandonment of ships in the harbour, jetties and waterways causing navigational risks and causing pollution to the environment and impacting ecotourism in the country. Noting this as the responsibility of the coastal state, however, discharge of oil in tanks, sewage and cabbage from occupants as temporary homes is a concern for environmental pollution.

Both countries are not a party to the Wreck Removal (Nairobi) Convention and, therefore, management of abandoned ships in the waterways, jetties and harbour are entirely the responsibility of the coastal state. The question is, how can the flag state as the regulator with the registry records of ships not aware or do nothing about the abandoned boats at the earliest. A survey conducted in the two countries\textsuperscript{28} indicated that there is no proper controlling system in place to monitor the flag registered vessels as stated by a training institute instructor of 41 years old\textsuperscript{29} in the survey.

According to Francesco (2015), ships of 300 gross tons and above must be insured and premiums are determined by the age of the vessel under the law with which the certificate is issued as proof of the liability cover (Berlingieri, 2015). An extension to the control and monitoring of the flag registered vessels, the survey was also conducted

\textsuperscript{28} The maritime administrations and the two maritime training institutes in PNG and Fiji

\textsuperscript{29} Legislation should be in place for companies and government not to purchase and operate rust buckets already been used in other countries for over 30 years or so. Instead, encourage the buying of new ships. Establish shipbuilding, provide employment and stimulate the economy.
regarding the age of the ship as shell plates thinning strongly indicate that the likelihood of structural failure is huge.

![Regulate Vessel Age Limit](image)

*Figure 4.4 - Monitoring required for age limit of flag registered vessels.*

Since PNG doesn’t build ships they are bought, brought and registered into the flag registry. A data obtained from a survey conducted\(^{30}\) is depicted in *Figure 4.4* and indicates that, 59% of the participants strongly agree and 25% agree and indicate there is really no proper control and monitoring system in place to monitor the age of flag registered non-conventional vessels. The outlook of the survey information leads one to believe that, the issue is a known and prevailing one among operators, commuters and educators of maritime transport. A participant indicated for drastic change\(^{31}\) while responding to question 05 of the survey (see appendix 8).

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\(^{30}\) with the Maritime Administrations and the two Maritime Training Institutes of PNG and Fiji.

\(^{31}\) “It needs a complete revamp (our administration) to ensure our ships maintain safety standards.”
Therefore, flag administrations have the task on hand to ensure maritime safety is maintained on ships from procurement, registration, operation until scraped or resold to another administration.

4.2.3 Encourage Shipping Economy

Shipping is the oldest mode of transport as such up to 90% of the world, tonnage is transported by ship. Like most coastal states and the great lakes, Papua New Guinea largely depends on shipping for trade with the outside world. With its location in the western pacific region, the country entirely depends on shipping for economic development. The national fleet has been greatly impacted by the competition put up by the international fleets as such gradually reducing in the number of foreign port calls. This is demonstrated by zero inspections recorded in the Tokyo MoU PSC (2019 p29) inspection and detention report. Since both countries operate a closed registry, every vessel detained is the responsibility of the flag as shown in Figure 4.1, hence, raises the question of efficiency and effectiveness of maritime administration functions.

Moreover, the United Nations Conference on Trade and Development [UNCTAD], (2019) report on liner shipping connectivity of countries and ports in global liner shipping networks including the pacific island countries\[32. The UNCTAD report confirms diminishing port visits by PNG flagships abroad. Most cargos are containerized and shipped by bigger vessels thus resulting in low trade volume for national fleets doing business in the region. The focus of the flag registered vessels is now re-directed to in-country trade.

\[32 \text{Pacific island economies are among those with the lowest container shipping connectivity. Low trade volume discourages shipping companies as trade in goods become costly and uncompetitive so the rate of liner trade in the region is diminishing.” (UNCTAD, 2019 p16)}

39
Above all, ignorant ship owners or operators of unsafe ships gain significant competitive advantage, that is having the upper hand over the responsible operators. Often operators identify the opportunities, maximize short term returns by neglecting the safety of life, environment, ship and cargo then quietly disappear leaving the ship to become a wreck. Such behaviour has happened over the years from pre-independence days till now and perpetrators easily getaway.

On the other hand, ship registry is considered crucial in any maritime safety administration in maintaining the record of vessels entering the country the exiting. Whether they are fit for purpose is largely dependent on the procedural guidelines regulated by ship registry. There is sufficient information to say that Fiji and PNG ship registry is impacted by the current dilemma of registering and operating old ships. The latter has registry records determined by economic demand as shown in Figure 4.5.

![PNG Ship Registry (NMSA, 2018)](image)

*Figure 4.5 - PNG ship registry driven by economic demand (NMSA, 2018)*

Ship Registry of Papua New Guinea saw its highest ever recorded number of ships in the four years’ period between 2009 and 2013 as shown in Figure 4.5. This was due
to the construction of a new liquefied natural gas (LNG) plant in the country (see appendix 03). On one hand, it was good as it increased employment opportunities with the economic boom, however, the downside of this was that ships were brought in uncontrollably. There are no stringent measures put in place to control which ship meet the safety requirement and can be registered.

For instance, an old cargo vessel\textsuperscript{13} registered in September 2008 most likely to take part in the construction of the LNG Plant. By the middle of 2012, the vessel was abandoned and left to become wreck in the harbour of Lae (see appendix 03). For a flag administration looking to improve safety, such scene would be a good lesson learnt and forge ways forward for new regulation or amend the existing. In addition, such efforts also reduce the behaviour of recalcitrant ship operators.

Therefore, the Maritime Safety Authority of PNG needs to do more. It has to continuously monitor and review existing or develop new procedures. Furthermore, enforce mechanisms to effectively implement flag state obligations and improve on the inadequate safety onboard the flag registered vessels.

\textsuperscript{13} 83m LOA vessel named Lotus, IMO No 7408198, build in 1975 (33yo), general cargo vessel.
4.3 External Impacts on Flag Administration - Tier 2

External impact is discussed on the basis of economics taking into account culture, social and symbolic influences on the flag state administration.

4.3.1 Introduction

Maritime Administrations of Flag and Coastal States around the world have the primary obligation to ensure maritime safety is maintained for safe transportation while promoting the maritime economy. However, every administration has people as drivers of the organisation. Each person has a different cultural background, social behaviour and symbolic principles and status. In the succeeding texts, the three external impacts are discussed in some detail, especially the decision making processes in the organization. Furthermore, the operational processes, while pursuing the organizational aims and objectives. The three impacting areas are discussed based on the theory of France Sociologist, Pierre Bourdieu (1986) which he defined them accordingly.

4.3.2 Cultural Wealth Impact

According to Bourdieu, “cultural wealth serves as a currency that helps navigate culture and alters our experiences and opportunities available to us,” (Bourdieu, 1986). He identified cultural wealth in three forms and they are; embodied, objective and institutional. The impact of culture on organizational management varies. However, maritime safety authority of PNG has multicultural employees especially at the executive management level with the aim to assist in the development of national officers to meet the future organizational demands. Bourdieu’s cultural wealth influence is demonstrated as shown in Figure 4.6.
Figure 4.6 - Cultural Wealth Impact on Organizational Resource Development (adopted from Bourdieu, 1986)

The knowledge that resides with an individual is how s/he has been groomed from a young age to what they currently are. Learning and acquiring knowledge depends on the family and cultural setting, educational background, societal norm. Training acquired to interact, live and work together in the same environment is unique in some societies. The Melanesian people of the Pacific which PNG is among the four has the cultural norm of not to speak against a teacher in a classroom setting, leader in a team or manager in an organisation (White, 2007).

For example, certain positions in the flag administration have been occupied by foreign technical staff since the establishment of the organization in 2003. Under the pretext of unavailability of a qualified person(s) in the country. Employees of the said position have since then been sourced from abroad and yet to train and nationalised.
The Melanesian cultural beliefs of respecting leaders or managers hence, suppressed as commended by an interviewee\textsuperscript{34}. Moreover, participant P4 also expressed the same sentiment\textsuperscript{35}. Therefore, an urgent review is needed for organisational succession plan to materialise.

As a developing country and seemingly under-resourced, states seek for technical and knowledgeable people to assist train and impart knowledge and develop human resources. However, such service comes with compensatory package. The administrations ensure that the impartation of the much-needed knowledge and expertise is compensated accordingly. The objectified material wealth like cars, luxury accommodation, salary packages, holiday and travelling packs and privileges for the duration of time taken to develop the administration human resources. Nevertheless, there is no tangible development in the consecutive years for engaging experts as stated by interview participant (P5) for different nationalities.

A survey conducted between the maritime administration of Fiji and PNG and the two maritime training institutions concluded with over 60\% (see Q8 Appendix 8) indicated that, there is no evidence of capacity building occurring and as such poor succession plan outcome. A participant of more than four years of service in the administration indicated that, “Flag administration has capacity building plans, however, it is up to the departmental heads and the top management to initiate and get the employees involve as such coincides with interviewee (P5) remarks of not having the skill sets.”

\textsuperscript{34} Participant (P5) in the interview commended that, “some of the managers do not have the skills set. Senior managers have to identify and correct the mistakes from subordinates in order for them to learn and be confident” (see appendix 9 Participant 5, O1B2)

\textsuperscript{35} micromanagement is evident, inspectors’ work is overridden, poor communication. Cultural knowledge caused three NMSA inspectors resign and one hospitalized for serving as subordinates under expatriate senior manager (appendix 9-P4, O1A3-6.)
Therefore, when the objective material wealth is taken for granted and human resources development is not achieved, the administration should consider reviewing the plans\textsuperscript{36}.

4.3.3 Social Wealth Impact

When Bourdieu (1986) described cultural wealth as “what one has”, he further went on to describe social wealth as “what one knows.” Social wealth largely depends on individuals’ socialization networks and is built in two different ways. Firstly, by connecting to a lot of people and secondly, by connecting to a few who have more power and or bigger network of friends so bigger the social network, bigger the friendship. The social bondage is maintained through chatting by phone, emailing, sharing of gifts and doing favours for each other through socialization and work-related tasks. Alternatively, someone with the small social network will have lesser social wealth, therefore, decision making is centred between the few in the team rather than the group in the social network.

PNG seems to have greater social networking at the executive management level and the stakeholders and very limited at the operational level. The inspectors largely responsible for control and monitoring of ship safety are suppressed and decisions on detentions etc challenged and dismissed at the executive level without proper explanation and or justification (see appendix 07) therefore there is no learning from mistakes done as stated by interviewee (P5) for organizational succession plan.

A survey conducted with the flag administration of PNG and its sectional departments to establish whether there is capacity building in the flag administration

\textsuperscript{36} Necessary amendments to the process should be considered and stringent measures to employ for engagement of facilitators. Control and monitoring mechanism to regularly assess the achievement of organizational goals.
and also to ascertain the ideology of recruiting experts due to lack in human resources available locally turns out to be more of a fallacy as depicted in Figure 4.7.

![Capacity Building in the Organization](image)

**Figure 4.7 - Employee knowledge on organizational capacity building in the flag administration of Papua New Guinea from survey.**

It is revealed from Figure 4.7 that only a minority, 29% of the participants indicated there is a capacity building program in the flag administration while 1% of the participants indicated unsure. The majority, 70% indicated no capacity building in the organization. If there is indeed policy in place, it is most likely dormant and not obvious to many or literally shelved away and forgotten as such engagement of foreign technical experts continues but very limited improvement to national succession plans. Extensive (personal) social networking groups are not very healthy for safety organizations such as the Maritime Administration because safety decisions are likely to be compromised through networks of friends with common economic interest.
Therefore, effective Maritime Administration requires to have its policies make known to the employees, review them regularly and work towards attaining set goals and objective while decisions must be considered from the end-users' perspective.

4.3.4 Symbolic Wealth Impact

According to Bourdieu (1986), Symbolic wealth is defined as a recognition and also as consideration as sighted by (Lebaron, 2014). It often concerns reputation and has roots from other forms of wealth like social as in educational degree(s), cultural as in language(s), knowledge and skills, and economically as in money and property. It, therefore, consists of various types of wealth, as long as it becomes recognised by others, it is finally symbolic in nature (Ihien, 2018).

As discussed earlier social wealth implies networking groups that one may build with as many or few powerful people with a bigger network. Symbolic wealth falls in the premise of networking and knowledge of the person in the network. Most times, symbolic wealth is built on an economic scale (money) and objectified status as in material wealth while institutionalised status such as degree(s), honorary prestige and government positions like the minister of State is symbolic to the government.

Figure 4. 8 - Flag administration safety policy vs external impacts (symbolic wealth).
Decision making in the flag administration is greatly hampered with knowing too many people in the network of friends such as ship operators and owners as stated by an interviewee (P2). Symbolic wealth coinciding with economic and social often take precedence over risk mitigation as such safety is compromised onboard ships.

For instance, a flag state inspection jointly conducted by inspectors of PNG (NMSA) and Australia (AMSA) on an Australian registered flagship in Papua New Guinea was overturned by executive administration of the flag state and vessel allowed to sail out to sea with detention. (See appendix 4a, 4b & 7). The ship operator when asked why the vessel sailed without being cleared of the deficiencies replied in writing and stated that executive management has given the clearance verbally, however, PNG Merchant Shipping Act prohibits\(^2\) such actions.

The ship being chartered from Australia to be engaged with gas and oil surveying by a prominent businessman in the country compromised functions of the safety organization. The work of the inspector concerned was undermined and the socialisation network together with economic demand took precedent in the circle of friends. Therefore, stringent control measures with reviewing are needed when engaging technical experts for reasons of resource and capacity building in the maritime administration of developing countries.

\(^2\) Section 162 of the PNG Merchant Shipping Act 1975, para 2a and 2b prohibits such actions and states that; when a ship is detained, the ship remain detained until the Officer of the Authority issues a certificate showing that s/he is satisfied so the owner, employer and the master may take the ship to sea.
4.4 Flag State Performance Monitoring - Tier 3

*Flag States Performance Monitoring is discussed from the viewpoint of ship surveys and inspections, Accident Investigation and Audits.*

4.4.1 Introduction

Since Flag State is the competent authority entrusted with the obligation to ensure adequate safety is implemented onboard ships in its registry, each state also has the responsibility to prevent pollution to the environment at the same time promote maritime economics. Article 5(1) of 1958 HSC and Article 94 of UNCLOS (1982) concurrently state that “Flag state should effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag” while at the same time promoting maritime economics.

Acknowledging that flag state is performing all its mandated functions, there is also a need to have control and monitoring systems in place hence; Survey, Audits and Investigations are captured here for discussion. Investigation discusses the mischiefs that occur onboard the ship in port or at sea and how the flag state reacts, Audits discuss the operations in the administration while Surveys elaborates on the implementation of safety from the international instruments adopted and implemented in conjunction with the domestic legislation. Ship survey is further distinguished from inspections and how they differ from each other.

4.4.2 Ship Surveying

International Maritime Organisation consisting of Member States often meet and make rules and regulations through the conventions. However, conventions do not contain and or provide all the detail specifications together with necessary information or requirements regarding the structures of ships and the types of machinery installed or to be installed onboard and whether they conform to the applicable international
standards. The requirements are as such contained in the rule book of the Classification Societies often referred to as Blue Book. The class rules are the basis for surveys and are being developed over time through researches, feedbacks including findings of past reported surveys. All the findings contributed and developed the current class rules and are still evolving with class surveys conducted by IACS members throughout the world.

To adequately perform the surveying functions, there are numerous attributes to consider and one such is, how to carry out the surveying task. Classification societies have developed suitable approaches on how to conduct surveys and together with IMO have implemented the approaches\(^{38}\). The guidelines for a harmonised survey and certification system (HSCS) is now used in the flag administrations and the recognised organisations that engage in surveying the flag vessels of conventional size (Dasgupta, 2019).

### 4.2.1 Conventional Ship Survey

Ships safety survey is important throughout its entire operational life to uphold safety and security and meet certain requirements set in the various ports and harbours. However, different survey approaches are utilised as such harmonised ship survey and certification is one system adopted by IMO in February 2000 and many IACS members are utilising it as depicted in Table 4.5 from Bureau Veritas.

\(^{38}\) International Maritime Organisation under Resolution A.1120(30) adopted in December 2017 survey guidelines.
Table 4.5 - Systematic Approach of Surveying (HSSC BV, nd)

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<tbody>
<tr>
<td>Safety Construction</td>
<td>Initial</td>
<td>AS</td>
<td>AS/IS</td>
<td>IS/AS</td>
<td>AS</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
<tr>
<td>Safety Equipment</td>
<td>Initial</td>
<td>AS</td>
<td>AS/IS</td>
<td>PS/AS</td>
<td>AS</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
<tr>
<td>Safety Radio</td>
<td>Initial</td>
<td>PS</td>
<td>PS/IS</td>
<td>PS</td>
<td>PS</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
<tr>
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<td>Initial</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
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<td>Marpol</td>
<td>Initial</td>
<td>AS</td>
<td>AS</td>
<td>AS</td>
<td>AS</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
<tr>
<td>PSSC</td>
<td>Initial</td>
<td>AS</td>
<td>AS/IS</td>
<td>IS/AS</td>
<td>AS</td>
<td>R</td>
<td>Extended Surveys and Docking (5 – 7.5) Years</td>
</tr>
</tbody>
</table>

According to Jones surveying is “combination of education and practical experiences or knowledge and skills needed to competently assess a marine venture (ship) thus is a documented procedure to maintain safety to its initial state”, (Jones, 2003)

Surveys are numerous and vary with ship types as indicated in Table 4.5 which is a systematic approach of inspection by Bureau Veritas class surveyors. Surveying establishes whether or not “ships are designed, constructed and maintained in compliance with its intended purpose taking into account the requirements of International Conventions, Codes and other relevant instruments together with laws of the Flag Administration” (IMO GISIS).

Observing from Table 4.5 when the survey is conducted for issuance of Safety Construction Certificate using the HSSC approach for a particular ship on the 27th July 2016 then, the following happens. The vessel is due for the first annual survey again in 2017 on the same date, however, three months before and after is acceptable. The second annual or intermediate (IS) is also due in 2018. If the intermediate is not done in 2018, then it can be done together with the third annual survey in 2019. An intermediate survey in most cases involves the survey of the underwater portion of the
ship and thus can be done either in water or out of water. A fourth annual survey is conducted in 2020 and finally a renewal survey on the anniversary date in 2021.

Circumstances may arise whereby the docking period needs to be extended beyond the anniversary date. This is possible with prior arrangements with the parties involved in managing the ship. It is done by considering the factors like; the conditional monitoring and the innovative techniques used in the surveys, the effectiveness of the plan maintenance employed onboard and the advances in paint coatings etc. The flag administration, classification societies and the shipowner upon assessing the situation can extend the docking period (Bureau Veritas, nd).

Nevertheless, the age of the ship, poor performance of ship owners and or management companies often leave the ships at a deteriorating state. When such is the case, ships often get detained by port state control inspectors when they call into another coastal state with port state control functions or within the country by flag inspectors.

The latter circumstances become matters worth discussing between the flag administration, class and the shipowner for improvement and this is the objective of the recognised organisations in the international and domestic scene to promote maritime safety. A similar system is encouraged and should be replicated to the non-conventional ship safety management and overseen by the flag administration.

Therefore, the flag state inspection (FSI) is an ability to assess a ship in its completeness, from than determine and establish its seaworthiness by using the knowledge and competency with requirements of international and national regulations. The grey area that lay ahead is that of the rules and regulations of non-conventional vessels.
4.2.2 Non-Conventional Ship Survey

Unlike the conventional vessels that have the privilege of the set survey guidelines from the IMO, the Non-Conventional size vessels largely dependent on the ability of the flag administration to adopt and or develop surveying guidelines that can be used to regulate the operation of the domestic fleets. This category of the vessel has also taken the lives of many and are still continuing to do so. Because of the limited coverage by the media, very little is reported and or known within the states and to the outside world.

Papua New Guinea suffered its greatest tragedy in February 2012 when the ferry, Mv Rabaul Queen sank and took up to 140 lives who were mostly students returning back to schools after spending Christmas holiday with family (Graue, 2012). The case eventually was dropped on technical grounds, however, one would ask if the accident brought new laws or caused some changes to the existing laws in the maritime safety authority set of laws and whether the lesson has been learnt to prevent future reoccurrences. Nevertheless, the Commission of Inquiry (Col) report was completed and returned to the government and acknowledged (Varitimos, 2012). Interviewee (P5) made mention on the investigation (Col) as being 100% done without flag involvement.

As stated earlier the missing functions of audit and acc. investigation as well the observation expressed by Interviewee (P5) about Col done without flag administration involvement is a critical oversight. Again stated earlier under flag state obligation, ship safety and environment protection confirmed with the subjective evidence of holes on shell plating in Figure 4.2 as such it is crucial to review the survey functions.
A survey conducted to establish whether the flag state surveyors need monitoring, the outcome is as depicted in Figure 4.9 and self-explanatory. An overwhelming 67% and 22% strongly agree and agree respectively that flag surveyors’ performance needed to be monitored while only 11% indicated not sure (neutral). Similarly, Table 4.4 clearly indicates that not enough is done to prepare RO contracts and establish oversight programs as highlighted by the PSR team (appendix ...........).

This really shows that the work of the surveyors has lost the confidence of the seafarers and the general maritime transport users. A survey participant (FSI) indicated that surveyors licences be renewed on compliance conditions.\(^{19}\)

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\(^{19}\) Flag authorised surveyors should be issued with licenses with expiry dates. Renewal is dependent on surveyor performance through the monitoring system. If no improvement is identified, the license to be revoked and denied for renewal.
The Col report of Mv Rabaul Queen also reported that surveyor (NMSA) relies on owner/operator to inform its annual due dates which shouldn’t be the case instead a fixed plan is to be adhered to (Varitimos, 2012 p162).

Therefore, surveying of flag registered ships (conventional and non-conventional) require proper control and monitoring systems put in place, however, be clearly stated in the national regulation as to who can be a flag recognised surveyor.

4.2.3 Ship Inspections – Conventional Vessels

Whilst surveying is a structured mode of inspection performed by a class or a flag surveyor. It is, therefore, an inspection done as per the work plans of the surveyor and the owner or the operator. However, ship inspections conducted by either the port or flag inspectors is unplanned and is done without the knowledge of the owner or the operator to assess the standard at which survey was conducted and the certificate initially issued or renewed. Detention of the flag registered vessels can be somewhat a mode of gaging the effectiveness and efficiency of the flag administration.

In the wider context, surveying ensures that ships comply with relevant international and flag state rules and regulations with periodic surveys while inspections play the function of control and monitoring of the condition at which statutory certificates were initially issued. Surveys and inspections are seen as measures directly involved with ensuring vessels comply with safety standards and continue to comply.

For example, Figure 4.10 shows the performance of conventional vessels registered under the flag registry of PNG and inspected under the Port State Control Regime of Tokyo Memorandum of Understanding (TMoU).
Figure 4. 10 - Port State Inspections and Detention of PNG Vessels (TMoU, 2019)

The graph shows the deficiencies found onboard the ships and detentions made between the four years rolling period to 2019 as reported. The deficiency findings as indicated is reducing from 2016, similarly the detention rate. In general, the trend of deficiency and detentions looks good as it shows a descending approach. However, the important information to digest in the presented graph is that number of the conventional vessel being inspected from 2018 has also reduced to zero in 2019. Tokyo MoU recorded no inspection for PNG ships thus zero deficiency or detention recorded. As such the trend (Linear roll average) indicated on the graph is miss-representing in one sense. The true safety status information can only be obtained even with ships being inspected but with less or zero deficiencies. This is indicative of effective and efficient safety management system, however, the scenario is the opposite for Fiji as shown in Figure 4.11.
Figure 4.11 - Port State Inspections and Detention of FIJI Vessels (TMoU, 2019)

While the trend (linear roll average) of ship inspection and detention of PNG shows a presumable improvement by the downward trend, Fiji PSC Inspections and Detention show the upward movement in the same rolling periods from 2015 to 2019. The general outlook of the inspections and detentions in Fiji shows in the 2019 report that, for only four deficiencies one detention was granted. Detaining a ship with four deficiencies can simply mean very critical. If such is the case, then the question is “how is the ISM working at the company level and at large the flag administration considering surveys and certification?”

The information presented on the graphs indicate that Fiji and Papua New Guinea have difficulty ensuring conventional vessels fully comply with ISM standards. Additionally, port state control visits by Papua New Guinea flag registered vessels have reduced to zero in 2019 thus ISM compliance standards of vessels cannot be determined while Fiji flag vessel detention in 2019 indicates four (4) deficiencies and warranted detention as such concludes that the deficiencies were critical. Therefore,
since both countries have closed registry, they require proper control mechanisms to continuously monitor the flag vessels through surveying and inspections.

4.2.4 Ship Inspection – Non Conventional Vessels

As stated earlier, the port state control is a mechanism to identify, examine and work towards eradicating sub-standard ships through the MoU systems established through the IMO for vessels above 500 gross tons, however, vessels below the range are in the grey area and largely dependent on the respective flag administration.

Papua New Guinea like other developing flag states has a flag inspections regime, separate from surveying which takes into account the safety inspections of vessels below 500 gross tons. Nevertheless, due to the lack of resources to assign and delegate respective functions, the inspectors of port state are also performing the functions of the flag state.

A survey carried out on the inspection functions with the ship inspectors of Fiji (no response received) and Papua New Guinea revealed that due to lack of inspection officers, most (90%) of seaports have only one officer thus inspections of port and flag have to be taken care of by the sole individual. Considering PNG with up to fourteen seaports, only eight ports have inspectors. Papua New Guinea seaport numbers four, eight, eleven, eighteen and twenty in Figure 4.12 are considered busiest as such are maintained at all times.
Figure 4.12 - Main PNG seaports manned by ship inspectors (NMSA, 2018)

The ship inspection is concurrently done with the flag state ship surveyors who operate as self-employed. The surveyors are either from recognised organisations or flag state who to some extend also take charge of surveying vessels below 500 gross tons. As indicated in Figure 4.1 earlier, surveying functions are being conducted with a lot of irregularities as identified by the flag state inspectors. The question one may ask is, who should become a flag state surveyor?

An interview with a flag surveyor of engineering background (P3) stated that; “the surveyor should not be a shipowner, employee or shareholder of a company.” This is to ensure there is transparency in the safety survey conducted on the vessels. The Rabaul Queen (Col, p 165) stated that “the owner is not qualified to survey CO² fixed installation bottles and issue certificates” which is also supported by the literature⁴⁰ (Beck, 1999).

⁴⁰ According to Beck (1999) who based the article on Lieut. R.F Marsh of the US Navy (1966) titled, the role of the marine surveyor in litigation stated that “courts have failed to apply the presumptions of unseaworthiness as such would otherwise impose liability on surveyors in ship loss cases” thus ship surveyors function is critical.
Needless to say, however, PNG flag administration has also appointed employees of shipping companies as competent and surveyed their own ships, furnish survey reports to the Maritime Authority and get issued with safety certificates. This in all respects defeats the purpose of control and monitoring at the same time jeopardizes and compromises functions of promoting ship safety in respective states as such must be clearly stipulated in the national regulations, for example, Bulgarian\textsuperscript{41}. regulation.

Therefore, flag administration of PNG has a task on hand to ensure critical procedures are in place to monitor and assess the performance of ship surveyors and often inspectors for transparency. This is to ensure state-mandated functions are performed efficiently with due diligence to promote and uphold maritime safety.

4.4.3 Incident & Near-miss Investigations

Proper monitoring begins with reporting Incidents and near-misses which are often signals demonstrating that something is not right. They are like alarms on a running engine which gives off audible or visual signals to attract the attention of the operator that immediate action is needed. If the machine is not attended to immediately, the shutdown is automatically initiated to prevent catastrophic occurrences. Similarly, near-misses are the first line of warnings followed by incidents and or serious accidents (casualty), however, reporting has been very low to none until accidents occur. Therefore, ship crews must be encouraged to report near-misses or be made liable.

4.4.3.1 Safety Investigation (No Blame)

An organization with a culture to investigate near-misses procedurally has greater changes in avoiding accidents (Anwar & Mustafa, 2019). An accident and organizational

\textsuperscript{41} Maritime Safety Code of Bulgaria in its legislation states in ordinance No 42/2004, “Ship owners cannot be nominated as surveyors, furthermore, no surveyor with commercial interest be allowed to survey ships” clearly stated.
analysis by the United States Department of Energy elaborated on near-misses and accident investigation as a continuous evaluating learning process\(^{42}\) (USDoE, 2012)

The IMO Accident Investigation Code effected on the 01\(^{st}\) of January 2010 incorporates standards and recommended practices for safety investigation into marine casualty or serious marine incidents. The code assists flag and coastal states to effectively carry out accident investigation on accidents that are confronted in a standardised manner (International Maritime Organization, 2008). It can, however, also be noted that managing and promoting maritime safety is, in other words, managing risks (Schroder-Hinrichs., et al, 2011). Therefore, accident investigation is conducted with the objective to prevent re-occurrences.

A survey conducted in PNG and Fiji (Appendix 8, Q9) to appreciate whether safety investigations are being conducted for casualty reports received, however, reveals that over 90% of participants indicated proper training is lacking to conduct the accident investigation. For example, PNGMRCC receives reports of casualties as depicted in the graph in Figure 4.13. It is obvious from the graph that many maritime accidents have gone un-investigated, a consequence of the absence of an investigative body in the flag administration. Furthermore, flag administration is unable to provide maritime accident reports for the last eight years for this paper which is also confirmed by IMO-GISIS with only three cases reported. Nevertheless, PNGMRCC has received and recoded over thirty cases in the last eight years, however, many haven’t been reported.

\(^{42}\) Accident Investigations (AI) and Operational Safety Reviews (OSR) are valuable for evaluating technical issues, safety management systems and human performance and environmental conditions to prevent accidents, through a process of continuous organizational learning.
A survey conducted with the survey and inspections department shows (Q9 appendix 8) well over 90% of participants indicated proper training is lacking to conduct the accident investigation. Furthermore, survey results (see Q7, Appendix 8) shows that the majority of the participants remain silent and not to say anything about record keeping of the investigations which they knew and need not say anything or no knowledge at all. Only 33% per cent indicated yes while the remaining 22% indicated no record or unaware.

Therefore, since safety investigation is now mandatory, flag administration of Papua New Guinea has to critically look into establishing a safety investigation body, train officers and commence performing safety investigations and also, report to IMO.
4.4.4 Audits (III code)

PNG began adopting IMO conventions and protocols to the existing conventions as shown in Table 4.2 earlier. However, it’s not just a matter of ratification and transposing to national legislation but implementation is considered worrisome. The voluntary audit scheme, Res. A739(18) by IMO which later made mandatory in 2006 through MSC Res. 208(81) created a pathway. The audit scheme basically assists the member states to improve their overall performance to fully comply with the international instruments which the state is a party.

It can also be noted that, while the flag states may benefit from the audit scheme, the full realisation by flag can only be achieved supposing all parties, member to the SOLAS Convention (1974) carry out their obligation as expected from the instrument concerned (IMO II Code, 2013). The code stresses on implementation and the need to report to the Organization for the purpose of updating for every member state.

Promoting maritime safety can also be recognised as managing risks, therefore, control and monitoring mechanisms like surveys and inspections and lessons from safety investigation are important in managing risks. The findings from audits are equally important and should be taken into consideration with corrective measures put in place. PNG flag administration underwent IMSAS audit in 2017, however, findings of the audits and rectification process are ambiguous which request was made but denied.

Nevertheless, the IMSAS audit report was again captured in part in the peer support review (PSR) by Singapore, New Zealand and Malaysia in 2018. For example, section 2, subsection 2.3 of PSR report checked if ROs were audited on the delegated functions prior to them issuing statutory certificates on behalf of the flag. (see Table 2 of PSR report appendix 5a). However, flag administration could not provide audit records of the ROs. Additionally, the PSG team also seek to establish whether the flag administration conducts RO oversights (see appendix 5a) and the response concluded negatively. The
main reason stated being, lack of resources hence to forge way forward, the flag administration indicated to undertake the task soon.

A survey conducted with the employees of the flag administration to ascertain the corrective action plan (CAP) to undertake and work towards rectifying the non-conformities and observation from the IMSAS audit, the participants indicated as shown in Figure 4.14.

![Figure 4.14 - Audit findings (NCs) and observation of rectification process.](image)

The graph in Figure 4.14 shows that 33% of the participants indicate 'yes' meaning, there is oversight program and the next 50% are unsure while 17% are sure that there is no RO oversight program in the flag administration. This is further confirmed by peer support review (PSR) findings (see appendix 5a) which confirms there is no oversight.

Promoting maritime safety through the findings as being the basis of this dissertation are partially revealed here. The non-conformance and observations are kept away and not made known to the employees as depicted in the graph in Figure 4.14. As a consequence, the rectification of the findings is delayed or not done at all,
thus maritime safety conditions for flag registered vessels continue to deteriorate rendering ships unsafe thus inadequate safety evident on the vessels leading to casualties.

Since IMSAS audit covers the SOLAS vessels, the non-SOLAS vessels are entirely the responsibility of the flag state. It is common knowledge that vessels below 500 gross tons share the same risks as they travel out to sea, therefore flag authority has to have a system in place to monitor and audit the non-conventional vessels. A survey conducted to determine if a simplified version of safety management is required, the participants responded positively with an overwhelming 90% in the survey and interviews.\(^{43}\)

\(^{43}\) (see Q11, appendix 8), however, an interviewee (P5) reiterated that the flag state must have it in the legislation and auditors trained to monitor and continuously review for improvement (see appendix 9, Quest 3: - C9)
CHAPTER 5 - CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This research “promoting maritime safety through findings and recommendations of investigations, surveys and audits was aimed to improve inadequate ship safety in the pacific targeted to PNG through the Niugini Tripod Conceptual Framework. The study was not to develop new theories instead was to identify similar scenarios if exist in the neighbouring Melanesian country of Fiji in order to effectively address the inadequate ship safety that exists on the PNG registered vessels.

The research revealed that inadequate safety onboard the flag registered vessels are driven by stakeholders having an economic interest in the shipping industry. Since the research is categorised in three tiers, each tier was aligned with a research question laying the basis to conduct the surveys which are as follows,

Q1: Is PNG flag administration doing enough to promote maritime safety in terms of safety and environment protection while promoting business in the industry?

With regard to the question, it was noted that safety issues were not fully addressed by the flag administration in PNG. Example; only half the international instruments were ratified and some important flag state regulations have not been legislated. Additionally, the responsibility of the flag to perform safety investigations and audit is non-existent as such the administration is yet to establish departments or sections and delegate the functions. On the other hand, the marine environment (harbours, jetties and waterways) is littered with wrecks which the flag administration doesn’t have the record of the abandonment, therefore, reveals no proper records kept. Above all, flag administration
is influenced by the stakeholders with the demand to make profit hence deny the ability to maintain safety standards onboard the flag (state) registered vessels.

Q2. Are the external factors culture, social and symbolic principles affecting the flag state ability to function independently and make safety-related decisions?

The research revealed that culture social and symbolic in conjunction with the owner and operators’ interest to make profit lead to a reduction in spending to improve the ship safety standards. Example; ships detained on grounds of unseaworthiness by the safety inspectors are released to sail on the basis of economic demand and without the knowledge of the inspector concern. This finding strongly point to lack in developing appropriate regulations, therefore the flag administration will only see improvement in safety with appropriate regulatory measures in place.

Q3. Is the flag state utilizing the safety investigations, audits, survey findings to gauge its overall performance and establish monitoring mechanisms for flagships?

With regard to utilising the findings and recommendations to improve the overall performance of maritime safety in Papua New Guinea, the research revealed that investigation and audit finds are not transparent. The deficiencies are not made known to the subordinates, therefore, the rectification of the deficiencies and recommended findings are not effectively and efficiently performed. Example, an IMSAS audit done in 2017 with the flag administration of PNG to assist with developing the paper was denied even with numerous attempts which were again confirmed with participants indicating limited knowledge of the audit outcome. It was also revealed that flag administration was not part of the Col or rather did not set up a safety investigation into the ferry disaster. In addition, the survey to establish whether there was any rule change with regard to ferry sinking in 2012, no feedback was received.
The research also revealed that transparency in safety management is absent. The deficiencies are not made known to the subordinates therefore the rectification of the deficiencies and recommended findings are not effectively and efficiently performed. Example, an IMSAS audit done in 2017 with the flag administration of PNG to assist with developing this paper was denied even with numerous attempts made. Moreover, it was again confirmed with participants indicating having limited knowledge of the IMSAS audit outcome in the administration. In addition, the survey to establish whether there was any rule change with regard to ferry sinking in 2012, no feedback was received.

Therefore, to sum up, the conclusion of this research, the use of the Nlugini Tripod Conceptual Framework has indeed created a partway to fully understand the cause of inadequate safety onboard the vessels registered under the flag administration of Papua New Guinea. Because the research was extended to Fiji, it was for the purpose to verify the events leading up to inadequate ship safety. The participants in Fiji overwhelming indicated as those from PNG which have been elaborated on to some extent in the discussion. It was also learnt for the first time that a safety investigation for any casualty is limited to the ships only excluding shipping company, even though the safety manuals are being prepared by the shore-based (company) team. Above all, this research generally concluded that inadequate ship safety in PNG and the Pacific is the consequence of economic interest over safety.

All in all, the inadequate ship safety in PNG and Fiji is largely the cause of economic (profit-making) interest. Even though, profit-making is of cause the ultimate purpose of shipping business, however, human lives are much more important and safety measures must be upheld for crewmen to safely return home. Nevertheless, future research could be conducted into leadership, qualification, competence and leadership of a successful maritime administration. That is, “An Organisation, no matter how well designed, is only as good as the people who live and work in it (Dee Hock, 2018)
5.2. Recommendations

The research findings corresponding to inadequate maritime safety in Papua New Guinea has the following set of recommendations to Flag State;

1. **Niugini Tripod Conceptual Framework be used in maritime administration anywhere and may also be used in other safety organisations.**

   Application of the framework to the Maritime Administration has been revealing, therefore, it is encouraged for use in any organisation for research and development of safety. It can also be used to create work plans, identify obstacles and taking control measures and continuous monitoring of organizational functions.

2. **Ratify relevant mandatory instruments including flag regulations.**

   The flag administration to find a solution to accelerate the process of ratification of international instruments and furthermore, develop appropriate flag regulations to cap the inadequate safety onboard the flag registered vessel. End users and industry specialist be utilised at the national level so to minimise the use of consultants at the same time develop the national officers to meet the organisation national employee succession plans.

3. **Update the registry records than control and monitor with regulatory guidelines.**

   The ship registry records and or contact details be updated and be accessible by other departments in the flag administration as well as the stakeholders in the industry. For example, the coastal state to be able to identify the wreck at the earliest and take remedial actions to ensure the owner is responsible for the vessel. Set up procedures
and educate prospective shipowners on the consequences of purchasing very old vessels for use in the country

4. Audit and safety investigation divisions to be established in the organization.

The flag state to look into establishing the safety investigation and the audits divisions to fulfil the obligation of flag administration under Article 94 of UNCLOS. Officers to be trained to execute the functions and at the same time improve on the engagement of contractual agreement with the Recognised Organisation. Finally, the flag is to make an improvement in its reporting function to IMO.

5. New Inspection Regime (NIR) or similar be identified for used on flag registered vessels to improve on the inadequate ship safety.

The new inspection regime (NIR) is recommended as a way forward to alleviate the current downward trend of ship safety on the flag vessels in Papua New Guinea. Since conventional vessels have the obligation to comply with applicable requirements in SOLAS, NIR can be a step in the right direction for control and monitoring for ship surveyors and inspectors and be further extended to the non-conventional vessels after testing and confirmation of its viability.
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(When sum of weighting points $\geq 4$)</td>
</tr>
<tr>
<td>Type of Ship</td>
<td>Chemical tanker, Gas Carrier, Oil tanker, Bulk carrier, Passenger ship, Container ship</td>
</tr>
<tr>
<td>Age of Ship</td>
<td>All types $\geq 12$y</td>
</tr>
<tr>
<td>Flag</td>
<td>BGW-list$^{(1)}$</td>
</tr>
<tr>
<td>Recognized</td>
<td>IMO Audit$^{(2)}$</td>
</tr>
<tr>
<td>Organization</td>
<td>RO of Tokyo MOT$^{(3)}$</td>
</tr>
<tr>
<td></td>
<td>Company performance $^{(5)}$</td>
</tr>
<tr>
<td>Deficiencies</td>
<td>Number of deficiencies recorded in each inspection within previous 36 months</td>
</tr>
<tr>
<td>Detentions</td>
<td>Number of Detention within previous 36 months</td>
</tr>
</tbody>
</table>

Figure 5.1: Monitoring mechanism for vessels over 500 gross tons by port and flag State Inspection Division (adopted from TMoU, 2014).
The edited version of the NIR in Figure 5.2 is for control and monitoring of the non-conventional vessels. The adopted version takes into account the types and age of ships, flag administration in terms of safe ship management audits, responsible officers onboard the ship, company and its surveyor performances, deficiencies and detentions issued to the ship. Lack of performance by crews and support from owners often renders the ship unsafe and life-threatening, therefore, two parties should actively participate to make ship a safer working, living and a safe means of transportation.
Figure 5. 3 - Monitoring mechanism for ships Risk Level (adopted from TMoU, 2014).

Each vessel is assigned a risk profile emanating from one of the three categories and they are; high risk (HRS/LSS), standard risk (SRS/SSS), and low risk (LRS/HSS). The main factors that are taken into consideration when determining the factors include;

<table>
<thead>
<tr>
<th>A</th>
<th>Performance of the ship’s flag state; categorized in TMOU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>i. Black, White List (+500gt)</td>
</tr>
<tr>
<td></td>
<td>ii. Status of the flag’s adherence to mandatory IMSAS Audit (+500gt)</td>
</tr>
<tr>
<td>B</td>
<td>Type of ship</td>
</tr>
<tr>
<td>C</td>
<td>Age of ship</td>
</tr>
<tr>
<td>D</td>
<td>Performance of the ship’s Recognized Organisation (RO)</td>
</tr>
<tr>
<td>E</td>
<td>Vessels’ safety performance in accordance with Company ISM Code</td>
</tr>
<tr>
<td>F</td>
<td>No of deficiencies</td>
</tr>
<tr>
<td>G</td>
<td>No of Detentions</td>
</tr>
<tr>
<td>H</td>
<td>Flag State Audit (SSM) Regulation (&lt;500gt)</td>
</tr>
<tr>
<td>I</td>
<td>Ship Crew Performance as per SSM Regulation (&lt;500gt)</td>
</tr>
</tbody>
</table>
Determining company performance based on deficiency and detention index.

\[
\text{Deficiency ratio} = \frac{\text{No. of ISM/SSM deficiencies} \times 5/2 + \text{No. of non-ISM deficiencies} \times 1}{\text{No. of inspections}}
\]

\[
\text{Detention ratio} = \frac{\text{No. of detentions}}{\text{No. of inspections}}
\]

<table>
<thead>
<tr>
<th>Deficiency Index</th>
<th>Deficiency Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average</td>
<td>&gt;1 above Tokyo MoU average</td>
</tr>
<tr>
<td>Average</td>
<td>Tokyo MoU average +/- 1</td>
</tr>
<tr>
<td>Below Average</td>
<td>&gt;1 below Tokyo MoU average</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detention Index</th>
<th>Detention Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average</td>
<td>&gt;1% above Tokyo MoU average</td>
</tr>
<tr>
<td>Average</td>
<td>Tokyo MoU average +/- 1%</td>
</tr>
<tr>
<td>Below Average</td>
<td>&gt;1% below Tokyo MoU average</td>
</tr>
</tbody>
</table>
Company Performance Metric

<table>
<thead>
<tr>
<th>Detention Index</th>
<th>Deficiency Index</th>
<th>Company Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average</td>
<td>Above Average</td>
<td>Very Low</td>
</tr>
<tr>
<td>Above Average</td>
<td>Average</td>
<td>Low</td>
</tr>
<tr>
<td>Above Average</td>
<td>Below Average</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>Above Average</td>
<td></td>
</tr>
<tr>
<td>Below Average</td>
<td>Above Average</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>Average</td>
<td>Medium</td>
</tr>
<tr>
<td>Average</td>
<td>Below Average</td>
<td></td>
</tr>
<tr>
<td>Below Average</td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td>Below Average</td>
<td>Below Average</td>
<td>High</td>
</tr>
</tbody>
</table>

Low-risk vessels have fewer inspections, whereas those vessels deemed to be high risks are subjected to more regular inspections. Therefore, low-risk vessels are to be inspected 9 to 18 months after last inspected, standard risk vessels to be inspected after 5 to 8 months and the high-risk vessel is inspected every 2 to 4 months.

If a vessel has any “overriding factors”, which may include situations where the safety certificate has been suspended, withdrawn or if the vessel has recently been involved in an accident, such as grounding, then it is appropriate for the vessel to be inspected by FSI regardless of when the last inspection took place.
REFERENCE


Osteen, J. (2015, September 20). Ships don’t sink because of the water around them. They sink because of the water that gets in them.. Facebook page: https://www.facebook.com/JoeOsteen/posts/ships-dont-sink-because-of-the-water-around-them-they-sink-because-of-the-water-/10156308096490227/


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https://books.google.se/books?id=9nlwuUvSwh4C&pg=PA6934&lpg=PA6934&dq=which+persons+should+carry+out+Maritime+safety+investigations?


https://www.malwaritimos.com/

https://doi.org/10.1057/polcomms.2016.2

https://scholar.google.se/scholar?q=WHITE+2007,+INDIGENOUS+GOVERNANCE+IN+MELANESIA+JOURNALS&hl=en&as_sdt=0&as_vis=1&oi=scholart

https://www.tandfonline.com/doi/abs/10.1080/1361332052000341006

https://www.journals.uchicago.edu/doi/abs/10.1086/229272
APPENDICES

Appendix 01a: Organizational Chart– PNG 2020

Appendix 01b: Organizational Chart– PNG 2020

Note: The research is targeted at the line managers and their subordinates as indicated by the red dashed block and in blue font. Others in black are not required for this research.
Appendix 02a: Organizational Chart of Maritime Administration – FIJI 2020

Note: The research is targeted to the targeted line mangers and their subordinates as indicated by the red dashed block. Other five departments required are not captured in this illustration.
Appendix 03:

Ref: https://www.fleetmon.com/vessels/mv-lotus_7408196_21476/

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<th>AIS Name</th>
<th>MV LOTUS</th>
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</tr>
<tr>
<td>Width</td>
<td>13 m</td>
</tr>
<tr>
<td>Draught</td>
<td>3.8 m / ...</td>
</tr>
<tr>
<td>Speed</td>
<td>Arg / Max</td>
</tr>
<tr>
<td>Deadweight</td>
<td></td>
</tr>
<tr>
<td>Gross Tonnage</td>
<td></td>
</tr>
<tr>
<td>Year Built</td>
<td>1975</td>
</tr>
</tbody>
</table>

PNG LNG - PNG LNG
https://pngling.com/About/History -
Engineering, procurement and construction contracts were approved in late 2009 and in early 2010 construction work began. In April 2014, the PNG LNG Project started production of liquefied natural gas ahead of schedule.

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<th>IMO</th>
<th>Call Sign</th>
<th>Port</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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<td>03-Jul-07</td>
<td>7408196</td>
<td>P2VS3211</td>
<td>Port Morot</td>
<td>MV LOTUS, Liquefied Natural Gas</td>
</tr>
</tbody>
</table>
To Ex. Manager,

We are here to enforce safety measures against law breakers. It is up to you and Ships Inspections Manager to direct ship inspectors as to what he should do, not to suggest based on what he has done or not done.

We should be approaching this issue from this perspective. As I said we will see why this vessel sailed when NMSSA issued a code 17 and we will prosecute the owners and the master. Any directions issued should be from a regulatory point of view.

I am surprised PPL has breached NMSSA’s directives and is yet willing to transport our inspectors to the site for inspections. I would have thought that a survey report on whether the defects were rectified would be the first thing to be furnished rather than an offer to provide transport.

Thanks

Legal Dept

[EMVO]

With due respect, the visiting inspector had explained all your query, what is your direction now.

The two inspectors had physically inspected the vessel.

Thank you

From Manager

Legal

No detention notice was served on the ship as stated on the understanding that the ship was going through the process of changing flag.

The ship was surveyed for change of flag and there were some major detainable deficiencies highlighted by the surveyor to be rectified to facilitate the ship’s change of flag.

The master was advised about the status of the ship as a stateless ship due to no statutory certificate on board.

From Ex Manager

To Legal,

No detention notice was served on the ship as stated on the understanding that the ship was going through the process of changing flag.

The ship was surveyed for change of flag and there were some major detainable deficiencies highlighted by the surveyor to be rectified to facilitate the ship’s change of flag.

The master was advised about the status of the ship as a stateless ship due to no statutory certificate on board.

From Inspector
Appendix 04b: Komodo Stateless Ship permitted to Sail in PNG

To Legal

Stop any legal action against this ship till I clarify with SS&I department this case.

John,

I need your explanation regarding issuing the inspection report by yourself to the ship indicating deficiencies copied from AMSA inspection report but which were already rectified by the owner when you went for inspection.

1) Did you inspect the vessel?
2) Did you physically verify existence of deficiencies listed in your report?

Ex Manager

Inspector,

Thank you, I want you to write a detention form and presented to PPL, it is a Stateless vessel that sailed and the Master and PPL should be penalised.

Trevor take note, after serving the detention notice, you will be copied off the detention notice and the defect list by our Inspector.

Thank you

Manager

Inspector,

Thank you, I want you to write a detention form and present to PPL, it is a Stateless vessel that sailed and the Master and PPL should be penalised.

Trevor take note, after serving the detention notice, you will all be copied off the detention notice and the defect list by our Inspector.

Thank you

Please see email below from PPL requesting to obtain clearance for Coasting Trade Permit.

Attached is the inspection report dated 19 December 2018.

For your information, the Executive Manager (EMMA) has advised to issue the clearance letter on our behalf.

Thanks

Record Clark

{\textit{All Names are removed from the Email Trail}}
Appendix 05a: Peer Support Review (PSR) Questions and Answers

Flag State 2.2  Performance – IMO audit scheme

In case the Authority has completed an audit under IMSAS, has a corrective action plan been submitted and accepted, in accordance with the IMO Member State Audit Scheme.

YES ☑ NO ☐

Comments:
IMSAS Audit completed successfully in September 2016. Corrective Action plans submitted to IMO for review, comments and acceptance.

2.3 Authorized Recognized Organizations

1. Please complete the following table by listing each recognized organization and the functions / tasks they are authorized to carry out on behalf of the administration. Copies of signed RO agreement should be provided, as appropriate.

<table>
<thead>
<tr>
<th>RECOGNISED ORGANISATION</th>
<th>FUNCTIONS / TASKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNV-GL</td>
<td>Carry out surveys, Audits and issue statutory certificates.</td>
</tr>
<tr>
<td>LLOYD’S</td>
<td>As above</td>
</tr>
<tr>
<td>RINA</td>
<td>As above</td>
</tr>
<tr>
<td>NKK</td>
<td>As above</td>
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<tr>
<td>ABS</td>
<td>As above</td>
</tr>
<tr>
<td>KR CLASS</td>
<td>As above</td>
</tr>
<tr>
<td>BV</td>
<td>As above</td>
</tr>
</tbody>
</table>

2. Does the Authority conduct oversight of ROs acting on its behalf? If so, what specific measures are in place for oversight?

YES ☐ NO ☑

Comments:
Not yet because of lack of resources. However, the task will be undertaken soon.
Appendix 05b: Peer Support Review (PSR) Questions and Answers

Please answer the following questions:

3. Does your Authority conduct flag State surveys and if so which?
   
   YES ☐  NO ☐

Comments:
Flag State surveys carried out on National flag ships (both conventional and non-conventional).

---------------------------------------------------------------
---------------------------------------------------------------

4. Which surveys are not delegated to the RO’s?

Comments:
Non-conventional Ships below 500 GRT. However, it is owner’s prerogative if they want vessel to be under a classification society

---------------------------------------------------------------

2.4 Enforcement of international rules and standards

Please answer the following questions and provide details as appropriate:

1. Are flag State inspections carried out to verify that ships are in compliance with international rules and that seafarers are familiar with their operational duties?

   YES ☐  NO ☐
Appendix 06

PEER SUPPORT REVIEW REPORT: Subordinate Regulations

STATUTORY INSTRUMENT.
No. of 2007.


ARRANGEMENT OF SECTIONS.

PART I – INTRODUCTION.


PART III. – SHIPS OTHER THAN SOLAS SHIPS THAT PROCEED BEYOND THE TERRITORIAL SEA OF PAPUA NEW GUINEA AND FISHING VESSELS AND BARGES OF 24 METRES OR MORE IN LENGTH.


PART IV. – SHIPS THAT DO NOT PROCEED BEYOND THE TERRITORIAL SEA OF PAPUA NEW GUINEA AND FISHING VESSELS AND BARGES OF LESS THAN 24 METRES IN LENGTH.


Appendix 07: Report on the Komodo Release with Detention from Administration.

KOMODO INSPECTION REPORT
Port Moresby Inspection
Dated: 21/01/19

On Wednesday 19th December 2018, Nathan F and I, John Kami were dropped off at PPL Paga Wharf (Port Moresby) by Samuel Kewei (senior PSCO) to serve the Detention Release Order Notice to the ship after she was Detained and Removed from Australian Registry by the Australian Maritime Safety Authority (AMSA).

We informed the Master that we were going to carry out a Port State Control Inspection on the vessel because the ship was a Stateless Ship after she was removed from the previous Registry.

Before carrying out the inspection we asked the master about what the management/company was doing about re-registering the ship. We were told by the master that the company was preparing the ship for re-registration with a new flag administration. Ship was recently surveyed by a non-exclusive surveyor on behalf of the Cook Island Flag Administration to facilitate the registration with the Cook Island Ship Registry.

With normal Port State Control procedure after meeting with the master and before conducting the inspection we always ask if there were any CONDITION OF CLASS (with IACS) or List of deficiency (non-exclusive survey) for us to verify during Port Control Inspection.

The master, Tom MAOP called on the chief officer and advised to provide us with the list of survey deficiencies. Senior Inspector, J.Kami asked the chief officer to provide us the list of last deficiencies with their corrective action plan (CAP). The chief officer highlighted the deficiencies rectified and made a copy for us to verify during our inspection rounds.

There were two of us (Inspectors) so we decided that one be in the wheelhouse with the captain to do the ships documents, crew documents and wheel house equipment after completing and serving the Detention Release Order from AMSA. I than went with the chief officer and the engineering officer (Tirera) for physical inspection around the deck, accommodation and engine room areas.

I physically went around the ship with chief officer, 2nd mate and chief engineer during my inspection for verification of deficiencies marked as already been rectified as per the list of deficiencies issued by the surveyor, Danis Willson during his survey.

At the end of the inspection, we went through our findings (deficiencies noted), and the outstanding survey list defects not rectified with the captain and the chief officer in the wheelhouse before commence write the deficiencies in our inspection deficiency form, (SV – CC).

After writing the deficiencies on our inspection deficiency form, we went through it again with the master and the chief officer and gave deficiency action codes. Many of them were determinable deficiencies, however, on the understanding that the ship was going through the process of changing the flag, all code 1.2 were issued to most deficiencies.

The master and chief officer were given opportunities to verify our inspection report:
- First opportunity when they highlighted their action plan,
- Second during the inspection,
- Three before writing our report when we went through our findings,
- Fourth when we went through the deficiencies to give deficiency action codes and
- Fifth when the master, who should read through before signing the form.

Before issuing our inspection report to the master, we explain the current status of the ship. The ship is a stateless ship and she cannot go to sea without Statutory Certificate. The Master, Tom MAOP agreed, acknowledged and assured us he understood.

The crew manning could not be verified because the ship had NO Manning Certificate available onboard during the time of Inspection.
This Authority will do a follow up inspection to verify manning when ships Minimum Safe Manning Certificate is made available. These were serious DETAINABLE deficiencies.

- The Inspection Report with our full understanding was not a cut and paste, as mentioned by EMMO. I physically went around the ship with chief officer, 2nd mate and the chief engineer.
- The survey deficiencies were also not from AMSA inspection. The report was from the survey list from Dennis Wilson, a non-exclusive surveyor, acting on behalf of Cook Island administration to facilitate the change of flag.

It can also be noted on our deficiency report that, deficiencies already been rectified were not listed on the SV – CC deficiency form and only once outstanding were noted and recorded as references to the last inspection during THE TIME OF OUR INSPECTION.

We as the attending inspectors did not receive any request from the owner, agent or the operator or any directions from our immediate manager, Capt. Danny Fesamo, Ship Surveys and Inspection Department or were there any directives from the Executive or the CEO Office to us the visiting inspector to clear the ship and allow her to sail.

Capt. Wermini Suri from PPL when asked where Komodo was when John could not sight her at her usual berth, Mr. Suri Replied,

"NMSA gave the OK for her to sail."

The Question now is?

1. WHO IN NMSA AUTHORIZED THE SHIP TO SAIL?
2. DID SHE PHYSICALLY DO A FOLLOW UP INSPECTION AND ENSURED THE DEFICIENCIES WERE RECTIFIED BEFORE CLEARING THE SHIP TO SAIL?
3. DID SHE VERIFY THE MINIMUM SAFE MANNING DOCUMENT FOR THE CREW?

We understand the ships document were delivered to the authority on Wednesday 17th.

January 2019 after a manager Ship Survey & Inspection requested for it to be delivered to him. The Report we have provided above is in the best knowledge and understanding of us the two visiting Inspectors of the vessel Komodo which recently changed flag from Australia to Cook Islands.

Thank you and
We sign below to affirm our report is all true.

John Kami [Ship Inspector]

Nathan [Training Inspector]

Both vessels were detained on reasons safety and registry issues in Alotau prior the Bech-de-mer season in 2018 but forcefully released by an expatriate NMSA Executive who may have connections to cocaine syndicate operating in Papua New Guinea.

Investigations has to continue into the registry of both vessels and how a detain vessel was released by top NMSA official.

#LETS_PROTECT_OUR_COUNTRY

PNG Daily

DRUG LINKS KNOWN
Tuesday, 4 August 2020
Appendix 08: Data Tabulation

(16 Questionnaires with-held in hard copy)

Appendix 09: Interview Transcripts

(Transcripts with-held in hard copy)
### Appendix 10: Ships registered with IMO number in PNG

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<th>ROs</th>
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**Total Ships:** 50
Appendix 11

2017 - IMSAS Audit Disclaimer

All views expressed for not making the document available for this dissertation are my own and do not represent the opinion of any person or entity whatsoever with which I have been in contact with in preparing this research paper.

Dear Madam, Lucy

SUBJECT: IMSAS AUDIT REPORT

I, Conny Ralph Hauseng currently on study leave at the World Maritime University wrote to seek clearance through the CEO, Mr Paul Unas on the subject report.

This mail seeks for his permission that I be given access to the report as it would be beneficial for my research paper. My Research Paper Title "Promoting Maritime Safety through the Findings of Accident Investigation, Surveys and Audits in the Pacific, the case of Papua New Guinea." is in progress.

Therefore, your assistance on this subject matter would be very much appreciated.

Regards

Conny

WMU, Sweden

---

Dear Lucy:

As per the CEO's Advice on the IMSAS audit report and the aspects of the audit which I required include:

SECTION REGARDING - FLAG STATE AUDIT

With Reference...

Numerous follow-ups made to obtain the requested information but to no avail

Your Assistance would be very much Appreciated

Best Regards

Conny
Appendix 12 – Peer Support Review (Observation 5)

Flag State authority

Observation 5:
Delegation of authority:
There is evidence to indicate that not all Recognised Organisations have signed an RO agreement with the Administration. It was noted that there is no RO oversight programme and system of authorisation for ROs.

Recommendation 5:
Implementation of an RO agreement with all authorised ROs. Development of an RO oversight program in accordance with the RO Code.

Observation 6:
Information submitted to GISIS on authorisation of RO:
It is noted that GISIS lists five Recognised Organisations however seven have been listed in the peer support questionnaire.

Recommendation 6:
Update and assign relevant person to continuously monitor and update GISIS with appropriate information.

Observation 7:
Recognised Organisation for Radio Surveys:
The entities, NICTA and Five Star Marine, which conduct statutory radio surveys under SOLAS have not been duly authorised in accordance with the RO Code.

Recommendation 7:
Establish RO agreement with these entities for the conduct of statutory radio surveys.
Appendix 13 – Safe Ship Management Code (adopted PSSM)

Seal of the Maritime Safety Authority

25 – Appendix VI

PAPUA NEW GUINEA SAFE SHIP MANAGEMENT CODE.

(Kept in Hard Copy)