Assessment of the ability of Comoros and their determination to ratify and enforce the 1979 SAR Convention

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ASSESSMENT OF THE ABILITY OF COMOROS AND THEIR DETERMINATION TO RATIFY AND ENFORCE THE 1979 SAR CONVENTION

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Comoros

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(MARITIME SAFETY & ENVIRONMENTAL ADMINISTRATION)

2020
Declaration

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

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

(Signature):

...........................................

(Date):

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Abstract

Title of Dissertation: Assessment of the ability of Comoros and their determination to ratify and enforce the 1979 SAR Convention.

Degree: Master of Science

The research assesses the ability of Comoros and its determination to ratify and enforce the SAR Convention.

The study focused on regulatory issues, resources, personnel incentive, required training for the personnel, communication challenges, cooperation between stakeholders and neighbouring rescue centre.

Different methods were used to collect the necessary data which include questionnaires and interviews with reasonable goal and analysis of the actual maritime SAR system in the national and regional.

The study allowed the researcher to identify the gaps that are currently hindering the maritime SAR services in the country. Meeting the obligations to provide SAR services is a big challenge to the community and stakeholders.

The increase in the number of persons lost at sea and the reception of many distress call yearly, made the researcher explore deeply the potential challenges. To cover the gap required to refer to the regional agreement which can evolve the SAR in the national water.

The idea of the study was to analyse how to effectively, efficiently implement and enforce the SAR convention to avoid more disaster in the near future at the national shipping industry.

Conclusions were drawn according to the surveys conducted through a questionnaire, personal interviews and case studies. The outcome of the research provided a vision on how to establish SAR system by increasing maritime safety and reducing the loss of lives at sea.

Keywords: Assessment, ability, Comoros, ability, determination, ratify, 1979 SAR Convention
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<tr>
<td>ADB</td>
<td>African Bank of Development</td>
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<td>AMSA</td>
<td>Australian Maritime Safety authority</td>
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<td>ANACM</td>
<td>National Agency of Civil Aviation and Meteorology</td>
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<td>ANAM</td>
<td>National Agency of Maritime Affairs</td>
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<td>APC</td>
<td>Comoros Port Authority</td>
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<td>DC</td>
<td>Deputy Commissioner</td>
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<td>DSC</td>
<td>Digital Selective Calling</td>
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<td>FDI</td>
<td>Foreign Direct investment</td>
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<td>FSI</td>
<td>Flag State Inspector</td>
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<td>GCC</td>
<td>Comoros Coast Guard</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GMDDSS</td>
<td>Global Maritime Distress and Safety System</td>
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<td>GISIS</td>
<td>Global Integrated Shipping Information System</td>
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<td>GOC</td>
<td>General Operators Certificate</td>
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<td>HF</td>
<td>High Frequency</td>
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<tr>
<td>IACS</td>
<td>International Association Classification Societies</td>
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<td>IAMSAR</td>
<td>International Aeronautical and Maritime Search and Rescue</td>
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<tr>
<td>III Code</td>
<td>IMO Instruments Implementation Code</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IMO</td>
<td>International Maritime Organization</td>
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<td>IOC</td>
<td>Indian Ocean Commission</td>
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<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
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<tr>
<td>IUU</td>
<td>Illegal, Unreported, and Unregulated</td>
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<td>JRSC</td>
<td>Joint Rescue Sub-Centre</td>
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<td>LCT</td>
<td>Land Craft</td>
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<td>MASE</td>
<td>Maritime Security</td>
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<td>MF</td>
<td>Medium Frequency</td>
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<td>MRCC</td>
<td>Maritime Rescue Coordination Centre</td>
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<td>MRSC</td>
<td>Maritime Rescue sub-Center</td>
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<td>MV</td>
<td>Motor Vessel</td>
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<td>RO</td>
<td>Recognized Organization</td>
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<td>SAR</td>
<td>Search and Rescue</td>
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<td>SOLAS</td>
<td>Safety of Life at Sea</td>
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<td>SRU</td>
<td>Search and Rescue Unit</td>
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<tr>
<td>STCW</td>
<td>International Convention on Standard of Training Certification and Watchkeeping for Seafarers</td>
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<tr>
<td>TEU</td>
<td>Twenty-foot Equivalent Unit</td>
</tr>
<tr>
<td>UTC</td>
<td>Universal Coordinated Time</td>
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<td>VHF</td>
<td>Very High Frequency</td>
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Chapter 1 Introduction

1.0 Background

For many decades, the Union of Comoros has faced a large number of incidents at sea which have caused the loss of many lives. Sea accidents are considered as common especially in many small island developing countries because of the isolation of coastal and island communities and the logistical impediments faced by those states. The population of the country living on coastal and small islands relies on sea transport to access government services such as education, health, including fisheries and agriculture. Considering the number of fishing boats and commercial vessel of all sizes engaged in maritime traffic around the area, Comoros faces significant losses for both human lives at sea and property. According to the report of the Regional workshop on safety for the South-West Indian Ocean Fisheries Commission, an average of 100 lives are lost every year in Comoros’ waters (FAO & SWIO Fish, 2008). The lives lost at sea increase due to the vessels used for transportation within national waters and neighbouring states which are unseaworthy and most of them do not have the necessary equipment for life-saving such as life-rafts, life-jackets, emergency beacons and others equipment designed for safety.

Avoiding bad weather in the Mozambique channel, the national water of Comoros has become a sea line for many vessels proceeding to the North or South of Africa and Asia. A part of ships coming for loading and discharging, the Moroni port has been receiving critical number of vessels for the past 5 years due to a number of security armed guard’s changes as well as crew’s changes in accordance of the Djibouti Code of Conduct, 2009. It becomes a major challenge for the authorities to provide prompt response to those in distress at sea and to implement safety measures
on the vessels particularly using in a timely way to mobilize resources to rescue people.

1.1 Geography of the area of the study

The archipelago of Comoros in the Indian Ocean consists of four Islands namely Grande Comore, Anjouan, Moheli and Mayotte (see figure 2). It is situated on the South-east coast of Africa, the North-West of Madagascar, and lies strategically in the centre of Mozambique channel’s Northern entrance (see figure 1). The islands have distance range from 50-90 kilometres with a combined surface area of 2 236 square kilometres. The closest countries are western Mozambique and Tanzania, and southern Madagascar.

Figure 1. Source: Graphic Maps
The Union of Comoros is mountainous islands of volcanic origin. The main island of Grande Comore has a very active shield volcano: The Karthala volcano with 2,361 meters which is the highest mountain in the archipelago. The last eruption was in 2005, causing significant problems because of widespread falling ash and contamination of drinking water. The historical eruption from both peak and flank vents have regularly altered the caldera’s shape. Most lava flows on both sides of the island have entered the sea. After the 1860 eruption, a lava flow migrated from the summit caldera some 13 km to the Northwest, entering the sea on the west coast north of Moroni city.

The islands' volcanic topography is broken, providing largely beautiful landscapes. The climate is tropical and maritime with more than two meters of rainfall during the rainy season so the vegetation is lush.

After being governed by France since 1843, Comoros declared independence on 6th July 1975. France did not recognize the independence of Mayotte which became a French Overseas Territory. From 31st March 2011, the Island became an oversea
department and region of France following the referendum on the status of Mahoran (citizen of Mayotte) in March 2009, which was overwhelmingly supported by about 95 per cent of voters (Benoit, 2011). The remaining islands form together with the Union of Comoros with 850,886 people living in the three islands and 562,000 people living abroad (World Bank, 2019).

1.1.1 Economy

The Union of Comoros suffers from structural weaknesses and the economic situation remains precarious. It is one of the least developed countries, with 42.4% of the population living below the poverty line, and ranks 156th out of 189 in terms of index of human development (World Bank, 2014). Per capita income remains low (GDP per capita of 1445 USD current in 2019 according to the World Bank which has admitted Comoros to the rank of the country with lower middle income).

The economy of the archipelago least diversified and rests on a few activity sectors, the insularity and the deficit in infrastructures strongly limiting its capacity to diversify:

Agriculture including artisanal fishery represents 33% of GDP (2017) but is based on three main products: vanilla, cloves and ylang-ylang, which represent 70% of exports. This sector is vital for the country and employs a very large majority of informal workers.

The industry, which weighs only 12% of GDP, is underdeveloped, which is explained by the crisis in the energy sector observed until the end of 2016 and it is hampering development. The Comorian industry remains mainly made up of small manufacturing activities.

Services represent 55% of the GDP; they mainly correspond to trade and hotel and catering activities. The monetary situation of the Comoros, which is part of the franc zone, is under control. However, the banking and financial sector is still underdeveloped.
Due to the predominance of small players mainly in the informal sector, the added value created remains structurally very limited. In this configuration, the rate of GDP growth, of the order of 2.2% per year between 2010 and 2016, was too low during this period to absorb population growth, of the order of 2.4% over the same period. However, activity recovered slightly between 2016 and 2018, with growth going from 2.2% to 2.8%. Population growth has declined slightly, from 2.5% in 2000 to 2.2 in 2018 (World Bank, 2019).

In 2016, according to the International Monetary Fund, exports represented 2.8% of GDP, against an import volume of 30.4%. The result was a trade deficit of 27.6% of GDP. However, due to large transfers from the diaspora, estimated at 18% of GDP in 2016, the current account deficit is much lower than the trade deficit (9.5% of GDP in 2017 and 10.2% in 2016). Decreasing slightly, the current account deficit is mainly financed by development aid, FDI being low (around 1% of GDP).

In recent years, budgetary tensions have worsened. Economic and financial survival is only possible through external support from donors and certain countries (exceptional budgetary support provided by Saudi Arabia to the Union of the Comoros 2017/2018 - € 40 million, or around 20% of the annual state budget) and the high level of diaspora transfers (between 18% and 25% of GDP).

At 1.8% of GDP in 2017, the public deficit, driven by the increase in current spending, would have widened to 3.5% in 2018. The main challenges are improving tax collection, controlling public spending and the reform of public enterprises (serious financial difficulties of the public electricity company Ma-Mwé). The passage of cyclone KENNETH, during the night of April 24th and 25th, had major repercussions on the economic situation of the Union of the Comoros which has damaged roads, electrical networks, significant damage inflicted on cash crops and food crops).
1.1.2 The Maritime Administration

The Union of Comoros has undertaken an in-depth reform of its maritime administration intending to enable it to support the blue economy of the archipelago since 2014. This reform focused on the revision of the merchant marine code which dated from 2001 and the establishment of an independent maritime authority by creating the National Agency for Maritime Affairs (ANAM), which will be responsible, among other missions, for the administration of the Comorian flag. It is important to note that the state quickly comes into compliance with the obligations described in the IMO instruments in the areas of safety, security and environmental protection to combat substandard ships.

ANAM aims to improve, promote and make Comoros’ National Maritime and Port Policy more competitive on the international level, acting always according to the Merchant Marine Law of the Union of Comoros and the International Maritime Organization (IMO). Besides, the administration has the following responsibility:

- Promote safety through the establishment and maintenance of maritime safety and environmental protection.
- Coordinate SAR activities following article 314 of the merchant shipping code.
- Ensure communication between vessels and port control which is acting as a coastal radio station.

ANAM is considered as the new body established and recognized under the jurisdiction of the Ministry of Transportation of the Union of Comoros, having the public service mission and authority to develop and operate the International Ship Registry of the Union of Comoros.

1.1.3 National Shipping Fleet and its registry
According to the data presented above, the flag state has registered 500 ships with 19% of non-conventional vessels according to the Comoros Database (ANAM, 2018). It is to note that national fishing vessels particularly canoes are not registered by the administration. The fishing canoes are registered under the ministry of the fishery with the supervision of ANAM.

The fishing vessels mentioned in the chart are foreign vessel operating in our national water through the partnership agreement by Council Regulation No.1563/2006 and then tacitly renewed, was denounced by the European Union in 2019. In the application of Council decision 2018/757, adopted following the inclusion of the Union of Comoros on the list of non-cooperating countries against the fight against illegal, unreported and unregulated (IUU) fishing. As the state is not able to monitor
the fishing activities to avoid IUU fishing, the flag state has stopped the registration of a foreign vessel.

1.1.4 Ship registry

Since 2000, ship registration has been operated by foreign private entities under various contract. Due to many complaints and violation of the international code by some vessel, the Union of Comoros decided to repatriate the ship registry to the country. Since the dispute between the state and the previous representative, the ship registry is running in parallel with two registries. The parallel registry is operated from the UAE by Mr Akram from Union Marine Classification Services LLC. Despite an arbitration procedure in London, the Comorian flag of the UAE still registers up to date. It is to note that the flag was taken back under the control of the Comorian administration in 2014. Despite this confusing situation, the government of Comoros is still outsourcing the control of its flag to outside entities.

![Age of Ships](image)

Figure 5. Source: ANAM, 2018
As the administration has not qualified personnel, the international registry is done through the intermediary of Deputy Commissioner (DC). The DC is duly authorized by the Union of the Comoros who is acting as a channel of communication between the ship-owners and ANAM. The main function of the DC is to assist the registration to run smoothly according to the IMO regulations and the national legislations. He may issue an only provisional certificate on behalf of the administration once authorized by the administration. Since 2017, the administration requires Flag state inspection or RO reports before register the vessel.

1.1.5 Flag State Surveyors

Flag State Inspections (FSI) are used by flag states to ensure that on board vessels flying their flag, satisfactory standards are maintained. Flag State Inspections are carried out by authorised Flag State Inspectors which include review of statutory documents with general inspection of the structure, machinery and equipment of the vessel, as well as more comprehensive inspection and/or operational testing of firefighting equipment, life-saving equipment and safety equipment.

The country has two types of Flag State Inspectors (FSI) in the administration. The first type is designed to inspect the non-conventional vessel which is mostly working at the national and regional waters. The second FSI is authorized by the administration to carried out regular inspection in different ports worldwide.

The FSI aims to ensure satisfactory standards are being maintained on board vessels flying the Comorian flag, ANAM has seven FSI for SOLAS vessels positioned according to the location of the DC assigned. For example, the Deputy Commissioner in Greece obliged the administration to appoint FSI in Greece to assist the operation of the DC to run efficiently. In case there is detention or other technical matter particularly on hull and machinery, the administration might send an authorized Recognized Organization (RO).
1.1.6 Recognized Organization (RO)

The Recognized Organization definition can be found as follows in Resolution A.1052(27);

“An organization which meets the relevant conditions set forth by resolution A.739(18), as amended by resolution MSC.208(81), and resolution A.789(19), and has been authorized by the flag State Administration to provide the necessary statutory service and certification to ships entitled to fly its flag.”

Since the responsibility of flag States to ensure the safety of the ship, the survey should be performed under international instruments by trained officers of the administration. However, the flag State can assign its legislative functions, such as survey and certification, to recognized organizations. As the resolution MSC.349(92) states that a flag State may delegate authority to an organization recognized as complying with the provisions of this Code to perform, on its behalf, statutory certification and services under mandatory IMO instruments and its national legislation. The Code provides the flag administration with a framework to help achieve a harmonized and effective global implementation of specifications laid down by the IMO instrument for the evaluation and authorization of ROs.

To meet the requirement of the III Code and RO Code, the administration has nominated Recognized Organizations to act on their behalf. The circular “Ref No: 20/698/COM/2” has appointed IACS and Non-IACS ROs to carry out their functions. The flag state has approved all IACS member as well as 7 Non-IACS members such as Phoenix Register of Shipping and Dromon Bureau of Shipping. The authorized ROs have signed an agreement with the administration to carry out the duty assigned unless the task is outside of RO capabilities. The flag state is cooperating with the delegated ROs to comply with the provision of the RO code.
1.1.7 Ports of Union of Comoros

Union of Comoros has three main port which 2 of them received foreign seagoing vessels. The international trade and shipping are also related to the growth of maritime ports for the optimal loading and unloading of cargo from ships. To achieve competitive advantages, the efficiency of a port is crucial in the nation; it is expressed through the provision of good services that the customer and ship owners expect. However, the ports are not spacious enough to accommodate ships and cargo particularly Moroni and Bwagoma port.

Moroni Port

The port of Moroni is a port in shallow water, two unloading systems coexist: Quayside reception of ships of less than 2,000 tonnes with a maximum draft of 4.50 m. The other vessels anchor 400 m from the quay and unloading operations are carried out by barges; two teams of dockworkers, one on board and the other at the dock, ensure all handling operations; operations are relayed ashore by truckers who transport the goods to their destination.

Mutsamudu Port

In the port of Mutsamudu, the berth is big enough to accommodate a vessel of more than 300 meters however the space for cargo storage is very small even compare with Moroni port.

The port was built in 1982 with funding from the ADB (African Development Bank). The port of Mutsamudu ensures the consolidation / unbundling of cargoes, the storage of containers and their transhipment on ships bound for ports in the region. Initially, it was to be considered as the transhipment port for the Comoros Archipelago. For example, the transhipment handled in 2016 was estimated to 6800TEU in full and 16000TEU empty. However, following an agreement concluded in 2005 between Maersk and UAFL aiming to make Mutsamudu a sub-regional “redistribution centre”,

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it takes on a new dimension. Thus, the traffic generated by UAFL as well as its 9-meter draft makes it today one of the transhipment ports in the South-West Indian Ocean region.

1.3 Maritime accidents

Many accidents at sea have been recorded in the Union of Comoros causing loss of life and destruction of marine environment such as the “MV. Majriha”. The grounding of MV. Majriha at a half mile of the coast of Grande Comoros was one of the worst maritime disasters in the maritime transportation in Comoros with more than 100 passengers and crew were on board at the time of the accident (BBC News, 2011). The rescue official said that less than 50 people had survived, but many remained unaccounted because the vessel was overcrowded with more than 40% of the required capacity. In Comoros, critics and groups of victims say there is a general lack of attention from port officials, ship owners and crew members even those dealing with civil security.

Further disaster, was the grounding of LCT Merci II at less than 4 miles of the coast of Moheli. The land craft carried more than 50,000 litres of fuel to supply the island as well as different cargo on board. According to the inspection report, the vessel was considered unseaworthy and was refused to leave the port with any cargo on board. Due to the influence of the government, the land craft got authorization to leave the port with cargo on board particularly bunker. Unfortunately, the vessel did not make it at the destination by sinking at less than 4 miles away to the port keeping on board a huge amount of fuel. Up to date, the vessel was not retrieved which will be a danger to the environment to the near future.

Another disaster was the crash to the sea of the Airbus A310-324 of Yemenia flight on 30 June 2009 at around 22:50 UTC, killing all persons on board except one 14-year-old lady found to hold on to a piece of debris among bodies and wreckage and
rescued by local fishermen. The flight was departed from Sana’s International Airport to Prince said Ibrahim International Airport with 153 people. Due to lack of rescue capabilities in Comoros, a French navy ship and two military aircraft were sent from Reunion and Mayotte to search for survivors and most of the bodies were not able to be found (The Guardian, 2009).

In 2019, more than six accidents of non-conventional vessel occurred along the coast of one of the three islands such as the boat Zamzam, Safina Altayiba, and Anmadjate. The Zamzam had an engine breakdown 2 miles to the coast of Ouzioini and has made 3 days before getting assistance as they were no other private or public vessel to tow the vessel to the port. Also, the same year, the minister of fisheries has registered more than 100 fishing canoes lost.

1.4 Problem statement

Under the Hamburg Convention, the contracting States are obliged to coordinate search and rescue services to provide assistance relating to the rescue of survivors of maritime incidents and to develop coordinating protocols with national authorities where vessels or aircraft registered in a third country are engaged in SAR operations.

In the Union of Comoros, the SAR operations have potential challenges. It is to note that most of the activities in this world are a risk to take. However, taking a risk to save lives should be a big achievement for every human being. Marine accidents are occurring significantly in the maritime sector specifically in the fishing industry, and commercial shipping as well as illegal migration to Mayotte. Most of those incidents are not reported on GISIS according to COMSAR.1/circ.55 which can provide data to the IMO to see the high level of gaps the state is challenged with. Establishing an effective SAR system will be a potential solution to reduce the loss of lives at sea.
In this thesis, the author will be analyzing the actual situation in terms of SAR, including how the intervention, communication, coordination and detection of vessels in distress are handled and identifying weaknesses in the current system. Besides, discussing what conventions are related to those particular issues, specifically SOLAS Convention, SAR Convention and the IMO Instruments Implementation Code (III Code) by giving an in-depth study on how to successfully approach an efficient SAR Centre.

1.4.1 Objectives of the research

The purpose of choosing the topic on the assessment of the ability of Comoros and their determination to ratify and enforce the SAR Convention is due to the rate of maritime incidents occurring in Comoros waters and the inadequacy of current responses to those occurrences, including the challenges faced by the concerned maritime administrations and the stakeholder.

1.4.2 Specific Research Objectives

Find out the actual situation and deficiencies in terms of search and rescue.
Identify the SAR resources such as SAR personnel training, medical assistance services, enforcement of safety measure, boat registry,
Examine the way which will provide a solution to achieve the objectives.

1.4.3 Research questions

What is the actual situation in terms of search and rescue operations in Comoros?
What are the gaps and deficiencies that exist in the current system?
What can be done to address these gaps and improve the current system?
What opportunities/ challenges exist concerning the establishment of a national SAR centre?
1.4.4 Significant of the study

This study has the potential to contribute the decision-making process in respect of the establishment of national SAR coordination centre by providing recommendation to the concerned stakeholders to establish practicable SAR facilities, training and accident investigation, including the provision of medical advice, medical assistance, or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installation (IMO & ICAO, 2016).

1.4.5 Research Limitation

The researcher will use interviews with key people from the institutions which are involved in this issue to collect data.

1.4.6 Methods

The research employed different methodology during the study, including but not limited to the research design, study area, concerned organization, research instruments, data collection, data analysis, and ethical issues.

1.4.7 Research outline

This dissertation consists of five chapters organized as follows; Chapter one introduces the research topic, giving the background about the International Convention on Maritime Search and Rescue (SAR), the problem statement, the research objectives and the limitation of the research. In Chapter Two, the chapter is all about the legal framework on SAR. It generally contains the information concerning the topic address in this dissertation and includes the definition of key terms. Chapter three explains the methods used to collect and analyze the data through Research Design, Study area, Concerned Organizations of the study, Research Instrument, Data Collection, Data analysis and Ethical Issues. Chapter four looks at the analysis of data and research findings include the explanation of respondents after answering the objectives of the
study, data collected from the questionnaire and interview which was tabulated and analyzed. The conclusion and recommendations follow in chapter five.
Chapter 2 Framework for SAR

2.1. Introduction

The tradition of ships responding to a distress call and signals from other ships in trouble is one of the oldest types of humanitarian activity at sea. This old tradition puts an obligation on those who can do safely without jeopardizing their vessel, passenger or crew to support those at risk from the sea. This standard obligation levied on ships or shipmaster is further extended and then passed on to states who are required under various treaties to provide SAR services. Coastal is required to provide SAR services as a governmental obligation, while the responsibilities of flag state are typically transferred to the master whose ship flies its flag, to proceed to distressed targets, wherever they may be and whoever they may be, to provide the required assistance. The coastal and flag obligation are covered by the following International Convention and National regulations describing the responsibilities to assist captain of the vessels, skippers or aircraft operators or individual who are in distress.

2.2. The United Nations Convention on the law of the Sea 1982

The SAR provision in SOLAS Convention is enshrined in article 98 of the Law of the Sea Convention “Duty to render Assistance” by stating that:

1. Every State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew or the passengers:
   (a) To render assistance to any person found at sea in danger of being lost;
   (b) To proceed with all possible speed to the rescue of person in distress, if informed of their need of assistance, in so far as such action may reasonably be expected of him;
(c) after a collision, to render assistance to the other ship, its crew and its passengers and, where possible, to inform the other ship of the name of his own ship, its port of registry and the nearest port at which it will call.

2. Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring States for this purpose.

2.3. The International Convention for the Safety of Life at Sea (SOLAS), 1974

According to Chapter V regulation 7, contracting states should ensure that appropriate arrangements are made to convey distress and organize their area of responsibility and to rescue people in distress at sea along their coasts:

Each Contracting Government undertakes to ensure that necessary arrangements are made for distress communication and co-ordination in their area of responsibility and the rescue of persons in distress at sea around its coasts. These arrangements shall include the establishment, operation and maintenance of such search and rescue facilities as are deemed practicable and necessary, having regard to the density of the seagoing traffic and the navigational dangers, and shall, so far as possible, provide adequate means of locating and rescuing such persons.

Each Contracting Government undertakes to make available information to the Organization concerning its existing search and rescue facilities and the plans for changes therein if any.

Passenger ships to which chapter I applies shall have on board a plan for co-operation with appropriate search and rescue services in the event of an emergency. The plan
shall be developed in co-operation between the ship, the company, as defined in regulation IX/1, and the search and rescue services. The plan shall include provisions for periodic exercises to be undertaken to test its effectiveness. The plan shall be developed based on the guidelines developed by the Organization.

Besides, regulation 8 requires the contracting states to arrange for life-saving signals to be used by SAR facilities engaged in SAR operations to communicate with vessels in distress:

Contracting Governments undertake to arrange that life-saving signals are used by search and rescue facilities engaged in search and rescue operations when communicating with ships or persons in distress.

2.4. International Convention on Maritime Search and Rescue, 1979

By Resolution A.406(X) of 17 November 1977, the Assembly of the International Maritime Consultative (IMCO) resolved to convene an international conference to consider the adoption of Maritime Search and Rescue (SAR) Convention. The SAR convention aims to develop and promote search and rescue by establishing an International SAR plan responsive to the needs of maritime traffic for the rescue of persons in distress (SAR, 1979). Where an accident occurs, the SAR organization will coordinate the rescue of persons in distress at sea and, if necessary, cooperate between neighbouring SAR organization by enhancing current arrangements, providing a basis for conducting SAR operation at sea and establishing an international SAR strategy.

This issue has been the subject of discussion in International, regional and local forums trying to identify the reason why some nations have not been able to establish SAR coordination centres. Several developed and developing countries are fully complying to assist people who are in distress or imminent danger. Countries that have installed search and rescue systems are saving lives daily at sea due to the required techniques that are in place. International, humanitarian search and rescue system that
uses satellites to detect and locate emergency beacons carried by ships, aircraft, or individuals.

Even though “the IMO has established an international SAR Fund to aid and assist the developing countries to fulfil their obligation under SAR and SOLAS convention, including establishment and maintenance of sub-regional rescue coordination centres”, the government of Comoros remains inadequate for the effectiveness and efficiency on SAR operation at its respective territorial water (IMO News 4, 2000).

Incidents should be prevented or reduced by finding the lacunae which the country is facing in respect of its SAR system. It is worth noting that Comoros is not a party member of the SAR Convention at the meantime it does not have standard equipment to assist people in distress but depending on the regional and nearby countries' rescue centres such as South Africa, Reunion and Tanzania, which provide in many time assistance during the occurrence of distress call.

2.5. The international Convention on salvage, 1989

The Convention was adopted on 28th April 1989, and coming into force on 1996. It replaced the 1910 Brussels Convention on the Law of Salvage, which introduced the principle of “no Cure, no pay” in which a salvor is only paid for services if the operation is successful. The Brussel Convention did not take into account pollution incident because the salvor was not getting compensation when he failed to save the ship or the cargo even he succeeds to prevent major pollution.

The 1989 Convention attempt to address this deficiency by providing for an improved salvage award that takes into account the skills and efforts of salvors to avoid or mitigate environmental harm. The obligation of the State to carry out search and rescue operation was highlighted under article 10 paragraph 1 of the convention by stating that every master is bound, so far as he can do so without danger to his vessel and
persons thereon, to assist any person in danger of being lost at sea (Salvage Convention, 1989).


One of the Non-Conventional Measure is the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, 2016. IAMSAR manual aims to help countries to fulfil their needs, and accept the obligations mentioned under the Convention on International Civil Aviation, SAR Convention, and SOLAS Convention. Apart the conventions that serve as binding instruments requiring States to provides SAR rescue services in their areas of jurisdiction, there are also guidelines and recommendations adopted by IMO and ICAO aimed at helping States to fulfil their humanitarian obligations to develop and sustain SAR services. The guidelines for a common Aviation and Maritime strategy for the organization and provision of SAR Services are given under three volumes of IAMSAR manual. ICAO and IMO jointly published the manual primarily to assist States in developing, controlling, executing and organizing their SAR activities.

Each volume may be used as stand-alone documents or together with two other volumes as ways to get a complete overview of the SAR system. An example of a common strategy is the use of the same message’s format which has been mentioned in the International Aeronautical Maritime Search and Rescue Convention (IAMSAR) manual Volume 2, (2012) to eliminate confusion between Maritime distress and aviation distress. The contents of the manual's three volumes are:

- **Volume I**: this guides the development of and successful management of the SAR organization.
- **Volume II**: this provides useful guidance for how rescue operations should be conducted
- **Volume III**: this includes detailed information on mobile facilities to be brought on board rescue units, aircraft and all SOLAS ships.
2.7. National policy providing SAR services

The subjects for maritime SAR are governed by the International Convention on Maritime SAR. With this convention, the international framework for the provision and coordination of maritime SAR services was first developed. It was adopted in Hamburg, by an international conference in April 1979. This is as its title implies, intended to improve present procedures and the procedure for performing searches and rescue operations after the collision at sea. Search and rescue services perform a range of operations, such as assistance to ships and vessels in distress, prevention of collision, search and rescue, a medical consultation and transport of patients from sea areas to shore.

It is imposed obligation in the contracting government to coordinate SAR services for the provision and for the creation of cooperation processes with national authorities where vessels or aircraft of the third country also engage in SAR operations. The International Convention on Maritime Search and Rescue (SAR) 1979 as amended is designed “to improve existing arrangements and provide a framework for carrying out search and rescue operations following accidents at sea”.

According to chapter one in the annexe of this convention, the terms “search” is an operation to locate persons in distress by using available personnel and facilities and “rescue” is an operation to retrieve persons in distress and deliver them to a safe place (SAR, 1979). To provide such assistance efficiently, a member state should be established nationally or in cooperation with another state, rescue coordination centres to meet the requirements mentioned in paragraph 2.2 of the SAR Convention.
2.8.1 National SAR Management

According to the regulation for the creation of the National SAR committee, the SAR administrative teams are described as the different ministries, ANAM and ANACM which have the authority to recruit, to plan and organize the SAR services.

The operational team responsible for SAR activities is the Comoros Coast Guard. Apart from the operation, the G.C.C should provide training, drill and familiarization to the person doing the SAR operation. However, the terms and conditions of employment and staffing are not fully suitable for maritime administration personnel and local ship inspectors.

A successful administration needs to create an atmosphere that aims to maintain current employees, and not just to recruit people to join and offer their best every day. Retention of highly skilled, efficient and qualified worker will give the organizations a competitive advantage according to Hertzberg’s two-factor theory. This theory takes into account two factors: motivation and hygiene. Factors of motivation include an appreciation of successful results, jobs and career paths. Hygiene considerations include remuneration, benefits and relationships with managers and employees. Both factors implement in the workplace through a comprehensive salary and benefits plan, team-building workshops are built and ways of identifying good results are generated.
2.8.2 National SAR legal framework

The national legislation contains the provision on the responsibility of the state and vessel flying its flag to render assistance for a vessel in distress is highlighted under the merchant shipping code of the Union of Comoros. The IMO has developed various international regulations which Comoros is a party member of some of them, requiring both the member State and the master of a sea-going vessel to provide care to those who may find themselves in distress at sea.

The national coordinating committee is composed of a representative of the president of Comoros and 7 representative of various ministries as well as a representative of National Agency of Maritime Affairs and the National Agency for Civil Aviation and Meteorology, and the head of the JRSC.

Once a distress message is received from a ship, a committee will be established to discuss the decision to make for the rescue operation. Different administration including ANAM, ANACM, GCC, and APC will be sent their focal point in charge of SAR to decide on their behalf to make the rescue operation more successful. The composition of the National SAR Committee in charge of SAR services in case distress alert was established according to the resolution N°10-007/MTTI. The members of the committee will be responsible for any appropriate coordination with the departments concerned within their respective organizations.

2.8.3 Responsibility of the key officials in charge of SAR in Comoros

1) Ministry in charge of transport:

The Ministers of Transport with the assistance of ANAM and ANACM is responsible:

- To chair the national SAR coordination committee and secretariat will be provided by the study and coordination service search and rescue;
- To establish and provide aeronautical SAR services and maritime services and ensure that the planning of these either be coordinated. This task includes
setting a provision of appropriate legal and financial assistance, SAR policy
development, coordination of training SAR. And supervision of the
aeronautical and maritime SAR system; to lay the foundations for the
organization of research and rescue and ensure its proper functioning;
➢ To ensure the establishment and proper functioning of the aeronautical and
maritime SAR organization; to ensure that the JRSC is suitably equipped with
staff; to bear the cost of fuel, oil and lubricants used by aircraft, ships and
private vehicles or
➢ Liaise with IMO and neighbouring States to facilitate SAR operations;

2) Ministry of Defense

The Ministry of defense with the help of Comoros Coast Guard is responsible:
➢ To make the communication channels of the AND available when necessary
during a SAR operation;
➢ To provide services, crews, vehicles and rescue ships when necessary, under
the overall coordination of the JRSC, during a SAR operation;
➢ To provide crews, aircraft, ships and research equipment when necessary
during a SAR operation;
➢ To bear the cost of all vehicles, machinery and equipment defense personnel
engaged in SAR operations, unless an agreement has been concluded with the
Ministry of Transport for the expense of this cost;
➢ To bear the cost of repairs to aircraft and buildings, military vehicles and
equipment that would have been damaged or which have become unusable
resulting from SAR operations.

3) Ministry of the Interior

The Ministry of the Interior is responsible:
➢ To supply the crews, ships, aircraft and equipment available to it during a SAR
operation;
➢ To secure the accident (accidents);
➢ To take care of the deceased persons and the effects personnel of victims;
➢ To bear the cost of the use of its personnel, vehicles, machinery and equipment
during a SAR operation.

4) Ministry of Health
The Ministry of Health is responsible for:
➢ The provision of personnel, equipment and medical services during SAR
operations
➢ Take care of injured and deceased persons;
➢ To bear the cost of making its staff available, equipment and services during
SAR operations

2.8.4 Conduct of National SAR Operations
In the event of the initiation of SAR operations, the determination of the probable
accident zone with the Joint Secondary Rescue Coordination Centre (JRSC), under the
relevant international agreements. The determination of the search zones is established
based on the probable accident zone. According to the actual national SAR legislation,
the operations should have managed as follows:
➢ The ANAM and ANACM manages operations through the Joint Secondary
Center for the Coordination of Research and Rescue under the authority of the
Ministry of Transport and the Ministry of Defense,
➢ The management of Maritime SAR resources belongs to the ANAM.
➢ The management of air assets is the responsibility of the ANACM,

The conduct of rescue operations is the responsibility of the army in collaboration with
the competent authority of the site of the disaster.
The organization of rescue in the event of an accident occurring in a port or an
aerodrome, or their vicinity, falls to the search and rescue brigade of this place.
The procedures relating to the first aid mentioned in the previous paragraph are defined by the Joint Secondary Search and Rescue Centre, to facilitate cooperation between the various search and rescue services and the accident investigation services.

2.8. Regional SAR Policy

According to Chapter 3 of the SAR Convention on “Co-operation between States”, requires Parties to coordinate search and rescue organization, and search and rescue operations with those of neighbouring States where possible (IMO, n.d). This Chapter states that unless otherwise agreed between the States concerned, a Party should authorize, subject to applicable national laws, rules and regulations, immediate entry into or over its territorial sea or territory for rescue units of other Parties solely for search and rescue.

Regional states with the help of IMO and other UN specialized agencies established a cooperation to maintain SAR in full compliance by creating a rescue coordination centre. In Africa, regional SAR was established in different countries to coordinate search and rescue operations among neighbouring states “where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring states for this purpose” and “when whenever necessary” as highlighted in chapter 3 of the SAR Convention (UNCLOS, 1982 & SAR Convention, 1979).

The Union of Comoros has a multi-lateral agreement with other states involved in the regional SAR plan namely Madagascar, Mozambique, South Africa, Namibia and Angola. Also, the Indian Ocean Commission (IOC) include Madagascar, Comoros, Seychelles, Mauritius, Reunion, Kenya, Djibouti following Maritime Security Program (MASE Program) project has created two joint centres dealing with SAR services in Seychelles RCOC and Madagascar RMIFC. The Maritime Security Program (MASE Program) agreement objectives according to article 3 are “to lay the basis for a regional cooperation framework amongst the state parties to enhance
maritime safety and security in the regional maritime zones by the national sovereignty, territorial integrity and non-interference in the internal affairs of States per national and international law”.

Several agreements have also been entered into force between African states and treaties signed for regional cooperation in ocean governance. Most notable among the treaties is the African Maritime Transport Charter of 1993 as amended, which calls upon African states to cooperate in enhancing maritime transport and ensuring that maximum benefits are reaped from it. Another positive development in regional cooperation in the governance of Indian ocean areas has been the establishment of the MRCC in Mombasa (Kenya), and the Regional MRSC in Victoria (Seychelles) and Dar Salaam (Tanzania).

The Mombasa centre and the two sub-centres were funded by the International Search and Rescue Fund. Those centres provide a much-needed search and rescue capability along the coastline of East Africa and improved security for seafarers whose vessels transit the waters of the Indian Ocean along the African coast. The regional agreement has highlighted the following point concerning the SAR operation at the regional level:

1) Logistics

Logistical support for SAR operations is at the expense of each deploying country (involved) conducting (requesting the SAR assistance) the operation. Each Party shall bear its costs arising out of joint SAR operations outside their respective territories and territorial waters. However, if the operation is being conducted on behalf of another country, the cost may be recovered by prior arrangement. The entry of the supporting logistics is immediately allowed into the search territory, to support the SAR effort, but remains subject to the domestic law of the respective counties. The involved Parties shall endeavour to render all necessary assistance to enable the required foreign logistical support.
2) **Financial procedures**

The deploying of the SAR resources (logistical and operational) remains at the cost of the countries deploying for the SAR assistance requested. The cost may be recovered from the country requesting the SAR assistance, or the country on whose behalf the operation is conducted, subject to prior arrangement. All countries participating shall endeavour to establish procedures wherein such financial support is supported. Financial requirements are not limited to the SAR operational requirements but include, and are not limited to: accommodation, food, sustenance allowances, travel allowances, medical support and repatriation costs.

3) **Trans-boundary movements of SAR personnel and equipment**

The Trans-boundary movements of SAR personnel and equipment (logistical and operational) remains subject to the law of the respective countries and conditions laid down by its authorities as well as other Common Procedures established in the Regional SAR Plan and includes the Facilitation of Entry of Search and Rescue Units, Stop-over assistance and the operational deployment of the SAR Teams. The SAR host country is to:

- Allow the SRUs (operational and logistical) immediate entry into its territory to conduct the required SAR,
- Land or berth, at diplomatic airfields and harbours respectively, without diplomatic authorization subject to prior agreement between the competent RCCs. The SAR host country/RCC shall endeavour to render all necessary assistance related to stopovers in terms of this Regional SAR Plan,
- Be allowed to correspond directly to the deploying countries concerning relevant SAR matters and directly to deploying foreign SRUs.

4) **Medical insurance and assistance to SAR personnel**

Medical insurance and assistance to SAR personnel (operational and logistical) are at the expense of the SAR host country regardless if the SAR host country RCC is executing the SAR effort or if it is done on behalf of the SAR host country. This
medical insurance and support obligation on the SAR host country is only applicable once the SAR personnel has entered, and lapses, once the SAR personnel, have exited, the territory of the SAR host country. Medical insurance and support may remain the responsibility of the deploying country subject to an agreement before the deployment of the SAR personnel.

5) Responsibility for injury and damage
The responsibility for injury and damage lies with the SAR host country regardless if the SAR host country RCC is executing the SAR effort or if it is done on behalf of the SAR host country. This responsibility is subject to the injury or damage not to have been caused due to negligence on the part of the person, or craft operator, and such injury or damage was suffered within the territory of the SAR host country in support of the SAR effort. The SAR host country has the right to investigate the incident from which such injury or damage resulted and to claim the costs involved from the parties involved. The claim of cost is subject to:

- The injury or damage suffered not due to negligence on the part of the person or craft operator,
- Injury or damage caused by a fellow countryman of the SAR host country resulting in the SAR host country effecting medical support or craft repairs and claiming the cost from the offender,
- Injury or damage caused by a fellow countryman of the SAR participation country resulting in either the SAR host country affecting medical support or craft repairs and claiming cost from the offender or the SAR participating country may be allowed to resolve the matter within its territory and subject to its domestic laws and regulations,
- Injury or damage caused by another SAR participating countryman resulting in either the SAR host country affecting medical support or craft repairs and claiming cost from the offender or the SAR participating countries may be allowed to resolve the matter between each other.
6) Documentation of response operations and related costs
The collection of documentation on SAR response operations and related costs is the responsibility of the SAR host country, regardless of the SAR host country RCC is executing the SAR effort or if it is done on behalf of the SAR host country, and is supported by the SAR participating countries. SAR participating countries must endeavour to provide the required documentation to the SAR host country without delay.

7) SAR System Funding
States should consider whether the level of funding provided for their SAR systems is sufficient to develop and/or maintain the required SAR service per their obligations as signatories to the relevant aeronautical and maritime SAR conventions. SAR agencies may need to present business cases to their governments outlining where additional funding is required. Such business cases should include consideration of amendments to existing State SAR arrangements which may provide more efficient delivery of the SAR service by better utilizing existing funds. For example, establishing a JRCC instead of operating a separate ARCC and MRCC. States may consider additional funding sources, for example charging a small levy to aircraft and shipping operators for providing the SAR service or seeking company sponsorship for SRUs.
Chapter 3 Research Methodology

3.1. Introduction

This chapter explains the different ways in which data was obtained and analysed. The chapter describes the research methodology, data collection methods and tools, research processes, secondary data, primary data, data evaluation and interpretation, observation and questionnaires.

3.2. Research strategy

The study on this dissertation has been carried out using applied research as it has been conducted to solve practical problems in Comoros as they have some different challenges to those of other nations, while past research conducted in small island developing countries with similar challenges as Comoros.

3.3. Research method

Meeting the objective of the dissertation, a qualitative approach was conducted. Qualitative research is characterized as a market method focusing on data acquisition through open and conversational communication. The qualitative research was used due to data obtained from relatively small samples of people and a micro-view of the issues under review has been given. A big advantage of qualitative research is the opportunity to extensively evaluate and obtain rich informative data on social phenomena through systematic interviews, cultural immersion, case studies and observation, for instance.

3.4. Data gathering methods and tools

The collection of data includes procedures by which academics, scholars and scientists acquire information to test the claims and hypotheses (Hahn, 2018). In this thesis, primary and secondary sources were used for the collection of data.
3.5. Primary Data

For primary data obtained by the researcher for certain purposes from primary sources to reach the goals. On the primary data, questionnaires and interviews were used to gather detailed data relating to maritime SAR facilities. The benefits of questionnaires are that answers are collected in a structured manner, information is collected reasonably quickly and information can potentially be gathered from a large part of a population (Milne, n.d).

3.6. Secondary Data

Secondary data was described as data that was already obtained by another person and that would be reused for other research using statistical procedures (Hoax et al, 2005). Secondary sources were used to search for data concerning maritime SAR services such as common internet search engines like google, google scholar, online library of the World Maritime University and other relevant websites as well as documents relating to the participating countries.

3.7. Questionnaire

The objective of the questionnaire is to present in documents written questions and circulated to respondents, thereby providing more detail to the researcher to achieve the study’s objectives. For this study, questionnaires were sent to the concerned officials on maritime SAR services particularly, the National Agency of Maritime Affairs(ANAM), Comoros Port Authorities (APC), Comoros Coast Guard (G.C.C), Ministry of Fishery, Ministry of Environment, National Agency of Civil Aviation and Meteorology(ANACM), and focal point for SAR coordination. Sample questionnaires were first issued to the student of the WMU for their feedback and modifications accordingly.
Nineteen (19) questionnaires were prepared by the researcher to the respondent who required to answer the questions. Twenty (20) participant were distributed, five (5) responded and fifteen (15) participants did not respond which make for 25 per cent response rate.

The questionnaires were developed based on Appendix H of the IAMSAR Manual Volume 1(2016), where relevant questions were selected and examined in line with the problems identified in the provision of maritime SAR services in Comoros. The questions are divided into two-part, where Part A contains objective questions, and Part B contains subjective questions.

3.8. Interviews

Interviews are a set of objects that are used to collect some data according to (Goddard et al. (2006)). To obtain more detail, it will be obliged to take the opportunity to ask various questions to respondents even performing interview with all concerned parties. The information provided by the Union of Comoros participating organizations was insufficient. As a result, extra effort was made to create contact with the respective regional SAR Centres who are fully participating on distress alert.

The interviews were semi-structured, meaning that we had picked a few areas that we wanted to cover and planned only a few basic questions for the respondent. All interviews within the study region were with appropriate individuals, and all meetings were pre-booked. Interview request has been sent to officials in the national and regional who are dealing with SAR missions. Seven (7) request were sent to the representative of national SAR however, three (3) of them accepted the interview and remaining did not give a sign to respond to the request. Also, a request was sent to five (5) regional official but two of them responded to the interview and others did not. Some were hesitant to provide details, but through interviews, the South Africa MRCC and Reunion were able to provide some details.
3.9. Sampling procedures and techniques

The sampling is described as the number of items or individuals selected in a given population such that the group has been chosen consists of the actions collected in the sample (Wienclaw, 2019). This study aimed to create a research sample where sample participants were selected based on their knowledge, relationships and expertise on the research subject. The participants were selected due to their implication on this subject as they are cooperating during distress alert so the researcher can extract the challenges faced.

3.10. Research process

Formal request letters were sent by the researcher to the respective concerned participants to gain acceptance in this research. The letters expounded briefly the essence and scope of the research. These formal letters were sent by email as attachments and positive responses were received, where acceptance letters were also sent back by email.

3.11. Data analysis

Analysis of data involved an examination of data using a potential array of method to collect information on the data provided to assist with the conclusions (Kte, 2018). In this study, quantitative and qualitative methods were used to analyze data. Data were qualitatively analyzed and the main idea was established in the qualitative method. In the quantitative method, the study used excel program, graphs, figures and tables for convergent reasoning.

3.12. Ethical issues
Ethical considerations were addressed in this study, in which all participants decided to participate by signing the Consent Form in writing. Besides, it is mentioned earlier that the agreement to take part in the study was also described in the official letter of acknowledgement. In respect of the right of respondents by giving them full insurance on confidentiality, the information provided by the participants was used for the search purposes only.

3.13. Research limitation

This thesis has the below limitation as it is always the same in all studies.

- Participants may not provide the exact information in response to the questionnaire because some questions were not well understood.
- Other participants hid the required responses by responding differently to avoid the implementation of international treaties and national legislations.
- Questionnaires may not answer to all participants.
Chapter 4 Results and discussions

4.1. Introduction

Data analysis was conducted by using Internal analysis and External analysis. The focus of internal analysis was to evaluate all facets of the institution itself. While the behaviour of other organizations movements may often be taken into account through internal research, they primarily linked to the intrinsic features of the entity at hand. This analysis will help the researcher to identify both strong and weak aspects of an organization without taking into consideration the performance of external organizations. Despite internal analysis, external analysis was less about the organization itself, and more about its business the market environment.

4.2. External analysis

A survey analysis asking the decided question “Will the Union of Comoros be implemented and enforce SAR convention in your opinion? How will it be handled and what will its consequence? How it will impact? To answer that an environmental scan is a valuable form of technical analysis, which can be used as part of the business strategy of an organization. Many types of environmental scans analyze external factors that may potentially influence the atmosphere in which an organization operates such as PESTEL. In 1967, Aguilar created PESTLE as a method and technique for scanning the business environment. After that, Arnold Brown made modest changes to this form of study for the Institute of Life Insurance (in the USA) as a way of organizing the results of his environmental scanning. The result of the scan will establish recommendations to the researcher.

4.2.1 Political factors

Threats

The ratification and enforcement of the Maritime SAR require political endorsement. A major political effort could be made to introduce adequate Search and Rescue services. The key issues raised in the politic arena, whether the government has
sufficient fund to establish SAR agencies particularly adequate training and SAR facility. According to the response in the questionnaire, National SAR plan was elaborated, however, no approval in the government level was done due to political reason and other influences, leaving behind the obligation under the merchant shipping code. The national SAR plan allows drawing the zone of responsibility under the international regional plan structure, to make in consideration of the border limit use as the zone of responsibility between neighbour country.

**Interview 2:** One of the big problems is that there is not efficient coordination between the concerned parties and the government. This happened because of the political difference between administration where every entity wants to show that there are the one in charge as they have various nationalist views. There is a big challenge as it is clear that there are misunderstandings amongst the role players particularly clear communication.

Also, most of the entities coordinating SAR and the government do not have clue on maritime issues lead to lack of awareness. Furthermore, there is political instability in the country which created a big gap in many sectors particularly in the shipping industry. Even, in countries that are perceived as politically stable, political changes can have a significant impact, leading to a less regulatory relationship.

**Opportunities**

**Interview 1:** “Many national legislations are being established to go with the provision of the SAR Convention. In addition, the national SAR plan was established and signed by different ministries waiting for the office of President to enact and make as national legislation.

Since the national SAR plan has not been adopted and there is no national SAR coordinator, the management of national SAR is threatened between the ministry of transport, the coast guard and the port authority. However, once the national SAR plan will be adopted, the competent authority in the legal basis to carry out the SAR
operation will be Coast Guard and the competent authority in the coordination of SAR will be the SAR national Committee.

4.2.2 Economic factors
Threats
The vessels working between islands and regional area are the non-conventional vessels and used to supply the islands food self-sufficiency importantly from Tanzania and Madagascar. As the carriage by sea is adversely affected by the inadequacy of the port facilities, small boats less than 500 GT are the one accepted to enter inside the port and remaining should stay inner anchorage for discharging and loading operation through barges particularly Moroni port and port of Bwagoma in Moheli.

In addition, the state has limited available and accessible resources to respond to distress alerts. The lack of the allocation of financial resources and funding to deal with SAR operation has reduced the number of operational vessels navigating between islands and the neighbouring states making the national economy to decrease exponentially as the country is importing 70% of goods through shipping.

According to the survey, the resources used for SAR operation are originated through some private and public individuals that the committee requisition their equipment when necessary but the state does not have the means for maritime or air SAR facilities. In other words, the absence of adequate state-owned means, we requisition any floating craft available at the port to respond to distress calls.

Opportunities
Private and public are willing to support financially and other means to make the SAR operation to be more successful. It is to note that without their equipment and willingness to assist the SAR operation will not be efficient and effective.
4.2.3 Social factors

Threats
People’s mistrust of officials, authorities’ lack of knowledge of events, lack of awareness of the significance of distress alert, gaps in perception of crisis-related concepts on the part of authorities and concerned parties are regarded as threats to the socio-cultural fields.

Companies operating in the maritime sector has decreased tremendously due to the negative effects on maritime tourism and the number of accidents occurring at sea. Many Comorian see declining levels of trust, whether it is their confidence in the federal government and elected officials or their trust of each other. The trust issue in the public and the interpersonal sphere has made it harder to solve the problem at the national level. The absence of SAR services and implementation of safety measures provide the population with the benefit of the doubt about sea transport. In the fishing sector, for example, the fisher has to carry out his activities closer to the shore working between sunset to midday to be visually seen from shore when he is in danger.

Opportunities
The implementation and enforcement of SAR Convention will provide the society with trust on the maritime transport as they are aware that in case of an accident at sea, there is a team who can provide them assistance.

4.2.4 Technological factors

Threats
On the contrary to the advancement of technology found in many countries, the government of Comoros has a low technological capability in term of detecting or relaying distress message. A lack of technological equipment generates an absence of monitoring the marine traffic at the international standards and in all environmental conditions. In addition, there is inadequacy on data saving and reporting systems in case an incident occurred.
Distress message is received through VHF radio (Mostly a handheld VHF radio with small range) belong to the port control and coast guard however relaying distress message is quite difficult or let say impossible due to the radio station facility’s equipment they possess. Regional distress messages and emergency alert are sent via email to the focal point of SAR operation so he/she can forward to the parties concerned. Other equipment such as Navtex and Inmarsat C is not operational or not present for the transmission and emission of a distress alert.

According to the survey, Comoros’ radio station can’t relay distress message by radio communication system because the SAR equipment is not operational, the coast guard has VHF and HF/MF. AIS and the port authorities have VHF and HF/MF only. Abundance

**Interview 4:** Only the port of Moroni and Anjouan have the VHF and HF/MF equipment however the port of Bwagoma has only handheld VHF radios used by the port.

According to the survey, most of the fishing vessels do not have communication on board. In case a vessel fails to arrive on time, the committee will send an email or make a call to alert the regional MRSC and MRCC of South Africa, Mozambique and Tanzania so they can scan the area if they can detect the vessel lost. Example, boat “Ville de Fomboni” has sent distress message when it was underway to Comoros on 26 December 2017. The SAR national committee was obliged to inform the MRSC of Tanzania to take action and MRSC Dar Es salaam success to tow the vessel to one of the nearest port which was Mtwar port.

**Opportunities**
The installation of standard GMDSS equipment for all port will provide great support for SAR services as well as other equipment and vehicle used for communication, for
detection, for the warning, and for operations in case of any incident happened to the sea.

4.2.5 Environmental factors

Threats

Situated in the northern part of the Mozambique channel, the Comoros islands is exposed to unpredictable weather condition. The oceanography of the Mozambique channel was unknown until ten years ago, when the presence of highly complex eddies several hundred kilometers long, mostly in dipoles that formed in the area around Comoros. As it is flow, around the northern part of Madagascar, both cyclonic and anti-cyclonic eddies are formed and make the island of Comoros exposed to that weather.

Due to lack of meteorological equipment, weather forecasts and navigational warning are not published for the use of navigational purpose. Therefore, the vessels operating in the country remained vulnerable to the weather condition particularly the small vessel and fishing boats. According to the findings for the audit report in March 2019, the maritime administration does not have a procedure for broadcasting marine weather to users and there is not designated service dedicated to broadcast urgent messages relating to the safety of navigation.

In the artisanal fishing sector, breakdown of the outboard engine due to overheating is one main causes of the accident at sea. Besides, fishermen are getting lost during bad weather and sea condition as they are not using safety equipment, instead, they are taking bearings of the mountain peaks of the islands to navigate. Anytime the visibility becomes less, the life of the fisher is put in danger.

As the country does not keep a record on the maritime incident, only the below record was being found through the FAO portal. It was recorded during research and workshop held by FAO and SWOFISH in 2008 in Comoros. Through the below report,
it is showing that more than hundreds of lives and canoes are lost each year. Indeed, life lost is increased every year with different reasons but most important the weather condition. It is well known that the Mozambique channel is exposed to bad weather condition with cyclone and anticyclone occurring many time every year.

Table 1: Source FAO & SWIOFish (2008)

<table>
<thead>
<tr>
<th>Year</th>
<th>Boats lost at sea</th>
<th>Lives lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>41</td>
<td>100</td>
</tr>
<tr>
<td>2004</td>
<td>24</td>
<td>120</td>
</tr>
<tr>
<td>2005</td>
<td>21</td>
<td>105</td>
</tr>
</tbody>
</table>

4.2.6 Legal factors

Threats

The delay in ratification of international conventions and regional agreement poses a challenge concerning the cargo and passenger ships particularly non-conventional vessels operating in the national water. The number of people lost at sea is still increasing because the government did not take the advantage to ratify the SAR Convention. They are aware that if an incident happens in their territorial waters, they cannot provide full assistance even though the resolution No.14-030/Au under article 22 of the Comoros merchant shipping code highlighted that the state and vessel flying its flag should assist the ship in distress.

Opportunities

To fulfil the responsibility under the resolution No.14-030/AU, the committee has elaborate policy according to chapter 5 of the multilateral agreement reading together with Chapter 4 of the same as well as Chapter 1 of the IAMSA manual Vol. 1, specifically 1.3. National SAR Plan is not yet enforced however the government elaborated the following regulations:

- Resolution N°10-005/MTTI for the establishment of search and rescue Sub-center for ships and aircraft in distress at real-time
- Resolution N°10-004/MTTI for the obligation on the carriage of the emergency beacon on board ship
- Resolution N°10-007/MTTI for the creation et description of the committee for the National coordination of search and rescue
- Resolution N°12-08/MPTPNTICTT for the establishment of National SAR Plan (Resolution signed by Minister of Transports, Minister of Health, Minister of Defense and Minister Interior Affairs)
- Joint Resolution N°12-02/DCPDST et N°12-019/MPTPNTICTT for the organization and operation of search and rescue services for aircraft and ships in distress in peacetime.

4.3. Internal Analysis

This section analyzes internal key factors causing the Union of Comoros not to ratify and implement the SAR Convention. This is partly based on the input from the interview sent to various concerned administrations on Maritime SAR services.

4.3.1 Resources

There is not an accurate picture of the resources required for the establishment of SAR services as the State has low income in term of the national economy. To relocate a Maritime Search and Rescue Sub-Centre (MRSC) in Comoros should spare too much money particularly in term of facility and SAR equipment. As the findings show, there is not building designed as SAR Facility even there is, it should need GMDSS radio equipment according to SAR requirement.

**Interview:** In term of SAR Communication equipment, there is not resource allocated for renewing or purchasing equipment. Full equipment of VHF Coast radio station including a D/F, MF TX station and MF RX station for GMDSS technical standard as well as Inmarsat C and landline telephone and fax are required which may cost a huge amount.
According to the survey, in term of Nautical equipment, Coast Guard has one small landing craft for logistic supply and one patrol boat but it needs urgent dry docking. This is due to lack of maintenance budget and the navy is still continuing to increase rusting of that equipment in the port. In case, there is a distress call the government should take any available boat in the port for the rescue operation.

The government does not have technicians for the prevention and accidental maintenance equipment. And due to the lack of land infrastructure to receive a VHF call much of the time, the system is considered also under-operated. Having a DSC equipped with a system can transmit a selective call to a dedicated coast radio station can automatically transfer the call to a trunk connection. For the establishment of that equipment, it will be very important to see the cost-effectiveness of this system if the parties concerned agree on this solution to make Coast radio station network available.

4.3.2 Maritime SAR Training

The shipping sector is not well considered in Comoros for long time. Most of the seafarers in the country are old fishermen or follow familiarization onboard and they do not have any STCW certificate according to IMO requirement. Meantime in the maritime administrations, 15 out of 20 of the personnel do not have a maritime background. In the control tower of the three ports, less than 4 personnel have GOC certificate which is issued by the government of Egypt and Tanzania which.

According to the survey, two officers of the APC have been participated in SAR workshop and can share their knowledge with MRSC personnel. However, this number is not sufficient to overcome the need for the three ports. But specific preparation for maritime SARs should be conducted locally in particularly priority staffs. Such training can be carried out with the assistance of technical cooperation regionally and internationally.
1. The objective of the SAR training

Training is vital to performance and safety, means saving people in distress where necessary and risks to personnel and facilities (IMO & ICAO, 2016). Regarding SAR knowledge and skills, there is, unfortunately, no unified International requirements, such as STCW 78/95 for merchant ship crews, to build basic knowledge, comprehension, experience and technical skills, etc. This may be because the number of SAR service workers to be trained is limited, as well as the fact that SAR services are not so much internationalized and have little to do with commercial interests, so it is not appropriate to control unfair markets compared to merchant shipping crew training.

The aim of the training is by developing SAR specialists to meet the objectives of the SAR system. Because of considerable experience and judgment are required to handle a SAR situation, it takes significant time to learn the necessary skills. Training can be costly but adds to the productivity of operations. The quality of training will match the quality of performance (AMSA, 2020). To have true professionals and employees who can do the right task on SAR operation at an ample time require a good training program. The expertise and skills required in SAR operations are so important for these workers that they may be unable to perform their duties properly without adequate training, which may even result in the loss of lives to be saved at sea by both SAR workers and these distressed people.

2. Who to train

The efforts to ensure discipline for people who are assigned to perform SAR duties apply to career development. The aim is to guarantee that SAR officers are qualified. In addition, the organization can consider carrying out tasks of ample duration to gain skills and to take advantage of SAR experience in subsequent officer’s assignments.

3. Requirement for training
Search and rescue organizations are responsible for setting up formal training programs for SAR personnel to attain and retain the required competence for their function. SAR staff training should concentrate on both the practical and theoretical implementation of SAR and the following may be included:

- Study of SAR procedures, techniques and equipment through lectures, shows, films, SAR Journals and Manuals;
- To assist or observe actual operations; and
- Exercises in which workers are qualified to organize individual procedures and techniques, or where individual procedures and techniques are organized.
- Operate sophisticated devices in an actual or simulated environment.

4.3.3 Communication

The State has not established a coastal radio station but they are using three radio monitoring stations for the three ports (Moroni, Mutsamudu, and Bwagoma port) to receive only distress messages. However, those stations do not meet the technical requirement for a coastal station. Nevertheless, a coast radio station has radio watch responsibilities under SOLAS and ITU maritime safety regulations, and the discontinuity of radio service can only be determined by a private operator without the coastal State Authority’s approval (Cornillou, 2010).

For distress alert, states should have adequate SAR and GMDSS equipment for the response of emergency. In the same vein of ideas, a study on the proposal for the implementation of search and rescue and GMDSS in Myanmar (Tun, 2000) has chosen the subject to analyze the response to an emergency in Myanmar water and to make the appropriate proposals for the future development and enhancement of the SAR system. The author emphasized that SAR and GMDSS are essential to the future of maritime safety; once they are operational, emergencies at sea will lead to a distress call and the response will be immediate and effective.
Furthermore, according to Kopacz et al., (2001) the authors assert that having a proper level of safety at sea required the introduction of the Global Maritime Distress and system (GMDSS) which will be the key elements on SAR system and preventing ships from polluting the marine environment. They point out that radio-communication technology particularly using GMDSS is one of major factor resulted to improve safety including the modern international legal system that creates the compact set of regulations and requirements.

4.3.4 Strategy

On May 2012, a ministerial seminar was held bringing together all the stakeholder in the maritime domain who will jointly finalize the reference framework for maritime SAR and thus establish the essential strategies for conducting operations at the national level, under supervision, command and control. During this seminar, the ministerial committee was established to supervise and manage the SAR. The Ministerial Committee is the highest decision-making body for Search and Rescue. It is chaired by the Minister of Transport who initiates the search and rescue plan on referral from the General Director of ANAM and ANACM.

However, SAR operations in Comoros remains a challenge because there is no infrastructure able to conduct the operations. The infrastructure depends on the availability of national plan, human resource, and equipment available on the country. Compare to the neighbouring States, the country is not well organized structurally and adequately concerning the provision of the SAR service under their responsibility. According to the survey, once a distress message is received it should follow a certain procedure which is not quite efficient as it is wasting more time before the rescue operation:

- Convocation of the SAR committee and establishment of a crisis unit,
- The committee informs all stakeholders
• Mobilization of resources under the direction of the ministry of transport

• Activate the rescue operation at sea under the command of the head of operations.

• In the absence of adequate means belonging to the state, we requisition any floating craft available at the port to respond to the distress calls

4.3.5 Records

According to the III Code, records should be developed and preserved, as required, in order to provide proof of compliance with the requirements and of the effective functioning of the state. This records should remain readable, easily recognizable and retrievable.

However, the maritime administration in Comoros does not make record as required. Amongst those accidents occurred in their national water, no administration has recorded them or reported to the IMO. Taking example of table 1, the record on the fishing incident was done by the FAO and SWIOFish during workshop in 2008. Since then, there is no further record from any institutions such as minister of the fishery or the National Agency of Maritime affairs. In the national SAR, the report found in the rescue Centre are coming from the regional SAR database.

4.3.6 Authority and responsibility

SAR service in Comoros has a complex hierarchy. A part of the office the president, the Minister in charge of Transport under the supervision of ANAM, is responsible for defining general policy on search and rescue, aircraft and ships in distress on the territory of the Union of Comoros. Thus, he can collaborate with the Minister of Defense, for the policy of triggering and management of operations in areas that fall under the responsibility of the Union of Comoros in terms of search and rescue. With the other ministers, they succeed to establish a SAR committee known as the National SAR Coordination Center.
The National Coordinator is responsible for directing SAR operations. As such, he leads and coordinates the actions of ministerial departments and other relevant bodies involved in search and rescue. It has overall responsibility for preparing for search and rescue operations. The SAR operation is done by the Coast Guard, security and safety officer of ANAM as well as a member of the port authority. Despite this arrangement, the National SAR coordinator suffers from the resource which can facilitate the SAR operation such as a fast boat, communication, and qualified personal.

4.3.7 Allocation of budget and finance

As a developing country, having a standard MRSC is a challenge particularly the modern technology that other States are using. Starting from the SAR building and the GMDSS radio equipment should spare much money without forgetting the equipment for the SAR operation such as a boat. According to their national SAR Plan which is not yet approved, the ministers of finance and budget should set a fund annually designed for the SAR operation. Because there is no implementation of the national SAR plan, the fund cannot be released. Therefore, the SAR committee has to use private and public means to make the SAR operation possible. Through the survey, if there is not vessel from the government, they have to use a commercial ship which is in port or the vicinity for the rescue operation. And most of the case, the government has to request the regional SAR Centre due to lack of capacity. For example, the crashes of Yemenia and Ethiopian in the coast, the government requested the help of the regional and international SAR to search for survivor.

4.3.8 Adequate competence

The authorities responsible for SAR services in the three island are diverse however, less than 15 per cent of all personal has the required training to carry out his assigned
task starting the management to operation. A small number of person have participated in SAR workshop and training. According to the interview, even there is training or workshop outside the country the authority may give to the person not interested in the topic but he just wants to travel only or other different reasons.

4.3.9 Trend analysis

Maritime SAR incidents have various combination of causes, seriousness, and types of vessels. It is small canoes, however, that have traditionally represented a largest category as the State is mostly using those types of boat for traditional fishing, and transporting person between islands. As the country is trying to enhance maritime safety, security and environmental protection to comply with the IMO instruments, marine accidents may decrease particularly if the government accept to approve the SAR plan and proceed to the ratification of the SAR Convention. Unlike other countries Maritime incidents in Comoros are increasing significantly due to lack of resources, qualification, and political engagement to implement measures for search and rescue.

4.3.10 Continuous review and monitoring of performance

To increase the performance in the SAR sector, require to introduce a system to update to track the qualification of the personnel each year as well as crew training, search methods, communication, rescue techniques. In addition, a mobilization of different stakeholder should have established by information sharing and updating all new strategy implemented.

Despite, the absence of strategic plan, lack of resources and qualified personnel, no performance can be reviewed or monitored in the country. The performance will be analyzed once the State decided to implement and improve the SAR services.
Chapter 5 Summary and Conclusions

5.1 Conclusion

Maritime SAR services are an essential part of the maritime safety system and, with the introduction of the GMDSS system, have evolved rapidly over the last few decades. The global picture defined as amended under SAR 79 requires the parties of States to provide SAR services in a consistent and harmonized manner; however, a broad variety of practices have been demonstrated by the parties of states.

The reasons for this study were to assess and determine the factors causing the Union of Comoros not to ratify and implement the SAR Convention. In Comoros as in other countries of the world, maritime incidents often result in loss of human life and material damages, this is the reason why the IMO of which Comoros is a member, puts an emphasis on Search and Rescue(SAR) activities which consist in saving people and/or ships in distress without distinction of nationality, place or circumstances.

The number of Maritime accidents occurring in Comoros is increasing significantly due to the isolation of coastal and island communities and the logistical impediment faced those state. It becomes a challenge for the state to provide prompt response to those in distress by applying maritime SAR services. Maritime SAR is governed by the SAR Convention1979 to improve the present procedure and for performing SAR operations after the collision at sea or other emergency-related matter. The islands of Comoros are not a party of the SAR Convention however due to the geographical aspect and living condition, maritime to transport is main option to travel and trade between the islands and the neighbouring countries.

The reform of new Maritime administration is to support the blue economy of the country by creating the National Agency of Maritime Affairs(ANAM) and coming in compliance with the obligation of the IMO regulations in the domain of safety, security
and environmental protection in order to combat substandard ship and operate in the international ship registry. Maritime transport is exposed to many accidents leading to loss of life and property where the State recorded many disasters in past years such as MV. Majiriha and Merci II. To understand and prevent those accidents to occur, it requires to refer to the national and international legislation discussing this matter such as UNCLOS, SOLAS, and SAR Convention. In addition, the IAMSAR manuals as guidelines for SAR should be put forward in the table.

The ratification and implementation of the Convention suggest that Comoros will be able to incorporate and adapt to the evolution of the recent global trend within the maritime industry, such as compliance with regulations, organizational structure, and equipment, in relation to the current status and emerging challenges.

5.2 Recommendation

1) To have efficient coordination between the concerned parties requires to put aside the difference in view and management between parties. In addition, Communication and information sharing between the SAR representatives should be established to provide teamwork during crisis management. Furthermore, an urgent need of awareness of the national authority to be involved and take in consideration the matter of SAR as the national concern of the government (national workshop, seminar between state, exercises in national level and regional level)

2) In order to implement high-level of national maritime SAR legislation, it is important to operate SAR services so that appropriate can be provided promoting collaboration and cooperation between agencies. A multi-agency approach to the provision of SAR services is widely used whenever possible, as surveys results have shown to formally and effectively include potential
SAR resources providers. At the same time, every single person, the role and obligation of the set out clearly.

3) The government should approve and implement the National SAR plan. This will provide a national strategy to organize SAR programs to fulfill domestic demands and international obligations and to document related basic national policies. It will also promote the life-saving clauses of the IMO SAR Convention, ICAO convention, and some international and regional agreements to which the Union of Comoros is a party member, and related IMO instruments. The overall objective of implementing the National SAR Plan is:
   o To use all available facilities and services effectively, whatever the category of the SAR Mission.
   o Serve as support for provisions on saving lives in accordance with the International SAR Convention, the Convention on International Civil Aviation (ICAO) and other related international instruments.
   o Integrate available resources which can be used for SAR, establishing a cooperative network for greater cost efficiency in the protection of human lives and property.
   o Coordinate all actions for SAR to optimize interventions.
   o Integrate available resources which can be used for SAR.

   o The Plan covers the Aeronautical and Maritime SAR operations, including the provisions for first aid at the scene of distress or near it (a first initial medical assistance of medical advice, medical evacuation, provision of food or clothing needed for survivors, transfer them to a safe place).

4) Each of the three Islands of Comoros needs a local SAR plan complying with the general provisions of the National Plan, but specific to local means. This
allows for quick implementation of SAR operations at the local level. The National Plan is responsible for the overall coordination of the resources of the Comoros and external relations (dissemination of information and request for assistance).

5) Allocation of financial resources and fund for SAR operation should be promulgated by the government which will show a good example to volunteer.

6) Create an efficient agreement on the service level and arrangement between committee members as well as other potential state agencies for the use of their properties, including voluntary agencies for improved cooperation and rescue response to those in distress.

7) Provision should be made of timely and reliable weather information to all the coastal and islands community for decision-making to deter collisions. The National Agency of Civil Aviation and Meteorology should be made conscious to educate coastal and island populations about how to understand the distribution of weather information and the implication of not adhering to such knowledge.

8) non-SOLAS and fishing vessels should be equipped with at least a communication device onboard. The communication equipment will allow the vessels once in distress to call for assistance.

9) With the rise in the number of passenger's vessels calling and travelling around our ports, it is important that we establish a shared understanding and follow a standard procedure to respond to a large number of casualties if we are needed to respond to an incident. It should also be remembered that there are passenger ferries operating within the region at some ports across the world and these vessels also pose a danger to a large number of people needing assistance should the vessel get into trouble.
10) There is an urgent need for capacity building in Comoros shipping industry, particularly on the SAR sector. The manning on GMDSS operation and management is very small in quantity. Training is one of the fundamental elements of maritime services offered to the personnel of maritime SAR, either by individual arrangements or in cooperation with another state. One cannot overemphasize the value of rigorous training for all employee working on SAR missions. The failure of a single link in the often complex chain of action needed in SAR missions can jeopardize the operation’s success, resulting in the loss of lives of SAR personnel, the lives of others who would otherwise have been saved and/or the loss of valuable resources.

Training should suit the goals, i.e. SAR training should concentrate on the functional specifications of the different roles of the SAR structure, followed by a structured evaluation process. Public awareness should also be given a high priority for the purpose of improving public support and understanding.

Rescue coordinator Center (RCC) staff are made up of people trained and able to plan and coordinate SAR operations. If RCC personnel have non-SAR functions, they should take into account additional functions when determining staffing levels required. Staff numbers will vary depending on local requirements, traffic density, conditions seasonal, weather and other SRR conditions. The RCC should be constantly ready to intervene operationally. If the RCC does not have dedicated staff permanently or only has a guard trained in RCC operations, it is necessary to make arrangements to quickly mobilize reserve RCC personnel.

11) To allow quick implementation of SAR operation at the national level, each of the three islands of Comoros requires to have SAR coordination centre. The national policy for SAR is responsible for the overall coordination of the
resources of the country and external relations, the state has described three areas of SAR depending on the geographical position.

12) The state should establish a coastal radio station respecting the requirement of ITU and IMO requirement particularly the installation of a standard GMDSS equipment.

13) The government should establish an infrastructure which can be able to accommodate the personal and SAR equipment for the operation of the search and rescue.

14) Database for the record of incident should be established to monitor the number of the accident occurred during a period as well as the origin so the management team can be able to find a solution for the reduction of ship accident in their national water.

15) The operation team should be qualified or trained for the task assigned so there will not have a big mistake in the future.

5.3 Further area of the research

It is widely agreed that the safety of non-SOLAS vessels and fishing boats constitutes a large range to be reached and established, and not so much is discussed in this paper. A higher profile for the safety of non-conventional and fishing vessels research should be given.
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Appendices

Appendix 1: Questionnaires to the respondent

Identification and detail

Name

Country

Current occupation

Year of experience

PART A

1. Please describe how the country responds to maritime distress alerts in their national waters?

2. What is the competent authority in the legal basis apt to carry out SAR operation and coordination?

3. Does the country have cooperation/agreement with other states or regions dealing with SAR operation? If so, please describe the cooperation and the details of the agreement. Also, please provide a copy if possible.

4. Does the state have a delimitation with neighbouring countries for SAR services? Please describe.

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5. Does the state have infrastructure capable of carrying out SAR operations? If so, please describe the SAR infrastructure and its adequacy with respect to the provision of SAR services in waters under responsibility.

6. Are coast stations available in the country to receive and relay maritime SAR distress messages? If so, please provide the details.

7. What is the process of implementing and enforcing IMO instruments at the National level? Please describe.

8. Are adequate reporting systems in place for departing vessels and expected arrival vessels in all three islands? Yes □ or No □. Please briefly describe the vessel reporting systems.

9. What equipment is used to communicate between coast station to ship and coast station to coast station?

10. Have the persons responding to maritime distress calls attended formal training? If so, is there an established system of certification?
11. Do you have any suggestions for the improvement of the measures used to respond to maritime distress alerts in the future? If yes, please briefly describe.

12. What are the resources available in the country for the provision of maritime SAR services? Please describe the resources and their adequacy.

13. What challenges does the State face in responding to maritime distress calls? Please describe.

14. What official language is used for maritime SAR communications?

15. Please describe SAR operation cases that you may have participated either directly or indirectly in your country.

PART B
16. According to resolution No.14-030/AU under article 22 of the National Merchant Marine Code there is an obligation “to provide assistance for vessels and people in distress”. In your opinion, is the article fully complied? Yes ☐, or No ☐ Kindly provide reasons in brief

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

17. As a decision-maker, what is your vision for the future for SAR services in your country? Please briefly describe.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

18. What challenges are you facing as a government official in the management of maritime distress response, particularly policy making and influence from other officials?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

19. Have you received any report of difficulties or challenges faced in the implementation and enforcement of the resolution No.14-030/AU? For example, issues with other maritime administrations not willing to adhere, shipping companies not supporting the obligation. Please describe briefly.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Appendix 2: Interview questions

1. Is there any legislation concerning SAR Convention?

2. What challenge the national coordination centre in charge of SAR in the country is facing? What is the reason leading to that?

3. Is there any resource allocate for SAR communication

4. Did the three ports have the required equipment for communication?