

**EFFECTS OF MARITIME GOVERNANCE IN HARNESSING THE
BLUE ECONOMY ALONG THE KENYAN COASTLINE**

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DECLARATION

This research project is my original work and has not been presented for examination to any other university.

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DEDICATION

The research project is dedicated to my family, for the love and support they have shown me throughout my academic journey.

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LIST OF ABBREVIATIONS & ACRONYMS

GDP	Gross Domestic Product
IGAD	Intergovernmental Authority on Development
IMO	International Maritime Organization
KCGS	Kenya Coast Guard Service
OECD	Organization for Economic Cooperation and Development
PSMA	Port State Measures Agreement
R & D	Research and Development
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme

OPERATIONAL DEFINITION OF TERMS

Blue Economy	This is a form of the "green economy" made applicable to our oceans and seas. It is an economic development strategy that emphasizes the responsible stewardship and utilization of natural resources in the maritime industry.
Economy	This refers to the economic aspects and activities related to the management and regulation of maritime resources, trade, and shipping.
Maritime Defense	Efficacious state military tactics and operations designed to stop hostile acts against a state's assets, infrastructure, and sovereignty that take place within or close to its territorial waters and Exclusive Economic Zone.
Maritime Governance	This are set of rules, policies that make up regulated frameworks and management practices for institutions that govern the use of the ocean and its resources.
Maritime Safety	Regulation, control, and technological advancement of all forms of waterborne transportation for protecting life and property.
Maritime Security	This includes steps made by maritime security enforcement stakeholders to combat unlawful marine-based activities like piracy, terrorism,

illegal fishing, illicit mining, and human trafficking to advance maritime safety.

Maritime Terrorism

Premeditated, politically motivated acts of violence carried out by criminals against non-combatants, ships, cargo, ports, port facilities, and vital maritime infrastructure in the marine environment.

Piracy

Criminal acts such as assaults and hijackings by boat or ship attackers of another ship or a coastal area with the intent to steal from or extract money from governments as ransom.

ABSTRACT

Kenya's blue economy potential has not yet been fully exploited. It is estimated that the blue economy, if used properly, has the potential to inject up to 4.8 billion US dollars to Kenya's economy and create over 52,000 jobs in the next ten years, this combined with a sustainable approach should make a difference in the protection of the maritime ecosystem domain. The activities commonly understood to represent the blue economy includes maritime shipping, fishing and aquaculture, coastal tourism, renewable energy, water desalination, undersea cabling, deep sea mining and biotechnology among others. The aim of the study was to determine the effect of maritime governance in harnessing the blue economy along the Kenyan coastline. The objectives were: to determine the effects of maritime defense and security along the Kenyan coastline; to examine the effects of maritime safety and ecosystem protection in harnessing the blue economy along the Kenyan coastline. The study was guided by securitization theory. The study adopted a descriptive research design focusing on the coastal county of Mombasa. The study targeted the adult population in Mombasa County. A total of 324 respondents who were involved in the maritime sector form the sample size. However, the target population being small and manageable, purposive and census sampling was utilized to select the participants. Questionnaires were used in data collection. The researcher administered questionnaires to the sampled maritime stakeholders for a multi-agency approach. Data were cleaned before coding and entering into the Statistical Package Social Sciences (version 26) for data analysis. The frequency and percentages tables, mean and standard deviation were used to transform quantitative information into meaningful information. The study adopted a multiple regression model to show the level of significant among the study variables. The findings revealed that maritime security, maritime defense, maritime safety and maritime ecosystem protection significantly affect the harnessing of the blue economy since the P-values are <0.05 significant level. The findings established that robust governance frameworks are essential in mitigating threats such as piracy, smuggling, and illegal fishing, which have historically plagued the Kenyan coastline. The study concludes that maritime security, maritime defense, maritime safety and maritime ecosystem protection significantly affect the harnessing of the blue economy. Effective maritime governance plays a crucial role in harnessing the blue economy potential along the Kenyan coastline. The study recommends that Government of Kenya should continue investing in maritime security measures by strengthening cooperation with international partners, enhancing surveillance capabilities, and implementing effective strategies to combat piracy and illegal fishing activities. This will safeguard maritime resources and create a secure environment for economic development.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A country's improved livelihoods is extremely important. According to the International Maritime Organization (2009), the industry contributes to 90% of global trade and employs more than a million seafarers from all over the world. Over 140 million square miles, or more than 70% of the earth, is covered by the oceans. Over 10,000 oceangoing ships and over 10,000,000 fishing boats can currently navigate the world's oceans, seas, and waterways. More than six billion tonnes of cargo are transported by sea every year, with 46,000 vessels supplying more than 4000 ports with this cargo. Energy supplies now make up a larger portion of that commerce, and it is anticipated that global oil demand will increase by more than 100 million barrels per day by 2025 ((Andrikopoulos, Merika & Sigalas, 2022). The important bit of our trade and success that entails connections and cautious policies ensuring sustainability contains difficulty in estimating its total worth. Implementation of national and international laws and regulations including other instruments help address some problems which were not solved and also ones that may arise in future.

According to Green, Copping, Cavagnaro, Rose, Overhus and Jenne (2019) the possibility of improved livelihoods from a global to the local perspective is a role played by the maritime governance. Environmental, social and economic sustainability are promoted by marine resources and management policies, laws and regulations. Growing recognition globally has been existing concerning the benefits of improving maritime governance to ensure a continuous blue economy. Maritime governance is so effective to the guidance of economic activities taking place in

oceans including fishing, shipping, energy development and tourism. Regulations and policies must be established to ensure that these activities are conducted responsibly and sustainably. Governance frame works must also be developed to address issues such as pollution, overfishing and the degradation of ocean systems. Globally, maritime governance must promote international collaboration and coordination. The ocean is a shared resource that is interconnected and dependent on the actions of all nations. The United Nation has recognized the sustainable maritime governance through its sustainable development goals (SDGs) specifically and in order to achieve this goal, the UN has called for enhanced global cooperation and partnerships, improved experimentation and data collection, the development of sustainable policies and practices (Hidayat, Fanani, Widagdo & Putra, 2021). Sustainable use of the ocean, its management and legal framework is given by the United Nations Convention on the Law of the sea which establishes the rights and responsibilities of states in relation to water bodies, including their jurisdiction over the waters adjacent to their coastlines, guidance of marine resources, and also protection of marine biodiversity (Narula, 2019).

In the United States, the blue economy contributes significantly to the country's GDP, with the maritime sector playing a vital role in driving economic growth. According to the Organization for Economic Co-operation and Development (OECD, 2016), the maritime industry in the U.S. generated over \$33 billion in revenue in 2016 alone. This highlights the importance of effective maritime governance in fostering economic prosperity and sustainable development in coastal regions. Johnson (2019) emphasized the need for robust regulatory frameworks and enforcement mechanisms to ensure the sustainability of maritime activities and the protection of marine ecosystems.

Canada has also prioritized the blue economy as a key driver of economic diversification and innovation. Statistics Canada (2020) reported that the ocean economy in Canada contributed \$31.7 billion to the country's GDP in 2018. The governance of maritime activities in Canada includes initiatives to promote sustainable ocean management and integrate indigenous knowledge into decision-making processes (Davidson, 2017). These efforts underscore the significance of inclusive governance practices in maximizing the benefits of the blue economy while preserving marine biodiversity.

In South Africa, the blue economy has been identified as a strategic priority for sustainable development and social equity. The Department of Environment, Forestry, and Fisheries (2019) highlighted the government's commitment to promoting the blue economy through initiatives that empower local communities and ensure equitable access to marine resources. Bennett (2018) pointed out the importance of community-based fisheries management in South Africa as part of broader efforts to address historical inequalities and enhance the livelihoods of coastal communities.

Countries have invested heavily in maritime governance to reap the benefits that the blue economy portends. The World Ocean Council (WOC) published a report titled "Maritime Governance in the Blue Economy; Overview and Opportunities" in 2020 that provides an explanation of the current state of maritime governance and identifies key opportunities for improving governance frameworks. The Blue Economy needs maritime governance to function (Voyer, Schofield, Azmi, Warner, McIlgorm & Quirk, 2018). For example, Norway has a strong maritime tradition and it's a leader

in the blue economy and through its effective maritime governance, Norway has been able to sustainably harness the potential of its oceans, creating economic opportunities while protecting the environment.

The global cooperation is crucial for implementing effective maritime governance. Planning and financing of programs and developing public-private partnership models to promote blue economy is also crucial (Kraska, 2017). The Development of peace accord provides an opportunity to address the challenges facing global oceans. Regionally, maritime governance in Africa is a complex issue given that the continent's vast coastline, numerous small island states and a range of security challenges, from piracy to illegal fishing. Many African countries rely heavily on marine resources for economic development, including fisheries, oil and gas exploration and shipping. Africa's intercontinental trade is mainly reliant on ships and ports (Lin & Cheng, 2020). Despite the fact that a third of African Nations are landlocked, shipping is still the primary method of accessing the world market.

According to Potgieter (2018), the blue economy presents both significant opportunities and is a fundamental aspect of global economic growth including development. In South Africa, the ocean economy is a significant contributor to GDP as the country has a sizable sea area, a wealth of marine resources, and a sizable maritime infrastructure. Operation Phakisa serves as a crucial part of the blueprint to promote prosperity of the economy. However, the governance in Africa faces a range of challenges including limited resources, weak institutional capacity, and lack of effective ocean management frameworks, which undermine growth impacting the coastal communities' livelihoods.

African governments have had a recognition regarding the challenges addressed and regional organizations have strengthened maritime governance. A key priority has been the development of national and regional policy frameworks, including maritime strategies, maritime domain awareness and human capacity development. African nations have adopted the ambitious agenda 2063, which aims to bring about lasting change in Africa through stronger cooperation, in order to harness the continent's potential (Rudiawan & Saleh, 2019). They can achieve this by capitalizing on development opportunities and harmonious collaboration among countries and stake holders, strong institutional capacity and effective policy frame works to ensure the productive enforcement of sustainable ocean governance practices. Initiatives to develop sustainable and integrated ocean management have been developed by Economic Community of West African states (ECOWAS) and also the India Ocean Rim Association (IORA). Locally, The Kenyan coastline is approximately 623 km on the Indian Ocean presenting a great potential for a rise of a thriving improved livelihoods. A wide range of marine life like fish, corals and sea turtles in the Kenyan waters is a great habitat and has benefited many financially. The total fishing potential of Kshs. 90 billion but only Kshs. 2.3billion was realized and this shows untapped potential that remains unrealized (Rasowo, Orina, Nyonje, Awuor & Olendi, 2020).

Kenya is a country that has made significant strides in harnessing its blue economy through effective maritime governance. In 2018, Kenya launched its first ever Blue Economy Conference that generated over 16,000 members from various regions to discuss ways to harnessing tackle the country's maritime resources sustainably. The conference highlighted the importance of maritime governance in promoting

economic growth and also job creation (Lewis & Ernstson, 2019). The country also launched its Blue Economy Implementation Strategy, which outlines a comprehensive approach to managing maritime activities and resources. Kenya Maritime Authority (KMA) is a body responsible for regulating and promoting shipping, trade and the use of Kenyan waters and is mandated to develop policies and strategies for effective management of maritime resources, protecting the marine environment, and enhancing maritime safety and security. The authority has also been instrumental in promoting the development of maritime infrastructure, such as ports and harbors, which are crucial for countries economic growth (Perwita & Sukma, 2018).

The inauguration of the Kenya Coast Guard Service comprising the 11 multi-agency maritime stakeholders depicts the government's commitment to maintaining maritime defense, security, safety and maritime ecosystem protection as well as pollution control and sanitation (Ruggunan & Kanengoni, 2017). Kenya has developed a range of policies and strategies to promote sustainable maritime development, including the Kenya National Shipping and Maritime Transport policy, The Kenya Maritime Transport and Logistic Master Plan and The Blue Economy Strategy. These policies aim to promote sustainable shipping, improve port infrastructure and logistics and support growth of Kenya's economy. Kenya being part of the Western Indian Ocean Marine Science Association (WIOMSA) encourages marine science and sustainable management of the Western Indian Oceans by bringing together researchers, policy makers, practitioners to discuss the latest trends and challenges in marine science and governance in the region (Markopoulos & Luimula 2020).

According to Rasowo, Orina, Nyonje, Awuor and Olendi (2020) Kenya has made significant strides in harnessing its blue economy through effective maritime governance and through the establishment of Kenya Shipyard Limited which has been mandated to lead and catalyze the development of shipbuilding industry in Eastern Africa with a focus on meeting the local demand of maritime assets and services from the Kenya Navy, Ministries, Departments & Agencies and other private domestic and regional clients, the development of the LAPSSSET corridor project and the fighting against IUU fishing are some of the key initiatives that the country has undertaken to encourage use of marine resources advancing the economy e.g Formation of a government initiative for the six coastal counties known as Jumuiya ya Counties za Pwani which include Lamu, Tana River, Kilifi, Mombasa, Kwale and Taita Taveta county was put in place to promote socio economic growth in the coastal region by providing a platform for county governments to collaborate and coordinate evolution efforts to better the well-being of the coastal region people who mostly depend on aquatic activities for their survival and main economic empowerment.

1.1.1 Maritime Governance

Maritime governance refers to the administration of human actions by governments and other stakeholders (Rasowo, Orina, Nyonje, Awuor & Olendi, 2020). These are set of rules, regulations and institutions that govern the use of world's oceans and seas. There has been a significant effort to establish effective maritime governance frame works at the national, regional and international level, which encompasses big security issues, safety, environmental protection, fisheries management, shipping and marine spatial planning. Effective maritime governance is essential for the development of tackled economic growth with environmental protection including

social equity too. A key principle of effective maritime governance includes the following approaches: Which involves coordination of policies and actions across different sectors and levels of governance with an aim to improve environmental performance and ensure sustainable use of maritime resources (Saeed & Saeed, 2020).

Ecosystem based management aims to maintain the health and resilience of marine ecosystem by considering the interaction between different species and the environment through identification of ecological thresholds and the implementation of adaptive management strategies to ensure long-term sustainability (Potgieter, 2018). Effective maritime governance requires the implementation of robust compliance and enforcement mechanism to ensure that laws and regulations are followed. This involves monitoring, reporting and verification of activities as well as penalties for non-compliance.

Maritime governance is essential for achieving a sustainable blue economy. However, there are several challenges that must be addressed to ensure effective governance. These challenges include the lack of effective enforcement mechanism, the lack of coordination and cooperation between stakeholders, and the need for increased investment in research and development, streamlines issues on jurisdictional boundaries, lack of technical and institutional capacity to implement maritime governance frameworks, lack of modern technology advancement capabilities (Perwita & Sukma 2018). By addressing these gaps in maritime governance will require a concerted effort by all maritime stakeholders that govern the use of the world oceans and seas.

1.1.2 Blue Economy

The blue economy, according to Sheena (2018), is a variant of the "green economy" tailored for our seas and oceans aiming to bring about development. According to Rosa, Juan, and Pablo (2021), blue growth supports the marine and maritime industries' sustainable expansion because the water bodies are a major support system of the global economy and have a big chance to be productive. Gunter Pauli presented the idea of blue economy where all countries must rely on maritime trade in order to purchase and sell products because none is a hundred percent sufficient. Maritime transit is the foundation of the international trade and world's economy and with its much-hyped benefits such as ecosystem and maritime space it does not operate in isolation. Job creation and economic expansion is well recognized by the blue economy as well as roles played by oceans in the global and climate ecosystem seeking to leverage oceans resources enabling balanced economic, social and environmental objectives promoting resilience and sustainability for a long time (Okemwa, 2019).

The United Nation has recognized the blue economy as a key component to encourage 2030 agenda for continuous growth and many countries are developing policies and initiatives to promote the blue economy as the path way to sustainable development (Kiswaa, 2020). Kenya had the honor of hosting the first high-level conference on the subject. Innovations and brand-new systems for the water bodies as well as maritime governance practice have been placed to ensure continuous exploitation of the oceans for economic development for present and coming generations. The potential of the blue economy to the country has not been fully exploited. The major problem that affects the realization of the full potential of the

exploitation emanates from lack of good governance frameworks. Thus, maritime governance must keep working in advancing the blue economy. Previous studies have not been conclusive on the role of maritime governance in harnessing the livelihoods along the Kenyan coastline.

1.2 Statement of the Problem

The coastal region of Kenya holds immense potential for the development of the blue economy, encompassing activities such as fisheries, tourism, shipping, and the sustainable use of marine resources (Guerreiro, 2021). However, the successful harnessing of these opportunities is intricately tied to the effectiveness of maritime governance in addressing key issues. A sustainable blue economy will allow society to obtain value from the oceans and coastal regions, while respecting their long term capacity for regeneration and restoration of ecosystem health. The sustainable blue economy contributes to climate change mitigation by promoting renewables sources like off shore wind and wave energy, reducing greenhouse gas emission, and protecting vital carbon sinks, such as mangroves and sea grasses. The major problem that affects realization emanates from limited resources, lack of effective ocean management framework for regulation and sustainable management of maritime activities. The eastern Africa region faces challenges of illegal and unregulated fishing, piracy and armed robbery, maritime terrorism, illicit trade in crude oil, arms proliferation, drugs and human trafficking, smuggling of contraband goods; degradation of marine ecosystem through discharge of oil, the dumping of toxic waste, illegal sand harvesting and the destruction of coral reefs and coastal forest (Charo, 2021).

Kenya also suffers from fragmented management of coastal zone, lack of capital, minimal participation by citizens, incoherent benefits sharing regime and bio diversity loss amongst others (Bennett, Blythe, White & Campero, 2021). There have been several studies on maritime governance for a sustainable blue economy, highlighting the importance of a holistic approach to managing maritime activities. These studies continue to provide valuable insights into the multifaceted challenges of managing maritime activities and offer solutions for improving governance frameworks and promoting sustainable development. Achievable maritime governance practices require a concerted effort by governments, industry and civil society to build the necessary infrastructure, policy frameworks and capacity to effectively manage and sustainably use ocean resources. However, the effective harnessing of the blue economy is significantly influenced by the prevailing maritime governance framework. This study sought to explore the effects of maritime governance on the successful utilization of the blue economy along the Kenyan coastline.

1.3 Objectives of the Study

The study was guided by the following research objectives;

- i. To identify the effect of maritime security in harnessing the blue economy along the Kenyan coastline
- ii. To establish the effects of maritime defense in harnessing the blue economy along the Kenyan coastline.
- iii. To examine the effects of maritime safety in harnessing the blue economy along the Kenyan coastline.
- iv. To determine the effect of maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline.

1.4 Research Hypotheses

The study null hypotheses included;

H₀₁: There is no significant relationship between maritime security and the harness of blue economy along the coastline.

H₀₂: Maritime defense has no significant effect on the harnessing of blue economy along the coastline.

H₀₃: Maritime safety has no significant effect on the harnessing of blue economy along the coastline.

H₀₄: There is no significant relationship between maritime ecosystem protection and the harness of blue economy along the coastline.

1.5 Justification and Significance of the Study

Investigations have a potential of impacting the growing field on maritime governance. Specifically, the research may inform policy and practice aimed at promoting sustainable use of ocean resources and supporting growth that benefits all stakeholders. The recommendations of this study might be implemented and may enhance maritime governance, maritime security, defense, maritime safety and maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline. The study will aid the business community along the Kenyan coastline to improve the performance of their businesses. The blue economy supports many businesses such as waterborne transport, seafaring industry, commercial ports and marinas, sports and aquaculture farms, marine energy sources, and maritime academies and training facilities are among the industries. This study intends to provide information to maritime businesses. The study will aid in filling knowledge

gaps on the function of maritime governance in harnessing the livelihoods. As a result, academics and researchers can utilize this study as a foundation for research focusing on maritime governance, maritime defense, maritime safety and maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline.

1.6 Scope of the Study

The study focused on effects of maritime governance in harnessing the blue economy along the Kenyan coastline. The study only concentrated on four strategies of blue economy harnessing, namely, maritime security, maritime defense, maritime safety, and maritime ecosystem protection. However, there were so many initiatives which were adopted by varying agencies to improve the blue economy harnessing along the coastline. The study majored on protection of vessel, passengers and also ecosystem harnessing the livelihoods along the Kenyan coastline and the population focus was based on locals and maritime associates.

1.7 Limitation of the Study

Some of the limitations that study encountered include the generalizability and robustness of the findings. One notable limitation of the study lied in its scope and generalizability. Focusing specifically on the Kenyan coastline restricted the applicability of the findings to broader regional or global contexts. The unique socio-economic, political, and environmental factors influencing the blue economy in Kenya differed significantly from those in other maritime regions. Consequently, caution was exercised when extrapolating the study's conclusions to maritime governance scenarios in diverse geographical settings.

When it comes to the collection of data concerning aquatic governance in handling livelihoods along the Kenyan coastline, the attitudes of the respondents were not controllable since they might give out unreliable answers.

Another potential limitation is the reliance on a specific time frame for data collection and analysis. Economic and governance dynamics are subject to change over time, and the study might not capture the evolving nature of the blue economy and maritime governance structures. Long-term trends and fluctuations in the maritime sector could be overlooked, impacting the study's ability to provide a comprehensive understanding of the subject matter.

1.8 Assumptions of the Study

Various assumptions were made in this study and it was assumed that the respondents were aware of aquatic governance in harnessing livelihoods along the Kenyan coastline. It was assumed that the respondents managed to give exact information required. Nevertheless, maritime security, maritime defense, maritime safety and maritime ecosystem protection affected the harness of blue economy along the Kenyan coastline. In conclusion the respondents gave correct information.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers foundational review of empirical literature and proposes the conceptual framework. However, it is also guided by the following: maritime security, maritime defense, maritime safety and maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline.

2.2 Empirical Review

Upon the study of objectives, this section of the study focuses on findings from prior research. It explores, reviews, and summarizes earlier works on maritime defence, safety, security, and ecosystem protection as they are operationalized in this study.

2.2.1 Maritime Security in Harnessing the Blue Economy

Protection of vessels is paramount globally for the improvement of livelihoods. According to the United Nation Conference on Trade and Development (UNCTAD), improved livelihoods have a potential to come up with up to \$3 trillion worldwide by 2030. However, this potential can only be realized if there is a secure maritime environment that enables the continuous use of water bodies. Hostile attacks such as piracy, armed robbery, and terrorism can deter investment in the improved livelihoods and disrupt maritime trade, investments and resource exploitation. Several studies have been conducted to explore similar relations between vessel protection and expansion of improved livelihoods.

Protection of vessels is crucial for sustaining the Blue Economy, according to Voyer, Schofield, Azmi, Warner, McIlgorm, and Quirk (2018). The Blue Economy idea has received a lot of support, specifically in the water body region, from numerous

malware groups. The study looked specifically at the ocean and examined how the improved livelihoods and maritime security agendas have co-evolved and depended on one another. Interests in vessel protection and improved livelihoods were shown to interact primarily in two ways. First and foremost, vessel protection aids in the development of the improved livelihoods such as upgrading specific oceanographic data for the aquatic industry and defending ownership rights of aquatic ecosystem zones.

Waterborne security is essential for the harnessed blue economy as it secures the diverse economic activities in the coastal regions. Chan et al. (2018) examined the challenges and risks faced by the global shipping industry and propose a risk management framework to reduce these risks. The authors discuss the need for an integrated approach that addresses the economic, security and environmental challenges faced by the shipping industries. Similarly, Bjarnadottir and Cao (2019) explore the potential security risks to marine renewable energy in the European Union. The authors suggest a vulnerability assessment frame work for marine renewable energy infrastructure, addressing the threats of cyber and physical attacks, accidents and environmental risks.

The aim of maritime security is to protect economic assets related to the improved livelihoods. Bueger and Timothy Edmunds (2017) in their article “Aquatic protection of vessels security and the improved livelihoods: A Critical Nexus”, the authors suggest that a comprehensive and integrated approach to maritime security is required. They proposed that the coastal states should adopt a holistic strategy that combines law enforcement, maritime governance and international cooperation. Such an approach would involve strengthening maritime institutions, enhancing

surveillance capabilities, promoting information sharing mechanisms and facilitating collaboration between states and other stake holders.

Mello et al (2019) investigated the security challenges and response strategies related to the petrol industry. The author argues that collaboration among stakeholders is crucial especially in assessing vulnerabilities, identifying threats and developing solutions. Barros (2022) acknowledges that, despite Brazil's changed diplomatic goals since 2019, the Blue Amazon paradigm has kept the maritime security and safety issue relatively steady. The author looked at the domestic, regional, and international systems that Brazil's marine security and safety were a part of. Brazil doesn't have any rivals in the region, but the 2019 Black August oil catastrophe, which poisoned a significant portion of the Kenya's coastal side, may be seen as a turning point because it compelled Brazilian officials to re think on how to put the issue in public. The author offers Brasilia three entrance points to consider employing the strategic diplomacy strategy framework in the near future. These relate to international and regional cooperation programmers, Antarctica governance, and the relationships between maritime security and safety.

2.2.2 Maritime Defense in Harnessing the Blue Economy

Effective maritime governance is effective in enhancing maritime security and defense by shaping the security environment in which maritime defense operates in, which significantly impacts the effectiveness of a country's maritime defense strategy. Maritime defense globally involves the measures taken by nations to protect their maritime interests, including the waters in their territories, exclusive economic zones (EEZs) and waters abroad by patrolling, surveillance, interdiction and response capabilities to deter and address security threats at sea. Maritime crimes have

negatively influenced the improved livelihoods activities both on open water and exotic areas and are one of the key barriers to the full exploitation and improved livelihoods worldwide.

Maritime defense supports the improvement of livelihoods by ensuring the safety and security of maritime environment, trade and transportation. This approach is crucial as maritime security is vital for international trade, energy resources, and protection against piracy, illegal fishing, smuggling, and terrorism encourages the maritime stakeholders to investments in the marine industries like shipping, tourism, and clean energy contributing to employment opportunities and development.

Maritime defense and the harnessed blue economy are closely related as they both involve the sustainable use and protection of aquatic ecosystems from maritime threats. A harnessed blue economy can contribute to maritime defense by providing economic opportunities that can deter illegal activities in the ocean. For example, sustainable fishing practices can provide livelihoods for local communities and reduce the need for illegal fishing. This can also promote the conservation of marine resources, which can be crucial for national security. Several global initiatives and frameworks have been established to enhance maritime defense for example, European Union Naval Force Operation Atlanta is a European Union led piracy mission around the Gulf of Aden and off Somalia coastline. Its role reduces piracy and armed robbery at sea, and has been successful in curbing piracy incidents in the region such initiatives have demonstrated the importance of a global approach to maritime defense, emphasizing cooperation, coordination and information sharing among nations. By working together, countries can effectively address maritime security challenges and ensure the safety and stability of the world's oceans.

Globally, several countries have invested heavily in maritime defense. According to Perwita and Sukma (2018), a nation's sphere of national interests develops automatically as its economy grows. In order to better secure its national interests, China has been modernizing its military in tandem with its swift economic expansion. China has also been rapidly expanding its maritime defense capabilities in recent years. It has built a significant naval presence in South China Sea containing territorial rivalries with several countries close to them. China has also invested in advanced naval technologies, including air craft carriers, sub marines and missile systems.

Kenya being a coastal nation in East Africa has recognized the importance of maintaining a strong military defense capability in order to harness its blue economy. Improving livelihoods requires Kenya to secure exclusive space creating safe, secure and favorable aquatic ecosystems. Kenya's maritime defense preparedness involves various aspects such as the protection of aquatic vessels with strategies which in the process intends to create a shared vision for securing the country's security domain, as well as the enhancement of the naval capabilities. The Kenya Navy is responsible for defending and protecting the rights of the republic of Kenya against sea borne external aggression with a primary role of protecting Kenya's Exclusive Economic Zones by conducting maritime patrols, participating in regional and international cooperation, supporting the national development agenda and enhancing her naval capabilities by acquiring new vessels, equipment, infrastructure and training to create a lean, adaptive and mission ready force. Considering the unique geographical location along the Kenya Somali boarder there has been need to improve the security measures since the coastal regions have already accepted the blue economy agenda. Maritime domain has been secured due to the Navy base along the coast.

2.4.3 Maritime Safety in Harnessing the Blue Economy

The studies used as examples to illustrate how important it is to solve maritime safety issues like anti-pollution and emergency response management are crucial in highlighting how the development of the blue economy depends on doing so. The lives of the plants and animals that inhabit maritime habitats are the principal victims of pollution activities in these ecosystems. The blue economy, which depends completely on the health of this ecosystem to exist, is wiped off as a result of pollution of the marine ecosystem, as demonstrated in the many literatures discussed.

In the Markopoulos and Luimula (2020) study, four security training programs and online training technology known as Immersive Safe Oceans were introduced. In immersive training scenarios, these tools can be used to promote professional education. These pilot events were produced for protection of vessels and are now being assessed. Involving Safe Oceans Technology is a lightweight, reasonably priced instrument that may be used on ships or maritime training centers. The introductory events all show Safety at sea and the technology may be used in many effective training sequences. These events demonstrate how crucial virtual reality training is to individuals in the shipping industry. As a result, cutting-edge virtual training facilities will be used onboard for next-generation learning.

The idea of balance scorecard integrated marine process management was examined by Lin and Cheng (2020). According to a number of studies, managers lacked a fundamental understanding of how to use a balance scorecard to assess a maritime course. A balancing scorecard can be used in course design as part of a maritime process management system. In order to determine whether the balance scorecard improved students understanding and comprehension of aquatic processes within

protection of passenger's procedure, students were given a balance scorecard project to complete in a foundational course. It would be better to include a particular diverse and unsystematically chosen aquatic accident sample in future study. A better comprehension of the overall operation of maritime safety process management was gained. Significant attempts are made by maritime industry to ensure eradication of errors leading to adoption of new laws and paperwork not necessarily needed. Not even one of these enterprises provides waterborne commerce and safety. Currently the sea is using proactive strategies to stop repeated happenings by coming up with an efficient measure. Safety measures are how firms act without being noticed.

Aquatic ecosystems may reach the desired and necessary safety levels with a determined culture arising from all levels of the organization (Arslan et al., 2017). The proposed framework gathered data on seafarers' contributes to lead monitoring in order to inspect a company's current level of security climate and address any regions that need improvement in order to raise the bar on safety. To strengthen these susceptible areas, fresh tactics and plans of action were suggested. The choice of safety indicators might be altered to suit the unique requirements of an organisation and the data kinds that were available. Gaining insight into a company's safety performance requires a thorough understanding of safety indicators.

The welfare climate structure will give businesses a structured method for knowing the security risks or hazards (Arslan *et al.*, 2017). Additionally, a management tool was created so that shipping businesses could regularly assess and monitor the degree of their current safety culture. The security climate evaluation framework's implementation is a long method that could take a period of five years of consistent labour until termination. Evaluation of the security climate and noting of the key

distinctions between open water workers and grouped individuals are only covered in the findings section.

2.4.4 Maritime Ecosystem Protection in Harnessing the Blue Economy

According to Ehlers (2017), the importance of the water bodies and the aquatic sector is rapidly increasing. A comparison of the usage and taking care of the seas is often established since the oceans are vast and contain particularly delicate ecosystems that must be conserved. The study by Ehlers (2017) offered several viewpoints on this subject, beginning with an overview of aquatic industries role played by improved livelihoods and a summary of the primary hazards this sector poses to the marine environment.

Environmental preservation is currently one of the key goals of maritime management, according to Galparsoro and Borja (2021). Everyone agrees that efficient management necessitates weighing the costs and benefits of protection versus poorly Implemented aquatic activity. Nevertheless, natural and outgoing economically based integrated approaches are required to meet sustainability and environmental protection goals. The authors utilized the Basque Country as a case study to show how Systematic Conservation Planning might be used to find cost-effective priority maritime areas for protection. The eight defined conservation scenarios include the biological significance of benthic habitats, the potential provision of ecosystem services, the sensitivity of the environment to human activities, and the ecological value of birds, cetaceans, microalgae, and macro invertebrates. To quantify the socioeconomic costs of protection including moderate fishing effort generated by traditional fishing households was adopted (Galparsoro & Borja, 2021).

The findings showed that current maritime protected areas were very close to meeting the required protection goals, even if these goals may be met by expanding current marine protected areas. The designation of zones that targeted a greater number of protection elements was related with higher expenditures. However, in these instances, cost effectiveness was better since the environmental advantages outweighed a fairly minor cost rise. The scenarios that included expanding currently existing marine protected zones, however, were the most economical. The technique used can help decision-makers and managers find conservation gaps.

According to McKinley, Rojas, Hattam, Duret, Martn, Hopkins, and Potts (2019), oceans and businesses at the coast are becoming more widely known as significant triggers to benefiting worldly trading. People are realizing that for sea activities to be ecological moving above just extractive, exploitative activities which have resulted in a shift toward the blue economy across the globe. An improved livelihood serves as a framework for essential methods to safeguard the water bodies. Its components include energy sources producing low levels of greenhouse gas, an ecological approach, and human safety by development of local businesses, services, and activities. Although Peru's waterways have a considerable economic impact, the blue economy has not yet reached its full potential.

In order to explore the opportunities and challenges for successful growth in three distinct business areas in Peru: Tourism, transportation, and the improved livelihoods; researchers were brought together. These priorities cover a variety of subjects, including the creation of a good system, assistance for environmentally friendly adventurous region, thorough analyses of the current maritime industries, and

improved integration of development studies to comprehend individual's social and political livelihoods (McKinley *et al.*, 2019). Although they are not an entire list, these top objectives provide a beginning for further discussion regarding coordinated unified and consistent source supporting improved livelihoods in Peru and other places.

According to Belgrano, Novaglio, Svedäng, Villasante, Melián, Blenckner, and Tönnesson (2021), marine protected zones are a crucial management and conservation tool and have an increasing impact on society and human well-being. However, it is common practice to neglect taking both biological and socioeconomic effects into account when evaluating marine protected zones. This could lead to false assumptions regarding the capability of marine guarded regions. In this context, the Belgrano *et al.* (2021) study used a trans-disciplinary approach based on the Delphi method to map and evaluate the ability of marine protected areas to protect biodiversity. This provides ecosystem services that is, ecosystem outputs that benefit people and same advantages for human safety. Human aspects of marine protection should be considered in such evaluations since the use of aquatic guarded sectors during periods depend on the friendly environments which marine protected areas evolve.

According to Manea, Bianchelli, Fanelli, Danovaro and Gissi (2020), the deep sea makes up around 79% of the Mediterranean basin and has ecosystems that have the potential to provide a variety of ecosystem services as well as a variety of commodities with a high measurement of benefit. Therefore, the huge Mediterranean Sea signifies frontier for the exploitation of aquatic systems, which is integrated into the objectives and goals of the European Blue Growth Strategy. Natural health

depends on the cavernous sea. Because of this, the intense Mediterranean needs to be protected from any potential uprising effects of current and future human activity. Analyzing and allocating distribution of human activities and planning has been viewed as an essential technique to assign maritime uses in the sea region in order to prevent conflicts.

In fact, Marine Spatial Planning incorporates the ecosystem-based approach in accordance with the aquatic analyzing and distribution of human activities to achieve a balance between socio-economic and environmental goals (Manea *et al.*, 2020). In spite of the activities being implemented in Europe, a Directive has not yet been used to regulate and track the environmental condition of the deep sea. The complicated management structure of the Mediterranean is a result of the deep areas that lie beneath both internal and territorial waters as well as high seas. Additionally, certain cumulative consequences in the deep Mediterranean have already been recorded but are probably understated due to a lack of knowledge about deep-sea ecosystems. As a result, it is imperative to implement scientific knowledge and establish sustainable management.

Lewis and Ernstson (2019) developed a paradigm for researchers to investigate the historical relationships among water bodies and the coast regions doing well. As a result of their inquiry, the authors looked at how concepts like capacity of individuals to grow, adjustments in economic systems, and natural structural elements are influencing contemporary planning practice. Many huge projects were undertaken in various places in order to rebuild the terrain for a more viable marine industry. The discussion then moves to a huge continuing planning project that sought to mimic the

natural dynamics of a certain river delta through shifting the river to the coastal marshes that are within in order to shield vulnerable towns from storms.

The findings showed how the growth of hydro systems in the area led to conflicts that could obstruct or delay the implementation of the plan by causing cleavages in the Eco hydrology and body politic of the area (Lewis & Ernstson, 2019). The study shows how past settlements concerning the arrangement, utilization and conservation of hydro equipment has had a substantial influence on the current forms and discourses of political debate. Disputes which occur are the greatest barriers to safeguard other significant communities within from storm surges. Lewis and Ernstson (2019) examined the fundamental problems this generate for planning by considering situational dispenses, competing justifications and opportunities for democratic institutional reforms.

2.4.5 Blue Economy

The improved livelihoods refer to continuous sustainable use of water bodies for development (Warner & Kaye, 2019). On the other hand, the harnessed improved livelihoods while ensuring environmental protection and social equity. It involves growth of aquatic systems such as fisheries, breeding and harvesting fish, energy, and biotechnology, as well as the conservation and restoration of marine ecosystems (Roe & Garcia, 2013). While there is significant means to improve livelihoods and also there are gaps in our ability to harness this potential that include but not limited to; paucity of data, infrastructure, policy and regulatory frameworks, capacity building, financing and environmental impacts.

According to Venkatesan and Bhaskaran (2018), the intention of a harnessed improved livelihood is closely related to effective maritime governance that indicates the system of rules which govern maritime activities and ensure sustainable use and administration of the oceans and coastal materials. It encompasses a huge range of issues, including maritime security, safety, environmental protection, fisheries management, shipping, and marine spatial planning. Effective maritime governance in this context is essential for the development of a harnessed blue economy. It needs a collaborative and well-defined approach that involves various partners such as government institutions and organizations.

OECD (2016) avows that, the key principles of effective maritime governance in harnessing blue economy include; integrated approach that involves the coordination of policies and actions across different sectors and levels of governance. This approach aims to balance aquatic resources, ecosystem-based management that aims to maintain the health and resilience of aquatic bodies by considering the interactions between different species and the environment. This approach requires the identification of ecological thresholds and the implementation of adaptive management strategies to ensure long-term sustainability, active stakeholders' participation including local communities, indigenous peoples, and other user groups. This involvement ensures that policies and actions are informed by local knowledge and values and that the benefits and costs of resource use are fairly distributed, precautionary approach that involves taking action to stop distraction of the marine surrounding and human health even with little scientific proof. This approach recognizes the complexity and uncertainty of marine ecosystems and the need to manage risks proactively, and last but not least involve the implementation of robust compliance and enforcement mechanisms to ensure that laws and regulations are

followed. This involves monitoring, reporting, and verification of activities, as well as penalties for non-compliance.

2.3 Theoretical Framework

The study was guided by four theory of maritime blue economy, namely, the environmental governance theory, the precautionary theory, the tragedy of the commons theory, and the ecological economic theory. The four theories were critical in understanding the four maritime governance strategies under investigation and the effect the adoption of each strategy would have on the effectiveness of the harnessing of blue economy along the Kenyan coastline.

2.3.1 Environmental Governance Theory

The Environmental Governance Theory presents the process of managing human activities to protect the environment and ensure its sustainability (Taherdoost, 2018). This theory supports the idea of maritime governance, where governments and other stakeholders work together to develop policies, laws, regulations, and institutions that guide the continuous use of water bodies. Environmental sector is the sector that theory's proponents have majorly focused on.

This theory relates a number of actions that, in the context of this study, would be considered to be routine non-security items and portrays them as important security issues that need to be addressed in order to protect the maritime environment and the economic activities that take place there. For instance, the contamination of the maritime environment, which for a long time remained a non-serious issue, has recently been securitized by many stakeholders including politicians, security professionals, and environmentalists, and has become a major security concern. The environmental governance theory is at the core of maritime governance for

harnessing the blue economy along the Kenyan coastline. Environmental governance recognizes the importance of involving all stakeholders in alternative resolutions and implementation to make sure all interests be considered and also integrated into governance frameworks (Venkatesh, Thong, & Xu, 2016).

2.3.2 The Precautionary Theory

According to Colman (2016), this theory states that if an action of policy can lead to potential harm to the public or the environment when scientific consensus is missing, those supporting the action will carry the burden of proof. Considering the ocean, the preventive thesis proposes that if there is uncertainty about the impacts of a particular human activity, then precautions should be taken to prevent harm to the marine environment. According to Evans & Tourish (2017), the primary premise of this theory, is that much of certain behaviors cases may be considered normal become severe security challenges and are precaution in the context of this study. For instance, the precautionary measures by various stakeholders, including politicians, security experts, and environmentalists, has turned contamination of the aquatic ecosystem that have been non-concerns for a period of time turning into serious security worries in recent years. This theory supports the need for effective maritime governance to manage human activities in the ocean and ensure their sustainability.

2.3.3 The Tragedy of the Commons Theory

Garrett Hardin (2020), argues that when a resource is shared among many people, individuals may act in their self-interest and the resource without considering the long-term consequences. In the context of the ocean, the tragedy of the commons suggests that unregulated fishing, pollution, and other activities brings about exhaustion of the marine environment. The theory is viewed as a power tool to

describe the importance of maritime governance. The theory presents a paradigm shift in managing this complexity and moving the role of maritime governance from a tactical to a highly strategic role. The application of the theory in maritime governance improves the results from all stakeholders' decision-making for harnessing the blue economy. Therefore, effective maritime governance prevents the tragedy of the commons by regulating human activities and ensuring that they are sustainable (Telser, 2016).

2.3.4 Ecological Economics Review

Research concludes that ecological economics is an interdisciplinary field that recognizes the interdependence between the economy and the environment (Glinkowska & Kaczmarek, 2015). The goal of ecological economics is to develop economic systems that are sustainable and equitable. In the context of the ocean, ecological economics supports the idea of improved livelihoods which continuously supports development and job creation while conserving healthy aquatic areas. The theory observes that people are motivated to do well and act unselfishly, whenever some organizational and cultural issues are fulfilled. This theory is critical in explaining the decision for stakeholders to consider blue economy harnessing along the Kenyan coastline (Subramanian, 2018). Hence, it is a model where involved stakeholders share a common agenda and work towards achieving it. Effective maritime governance is necessary to ensure that human activities in the ocean are sustainable and support a blue economy.

2.4 Conceptual Framework

The Independent variables are maritime security, maritime defense, maritime safety and maritime ecosystem protection. Maritime security indicators are technical

security and physical security. The indicators for maritime defense are anti-piracy measures and anti-maritime terrorism measures. Maritime safety indicators are emergency response and antipollution measures. Maritime ecosystem protection indicators are responsible fishing measures and safe boating. Response variable is improving livelihoods. Commercial fishing, transportation and tourism are the indicators of changeable response.

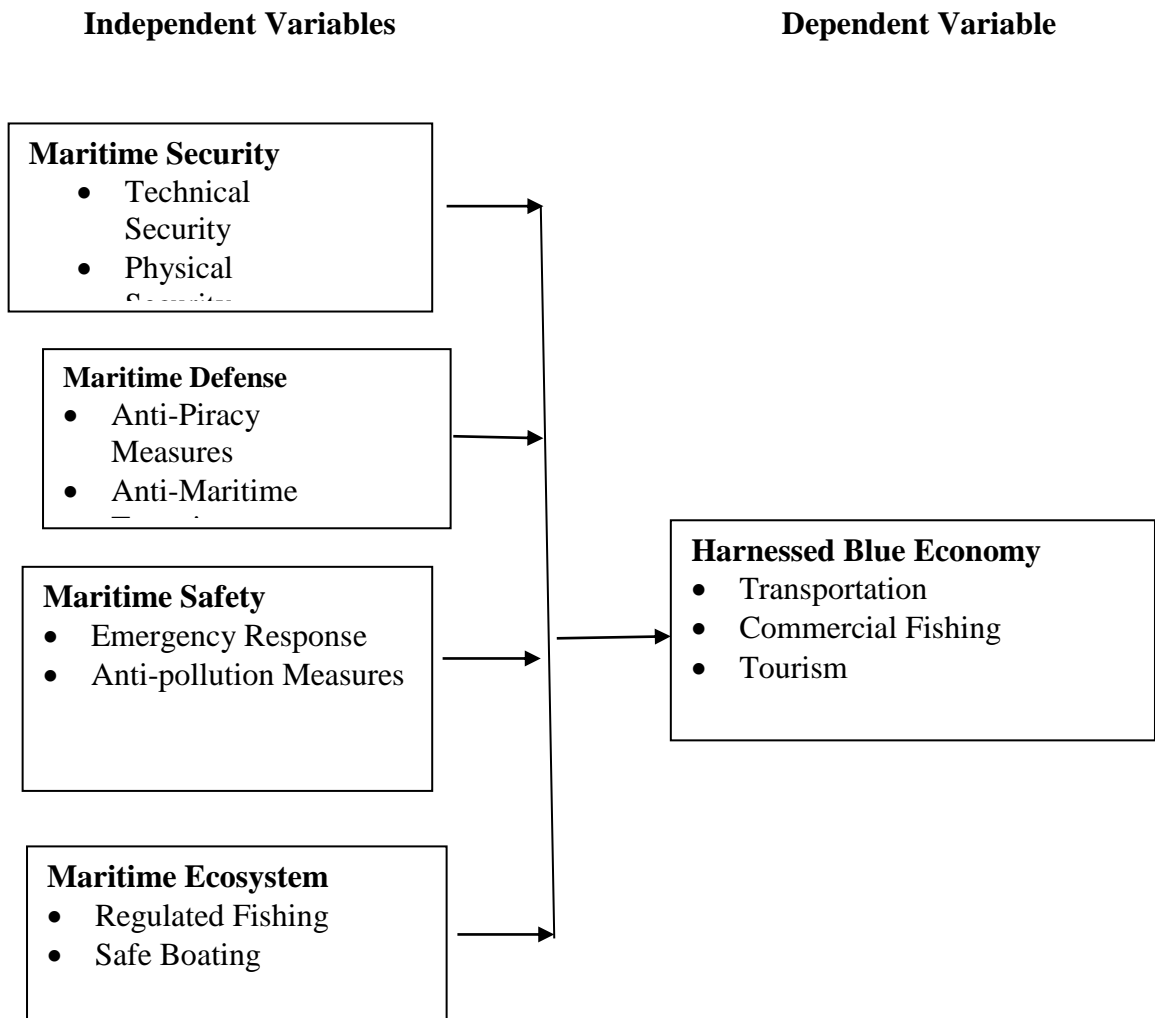


Figure 2.1 Conceptual Framework

Source: Researcher (2024)

2.5 Summary of Literature Search

Past studies did not tackle maritime governance in harnessing improved livelihoods. Some studies did not distinctively identify how maritime security, maritime defense, maritime safety and maritime ecosystem protection in harnessing improved livelihoods just to create a shared understanding of the economy, Narula (2019) tried to unravel its guiding principles. According to Potgieter (2018), the oceans economy contributes to the development and evolution of the global economy. Barros (2022) acknowledges that, despite Brazil's changed diplomatic goals since 2019, the Blue Amazon paradigm has kept the maritime security and safety issue relatively steady. The impact of marine security on the blue economy is not clearly spelt out. Additionally, previous studies seldom reveal the effect of marine defense on the blue economy. Protection of the marine ecosystem is not also definitely linked to the exploitation of the blue economy. These present a knowledge barrier that the proposed fights to occupy. This study examines the effects of maritime governance in harnessing the blue economy along the Kenyan coastline. The study investigates the effect of maritime security, maritime defense, maritime safety and maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Describes the research techniques selected for this study is represented at the beginning of the chapter alongside with the methods utilized to conduct this study. The tools that were used for data collecting are also outlined. The methods used to analyze the data were covered in this chapter. Further, the chapter present ethical considerations.

3.2 Research Design

The study adopted descriptive correlational research design. This design aimed to identify and analyze the relationships between maritime governance practices and the outcomes in the blue economy. Statistical analyses were used to examine correlations between study variables such as maritime security, maritime defense, maritime safety, and maritime ecosystem and harness blue economy performance. The design helps to identify patterns and relationships, providing insights into potential causal links (Abutabenjeh & Jaradat, 2018).

3.3 Study Location

Kenya is blessed with a wide variety of water features, from small streams and water pans to large lakes and lengthy, winding rivers. The nation shares a boundary with the Indian Ocean on its southeast side. The particular maritime ecosystems and their near environs will be the main subject of this investigation. Therefore, the focus of this study was the coastal county of Mombasa in Kenya. This county was chosen because it heavily depends on the marine environment, specifically the ocean, for economic operations. Additionally, due of its size and position, it must deal with a variety of problems that were of relevance to this study, including pollution brought on by

humans and security threats from both internal and external aggressors. These elements subsequently have an impact on the maritime commercial activity in this area and, indirectly, Kenya's blue economy.

3.4 Target Population

Stakeholders are decisive for the accuracy of the data that were collected in this study which definitely affect the validity of the study's conclusions. The population targeted was key partners in aquatic diplomacy. Target populations were sea fearers, Kenya ports authority, marine police, ministry of tourism, Kenya maritime authority, dock workers' union, ministry of devolution and planning, ministry of foreign appears fisheries department.

Table 3.1 Target Population

Maritime Multi agency Stakeholder	Target Population
Kenya Ports Authority	328
Dock Workers Union	116
Kenya Maritime Authority	189
Fisheries Department	176
Africa Union	492
Ministry of Devolution and Planning	89
Ministry of Tourism	76
Marine Police	65
Ministry of Foreign Affairs	34
Kenya Defence Forces	54
Sea Fearers	69
Total	1688

Source: GOK, 2022

3.5 Sample Size and Sampling Technique

Purposive sampling was utilized in selecting stakeholders involved in maritime governance. In this study from the above maritime multi-agency stakeholders target population of 1688, the Slovin's formula is given below as:

$$n = N/[1 + Ne^2]$$

Where:

n = Sample Size

N = Total Population

e = Level of Precision

Since the study target population (N) was 1688, with precision level of 0.05; the sample size was determined as shown below.

$$n = 1688 / [1 + 1688(0.05)^2] = 324$$

Therefore, 324 respondents formed the sample size and were drawn proportionately from the target population as illustrated in the sampling frame Table 3.2

Table 3.2 Sample Population

Maritime agency Stakeholder	Multi	Target Population	Sample size
Kenya Ports Authority		328	328/1688=63
Dock Workers Union		116	116/1688=22
Kenya Maritime Authority		189	189/1688=36
Fisheries Department		176	176/1688=34
Africa Union		492	492/1688=95
Ministry of Devolution and Planning		89	89/1688=17
Ministry of Tourism		76	76/1688=14
Marine Police		65	65/1688=12
Ministry of Foreign Affairs		34	34/1688=7
Kenya Defence Forces		54	54/1688=11
Sea Fearers		69	69/1688=13
Total		1688	324

Source: Researcher (2024)

3.6 Data Collection Instruments

The study utilized questionnaire to collect data. The questionnaires were administered to the selected respondents. Wa-Mbaleka (2019) postulates that a questionnaire has the ability of reaching a large number of respondents in a short time. The tool gives the respondents enough time to fill the items, gives a sense of confidentiality and it is non-biased. Questionnaires collected both quantitative and qualitative data. The questionnaire had five sections; A, B, C, D and E. Section A collected demographic information of respondents while B collected data on maritime security in harnessing the blue economy, Section C collected data on maritime defense harnessing the blue economy, D collected data on maritime safety and retention and E collected data on maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline.

3.7 Pilot Study

Piloting was done in Kilifi County. A total of 32 respondents were selected and given questionnaires for pilot study. This was done to check whether the language used in the research instruments is clear. Also, this helped the researcher to detect vague instructions, questions, insufficient space to write the responses and wrong phrasing of the questions. The pilot study assisted the researcher to establish whether the instruments addressed the objectives or not, then made necessary corrections or amendments.

3.7.1 Reliability

Reliability is to the measure of the degree to which research instruments yields consistent results after repeated trials (Kothari, 2016). Cronbach's alpha was used to establish the average correlation or internal consistency of items in the survey instrument to measure its reliability to appraise and improve upon the reliability of variables resulting from summated scales. The Cronbach's alpha coefficient with ranges between 0 and 1 was used. If a coefficient of 0.7 and more was achieved after computations, then the research instruments were considered reliable.

3.7.2 Validity

Maritime security, maritime defence, maritime safety, and maritime ecosystem protection were carefully constructed, and the indicators and measurements of harness of blue economy and the four independent variables were tested throughout the pilot study, to verify construct validity. Therefore, only relevant questions that assess the indicators of marine governance and the utilisation of the blue economy along the Kenyan coastline. The instruments were also given to the supervisor for

additional inspection to find any potential gaps. The supervisor resolved any ambiguities and issues in regards to the research instruments.

3.8 Data Collection Procedure

All 30 wards, in the study area were visited to guarantee that respondents from the county are evenly distributed among the respondents. From each of the wards approximately 12 individuals from the public were requested to participate in the study. On average, two wards were covered each day for a period of 15 days.

3.9 Data Analysis

Data verification and cleaning were the first steps in the analysis process. The data were then coded and summarized to facilitate analysis. Qualitative and quantitative data were gathered. The qualitative data were grouped based on the study's objectives. Themes were generated based on the analysis. The quantitative data were analyzed descriptively and inferentially using the Statistical Package for Social Science (SPSS v. 26). Descriptive statistics included frequency tables, percentages, means, and standard deviations. Inferential statistics were conducted using

The multiple models below will be adopted:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y is Harnessed Blue Economy

β_0 is a Constant

(β_i ; $i=1, 2, 3, 4$) are the Beta Coefficients of Independent Variables

X_1 is Maritime Security

X_2 is Maritime Defense

X_3 is Maritime Safety

X₄ is Maritime Ecosystem Protection

3.10 Hypotheses Testing

Four hypothesis was tested as indicated in Table 3.3.

Table 3.3 Hypotheses Testing Procedure

Hypothesis	Hypothesis Test Method	Decision Rule and Anticipated Model
H ₀₁ : No significant maritime security harnessing blue economy along the coastline	Karl Pearson Beta Test	If $\beta \neq 0$ and p value < 0.05 reject null hypothesis, if $\beta = 0$ and p value > 0.05 fail to reject null hypothesis; $Y = \beta_0 + \beta_1X_1 + \varepsilon$
H ₀₂ : Maritime defence harnessing along the coastline	Karl Pearson Beta Test	If $\beta \neq 0$ and p value < 0.05 reject null hypothesis, if $\beta = 0$ and p value > 0.05 fail to reject null hypothesis; $Y = \beta_0 + \beta_2X_2 + \varepsilon$
H ₀₃ : Maritime safety harnessing along the coastline	Karl Pearson Beta Test	If $\beta \neq 0$ and p value < 0.05 reject null hypothesis, if $\beta = 0$ and p value > 0.05 fail to reject null hypothesis; $Y = \beta_0 + \beta_3X_3 + \varepsilon$
H ₀₄ : No significant maritime ecosystem protection on harnessing blue economy along coastline	Karl Pearson Beta Test	If $\beta \neq 0$ and p value < 0.05 reject null hypothesis, if $\beta = 0$ and p ; $Y = \beta_0 + \beta_4X_4 + \varepsilon$

3.11 Ethical Considerations

Ethical considerations are important in a research project since they help to achieve the aims and objectives of research. The study was guided by Kenyatta University's research ethics as well as global practice. The county government of Mombasa was requested for permission to conduct the study. Prior to this, research approval from Kenyatta University was requested, followed by a research permit from National Commission for Science, Technology and Innovation (NACOSTI). The respondents' consent was obtained, and they were given the choice of participating or not participating in the study. No respondent was exposed to harm, allowed to disclose their personal information, or coerced to participate in the study.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents research findings and discussions. The study relied on primary data that were collected by use of structured questionnaires. The research aimed to determine the effects of maritime governance in harnessing of the blue economy along the Kenyan coastline. The findings are presented in form of figures and tables. The findings were presented on based on the following study objectives;

- i. To identify the effect of maritime security in harnessing the blue economy along the Kenyan coastline
- ii. To establish the effects of maritime defense in harnessing the blue economy along the Kenyan coastline.
- iii. To examine the effects of maritime safety in harnessing the blue economy along the Kenyan coastline.
- iv. To determine the effect of maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline.

4.2 Response Rate

The researcher distributed 324 questionnaires to maritime multi-agency stakeholder. A total of 280 questionnaires were dully filled and returned to the researcher. This gave a response rate of 86.4% which is deemed sufficient for the study. The study findings are supported by Mugenda and Mugenda (2003) who states that a response

rate of 50% and above is deemed sufficient for the study. The findings are as shown in Figure 4.1.

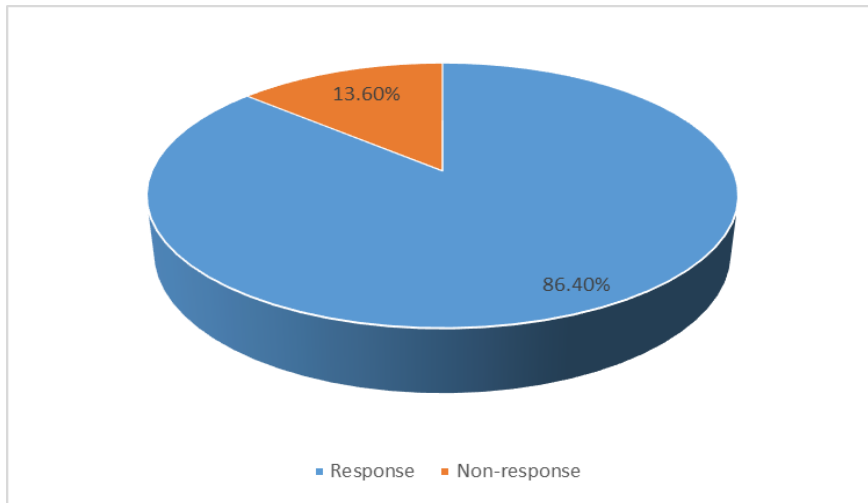


Figure 4.1 Response Rate

Source: Field Data (2024)

4.3 Demographic Information

Respondents were asked to indicate their demographic information to establish whether the respondents of the study are a representative sample of the target population for generalization purpose. The findings are as shown in subsequent sections.

4.3.1 Gender

Respondents were asked to indicate their respective genders. The findings are as shown in Figure 4.2.

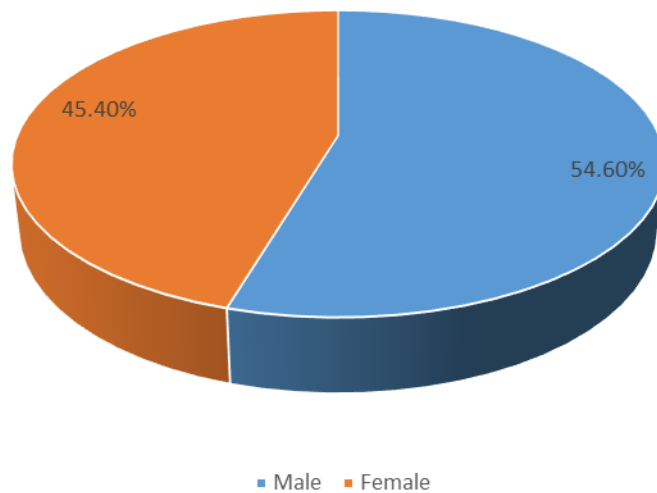


Figure 4.2 Gender of the Respondents

Source: Field Data (2024)

The study findings show that 153 (54.6%) of respondents were male, while 127 (45.4%) were female as illustrated in Figure 4.2. However, this implies that respondents were drawn from all gender group to expurgate any gender biasness that might have been associated with the research findings. The study has shown that gender diversity in the workplace can contribute to enhanced creativity, innovation, and problem-solving. This infers that incorporating a gender perspective in maritime governance lead to more equitable and sustainable development outcomes. Women's involvement in decision-making processes and resource management helps in ensuring that the benefits of the blue economy are shared more equally among different segments of the population.

4.3.2 Age of Respondents

The study sought to determine age distribution of the respondents since age of the participants is an indispensable factor in the study because it determines one's experience and way of reacting to situations. The findings were tabulated in Table 4.1.

Table 4.1 Distribution of Respondents by Age

Age	Frequency	Percentage
18 – 25 years	23	8.2
26 – 35 years	74	26.4
36 – 45 years	98	35.0
46 – 55 years	49	17.5
Above 55 years	36	12.9
Total	280	100

Source: Field Data (2024)

The findings in Table 4.1 shows that 35.0% of the respondents were aged between 36-45 years, 26.4% between age of 26-35 years, 17.5% between age of 46-55 years, 12.9% were above 55 and above years and only 8.2% were aged between 18 and 25 years. Hence, this explicitly imply that all the respondents based on the age distribution were in position to respondent to the questions. This clearly indicates that employees working in coastline maritime in Kenya are largely represented by middle aged people. The varied age distribution of respondents provides a comprehensive understanding of how different age groups perceive the effects of maritime governance in harnessing the blue economy along the Kenyan coastline. According to Dungumaro and Ndalaha (2022) ensuring inclusivity by providing opportunities for all age groups to participate is critical.

4.3.3 Level of Education

The study aimed to determine the educational level of participants. The findings were illustrated in Table 4.2.

Table 4.2 Level of Education

Educational level	Frequency	Percentage
Secondary certificate	64	22.9%
Tertiary education	126	45.0%
University degree	90	32.1%
Total	280	100.0

Source: Field Data (2024)

The research findings in Table 4.2 reveal that majority of the participants had attained tertiary education as their highest educational level as presented by 126(45.0%) and followed by those with university degree as presented by 90(32.1%). Further, 64(22.9%) had attained secondary education. This implies that the respondents had necessary education requirement which is a key determinant in the success of any economic activities. A higher level of education among individuals may lead to better skills development, which is essential for engaging in various sectors of the blue economy such as fisheries, aquaculture, marine tourism, and maritime transport. Through education and training programs, individuals acquire the necessary knowledge and expertise to contribute meaningfully to these sectors.

4.4 Descriptive Statistics

This study utilized mean and standard deviation to present the summary measures of the sample that was observed. Analysis of descriptive statistics was conducted on the basis of the data collected on the variables that were at the core of this study. The basic feature of the observed sample formed the basis for quantitative data analysis for this study.

4.4.1 Maritime Security and Harnessing of Blue Economy

Several statements on the how maritime security affect the harnessing the blue economy were identified by the researcher. Respondents were asked to indicate the extent of their agreement with each statement and how it has affected the harnessing the blue economy. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4 = Agree and 5 = Strongly agree was used. The findings are as shown in Table 4.3

Table 4.3 Descriptive Statistics for Maritime Security in Harnessing the Blue Economy

Statements	Mean	Std. Dev
There is presence of police officers who provide security along the coastline.	3.59	0.637
There are adequate police stations along the coastline.	3.67	0.654
Response to security along the coastline is fast	3.65	0.662
The security agencies collaborate with the public to get crucial security information.	3.62	0.658
There is a police hotline to report security concerns along the coastline.	4.12	0.657
Average scores	3.73	0.654

Source: Field Data (2024)

The findings presented in Table 4.3 revealed that majority of the respondents agreed that there is presence of police officers who provide security along the coastline (mean = 3.59; Std. Dev = 0.637). The respondents also agreed that there are adequate

police stations along the coastline (mean = 3.67; Std. Dev = 0.654). Further, most participants agreed that response to security along the coastline is fast (mean = 3.65; Std. Dev = 0.662). By ensuring safety and stability at sea, maritime security measures contribute to creating a conducive environment for economic activities such as fishing, tourism, shipping, and offshore mining. This is supported by Mwangi and Mbaria (2019) who established that properly enforced maritime security measures safeguard against piracy, illegal fishing, and other criminal activities that can deter investment and economic growth within the marine sector.

Furthermore, the findings revealed that most respondents agreed that security agencies collaborate with the public to get crucial security information (mean = 3.62; Std. Dev = 0.658). Also, most respondents agreed that there is a police hotline to report security concerns along the coastline (mean = 4.12; Std. Dev = 0.657). The country may realize the full economic potential of its marine resources by giving maritime security measures top priority and making the necessary investments, opening the door for long-term growth and development in the blue economy. This agrees with Kiereini and Njiru (2017) who revealed that secure maritime environment encourages foreign and domestic investments in the blue economy by instilling confidence in potential investors regarding the safety of their assets and operations in Kenyan waters. This, in turn, leads to increased job opportunities, revenue generation, and overall socio-economic development along the coastal regions of Kenya. Through international collaborations and partnerships, Kenya can enhance its maritime security capabilities, benefiting not only its own economy but also contributing to regional stability and cooperation in the East African region (Tonui, 2016).

From the qualitative data, it was noted that;

The country has made significant strides in enhancing its maritime security infrastructure through initiatives such as the establishment of the Kenya Coast Guard Service and collaborations with international partners to combat piracy, illegal fishing, and other maritime crimes. These efforts have helped to improve the safety and security of the waters off the Kenyan coastline, reducing incidents of piracy and increasing surveillance capabilities to respond to security threats promptly.

The presence of robust maritime security measures was found to be a crucial factor in promoting economic activities such as fishing, shipping, and tourism. Employees highlighted that improved security not only instills confidence in investors but also ensures the safety of maritime trade routes, thus facilitating smoother transport of goods and services. The findings suggest that a secure maritime environment is essential for the sustainable development of the blue economy in Kenya, attracting both local and international investments.

4.4.2 Maritime Defense and Harnessing of Blue Economy

Several statements on the effect of maritime defense in harnessing the blue economy along the Kenyan coastline were identified by the researcher. Respondents were asked to indicate the extent of their agreement with each statement regarding the maritime defense and how it has affected the harnessing of the blue economy. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4 = Agree and 5 = Strongly agree was used. The findings are as shown in Table 4.4.

Table 4.4 Descriptive Statistics for Maritime Defense in Harnessing the Blue Economy

Statements	Mean	Std. Dev
Anti-piracy measures have assisted to enhance the blue economy.	3.64	0.661
The anti-maritime terrorism measures have been effective in enhancing maritime defence.	3.67	0.658
Commercial fishing along the coastline has been enhanced through adequate antipiracy measures	3.51	0.663
Maritime transportation has been enhanced through elaborate security measures by the security agencies	3.63	0.657
The anti-terrorism laws have enhanced maritime tourism along the Kenyan coastline.	3.69	0.655
Average scores	3.63	0.659

Source: Field Data (2024)

The findings presented in Table 4.4 uncovered that most respondents agreed that anti-piracy measures have assisted to enhance the blue economy (mean = 3.64; Std. Dev = 0.661). The respondents agreed that anti-maritime terrorism measures have been effective in enhancing maritime defence (mean = 3.67; Std. dev = 0.658). Also, most respondents agreed that commercial fishing along the coastline has been enhanced through adequate antipiracy measures (mean = 3.51; Std. Dev = 0.663). Effective maritime defense mechanisms are essential for safeguarding the country's marine resources and infrastructure from external threats such as piracy, illegal fishing, and maritime terrorism. This agrees with Mwangi and Mbaria (2019) who established that

maritime defense operations help to provide a safe environment that is favorable to economic activity within the blue economy sector by preventing and responding to security threats at sea. A strong maritime defense plan will help deter possible conflicts over marine resources, foster collaboration with neighboring nations, and strengthen Kenya's position as an important player in the development of the blue economy in East Africa. The government, navy, coast guard, and other stakeholders must work together to ensure the effective implementation of marine defense measures that support Kenya's blue economy's long-term growth ((Kenya Maritime Authority, 2021).

Also, the findings presented in Table 4.4 revealed that most participants agreed that maritime transportation has been enhanced through elaborate security measures by the security agencies (mean =3.63; Std. Dev = 0.657). Further, most respondents agreed that anti-terrorism laws have enhanced maritime tourism along the Kenyan coastline (mean = 3.69; Std. dev = 0.655). Kenya secures its maritime assets, promotes economic growth in the blue economy sector, and contributes to the region's overall stability and prosperity by investing in strong marine defense capabilities and developing domestic and international cooperation. The findings are supported by the findings of a study by Perwita and Sukma (2018) who established investments in maritime defense capabilities not only protect Kenya's maritime interests but also enhance the country's regional influence and standing in international maritime governance initiatives.

From the qualitative data, it was noted that;

Effective maritime defense policies provide stability and security, thereby creating a conducive environment for economic activities such as fisheries, shipping, tourism, and offshore energy production to thrive. Additionally, robust maritime defense measures create a sense of trust and reliability among nations, leading to enhanced local and international collaborations in areas such as joint naval exercises, information sharing, and coordinated responses to maritime threats. Such partnerships not only strengthen security but also boost economic cooperation and facilitate the sustainable management of marine resources on a global scale.

Through the lens of maritime defense and its impact on the blue economy along the Kenyan coastline, key insights emerged. Employees emphasized the pivotal role of a well-equipped and trained naval force in safeguarding maritime resources and deterring threats such as piracy and illegal fishing activities. The findings underscored that a strong maritime defense strategy not only protects coastal communities and ecosystems but also promotes a conducive environment for economic growth.

4.4.3 Maritime Safety in Harnessing the Blue Economy

Several statements on the effect of maritime safety in harnessing the blue economy along the Kenyan coastline were identified by the researcher. Respondents were asked to indicate the extent of their agreement with each statement regarding to maritime safety and how it has affected the harnessing of blue economy. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4 = Agree and 5 = Strongly agree was used. The findings are as shown in Table 4.5.

Table 4.5 Descriptive Statistics for Maritime Safety in Harnessing the Blue

Economy

Statements	Mean	Std. Dev
Anti-pollution measures put in place have enhanced tourism along the coastline.	3.59	0.636
There is minimal pollution in the environment along the coastline.	3.64	0.649
Government response to accidents and disasters along the coastline has been fast.	3.60	0.673
Marine food fished along the coastline is of good quality and quantity.	3.66	0.639
There are adequate personnel to deal with marine safety along the Kenyan coastline.	3.61	0.643
Average scores	3.62	0.648

Source: Field Data (2024)

The findings presented in Table 4.5 revealed that most respondents agreed that anti-pollution measures put in place have enhanced tourism along the coastline (mean = 3.59; Std. Dev = 0.636). The participants also agreed that there is minimal pollution in the environment along the coastline (mean = 3.64; Std. Dev = 0.649). Further, most respondents agreed that government response to accidents and disasters along the coastline has been fast (mean = 3.60; Std. Dev = 0.673). Ensuring maritime safety through effective regulations, monitoring, and enforcement measures is essential for protecting lives, vessels, and marine ecosystems. This is supported by Njoroge and Kamau (2018) who established maritime safety initiatives help to protect Kenya's marine resources and foster the expansion of blue economy sectors like tourism,

aquaculture, and fisheries by reducing the likelihood of mishaps, oil spills, and other environmental catastrophes at sea.

The findings in Table 4.5 established that most respondents agreed that marine food fished along the coastline is of good quality and quantity (mean = 3.66; Std. Dev = 0.639). Further, most participants agreed that there are adequate personnel to deal with marine safety along the Kenyan coastline (mean = 3.61; Std. Dev = 0.643). Investments in maritime safety infrastructure and capacity-building initiatives enhance the resilience of the maritime sector and promote investor confidence in the blue economy activities. The findings are supported by the findings of a study by Auma and Omondi (2020) who established that Kenya increases foreign direct investment, develop its maritime trade networks, and bolster its standing as a contender in the global blue economy by upholding international marine safety standards and best practices. Fostering a culture of safety consciousness and ensuring the successful implementation of maritime safety measures that support the sustainable development of Kenya's blue economy depend heavily on cooperative partnerships between government agencies, industry stakeholders, and international organizations (Mutiso & Odhiambo, 2021).

From the qualitative data, it was noted that;

The implementation of stringent safety measures not only enhances the overall security and sustainability of the maritime sector but also influences economic activities in several ways. While compliance with safety regulations may require upfront investments in technology, training, and infrastructure, the long-term benefits far outweigh the costs by reducing the frequency of accidents, insurance premiums, and legal liabilities.

Existing maritime safety regulations play a crucial role in mitigating risks and accidents in the maritime sector by establishing standards, procedures, and guidelines

to ensure the safety of ships, crew, passengers, and the marine environment. These regulations cover various aspects such as vessel construction, equipment standards, navigation procedures, crew training, and emergency response protocols, all aimed at reducing the likelihood of incidents at sea. By enforcing compliance with these regulations, authorities can prevent maritime disasters, protect lives, minimize environmental damage, and maintain the integrity of maritime infrastructure.

Employees highlighted that promoting maritime safety practices, such as enforcing regulations, conducting regular inspections, and providing emergency response capabilities, are fundamental to reducing accidents and environmental risks. The findings emphasized that a culture of safety at sea not only protects human lives and marine ecosystems but also enhances the overall attractiveness of the maritime sector for potential investors.

4.4.4 Maritime Ecosystem Protection and Harnessing of Blue Economy

Several statements on the effect of maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline were identified by the researcher. Respondents were asked to indicate the extent of their agreement with each statement regarding the maritime ecosystem protection and how it has affected the harnessing of the blue economy. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4 = Agree and 5 = Strongly agree was used. The findings are as shown in Table 4.6.

Table 4.6 Descriptive Statistics for Maritime Ecosystem Protection in Harnessing the Blue Economy

Statements	Mean	Std. Dev
There is presence of illegal mining along the coastline.	3.58	0.629
There is responsible fishing along the Kenyan coastline.	3.62	0.637
Laws to curb illegal mining have been efficient to curb the problem.	3.56	0.643
There is adequate implementation of laws against irresponsible and illegal fishing.	3.54	0.648
There are adequate personnel to deal with illegal fishing along the Kenyan coastline.	3.65	0.659
Average scores	3.59	0.643

Source: Field Data (2024)

The results displayed in Table 4.6 revealed that most participants agreed that there is presence of illegal mining along the coastline (mean = 3.58; Std. Dev = 0.629). The respondents agreed that there is responsible fishing along the Kenyan coastline (mean = 3.62; Std. dev = 0.637). Further, most respondents agreed that laws to curb illegal mining have been efficient to curb the problem (mean = 3.56; Std. Dev = 0.643). Protecting maritime ecosystems in Kenya has a direct impact on harnessing the blue economy, which encompasses various economic activities related to oceans and seas. By safeguarding marine habitats such as coral reefs, mangroves, and seagrass beds, the country can sustainably utilize its marine resources for economic development. These findings are supported by Muthiga and McClanahan (2019) who established that preserving coastal ecosystems can benefit not only established industries like fishing and tourism, but also newer ones like biotechnology and renewable energy.

Kenya fosters a climate that is favorable to innovation and environmentally sound business practices in the blue economy by protecting biodiversity and lowering pollution in maritime settings.

Furthermore, the results presented in Table 4.6 revealed that most participants agreed that there is adequate implementation of laws against irresponsible and illegal fishing (mean = 3.54; Std. Dev = 0.648). The respondents agreed that there are adequate personnel to deal with illegal fishing along the Kenyan coastline (mean = 3.65; Std. Dev = 0.659). Healthy ecosystems are essential for supporting fisheries, tourism, and other marine industries that contribute significantly to the Kenyan economy. The findings concur with the results of a study by Nzuki (2019) who established that the conservation of maritime ecosystems plays a crucial role in enhancing climate resilience and adaptation in coastal communities. Healthy ecosystems act as natural buffers against the impacts of climate change, such as sea-level rise and extreme weather events. Through measures like marine protected areas and sustainable coastal management, Kenya can build resilience in its coastal areas and ensure the sustainability of blue economy activities over the long term.

From the qualitative data, it was noted that;

Compliance with regulations is essential for safeguarding the livelihoods of fishermen, preserving the economic value of fisheries, and conserving marine ecosystems for future generations. On the other hand, marine conservation efforts rely heavily on regulatory frameworks to establish protected areas, marine reserves, and conservation zones that safeguard critical habitats, endangered species, and biodiversity hotspots.

Employees stressed the intricate relationship between healthy marine ecosystems and economic prosperity, highlighting that preserving biodiversity, combating pollution, and conserving natural resources are essential for long-term sustainability. The

findings underscored that investments in ecosystem protection not only support industries such as fisheries and tourism but also contribute to the resilience of coastal communities against climate change impacts.

4.4.5 Harnessing of the Blue Economy

Several statements on the harnessing of the blue economy were identified by the researcher. Respondents were asked to indicate the extent of their agreement with each statement in regard to harnessing of the blue economy. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4 = Agree and 5 = strongly agree was used. The findings are as shown in Table 4.7

Table 4.7 Descriptive Statistics for Harnessing of the Blue Economy

Statements	Mean	Std. Dev
Transportation of goods and people along the coastline is smooth.	3.42	0.637
There is responsible commercial fishing along the Kenyan coastline.	3.46	0.647
Tourism is thriving along the Kenyan coastline.	3.49	0.664
There is legal mining activities along the Kenyan coastline.	3.55	0.631
There is adequate security along the Kenyan coastline.	3.61	0.653
Average scores	3.51	0.646

Source: Field Data (2024)

The results in Table 4.7 established that respondents agreed that transportation of goods and people along the coastline is smooth (mean = 3.42; Std. Dev = 0.637). Also, the respondents agreed that there is responsible commercial fishing along the

Kenyan coastline (mean = 3.46; Std. Dev = 0.647). Further, the respondents agreed that tourism is thriving along the Kenyan coastline (mean = 3.49; Std. Dev = 0.664). Effective maritime governance in Kenya contributes to enhancing maritime security and safety, which are essential for unlocking the full economic potential of the blue economy. The presence of clear regulations, enforcement mechanisms, and cooperation frameworks among relevant stakeholders can help combat illegal fishing, piracy, and other maritime crimes that threaten economic activities in coastal and offshore waters. The findings concur with the findings of a study by Mbaru (2020) who established that promoting maritime security through governance mechanisms not only protects marine resources but also creates a conducive environment for investments and trade, fostering economic growth and stability in the blue economy sector.

Furthermore, the results presented in Table 4.7 revealed that most participants agreed that there is legal mining activities along the Kenyan coastline (mean = 3.55; Std. Dev = 0.631). Also, the respondents agreed that there is adequate security along the Kenyan coastline (mean = 3.61; Std. Dev = 0.653). This implies that emphasizing good governance principles in policy creation and implementation is critical to reaping the full advantages of the blue economy and guaranteeing long-term prosperity for Kenya's maritime resources and communities. The findings are supported by Manyara and Wanyonyi (2018) who established that robust governance frameworks are essential for promoting responsible stewardship of marine resources and balancing economic growth with environmental conservation. In the context of the blue economy, strong maritime governance in Kenya is necessary to create a conducive environment for investments, innovation, and sustainable practices in various sectors such as fisheries, tourism, and renewable energy.

4.5 Inferential Statistics

The researcher conducted regression analysis to establish the effect of maritime governance in harnessing the blue economy along the Kenyan coastline. The findings of Model Summary, ANOVA, Regression coefficients and Pearson Coefficient are as shown in subsequent sections.

4.5.1 Model Summary

The findings of coefficient of correlation R and coefficient of adjusted determination R^2 is as shown in Table 4.8

Table 4.8 Model Summary Results

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	0.856	0.734	0.723		0.128

a. Predictors: (Constant), Maritime security, Maritime defense, Maritime safety and Maritime ecosystem protection

b. Dependent Variable: Harnessing the blue economy

Source: Field Data (2024)

The results presented in Table 4.10 provide R value of 0.856 which indicates a strong positive correlation between the predictors and the dependent variable. This suggests that there is a high degree of association between the quality of maritime governance and the effectiveness of harnessing the blue economy. In other words, improvements in maritime security, defense, safety, and ecosystem protection are strongly linked with better outcomes in the blue economy. The R Square value of 0.734 implies that approximately 73.4% of the variability in harnessing the blue economy can be

explained by the combined effects of the four predictors. This high R Square value underscores the significance of maritime governance factors in influencing the blue economy. It suggests that these four aspects of maritime governance are critical determinants of economic activities and productivity in the maritime sector.

4.5.2 ANOVA

An ANOVA was conducted at 95% level of significant, the findings of F Calculated and F Critical are as shown in Table 4.9.

Table 4.9 ANOVA Results

Model	SS	df	MS	F	Significance
Regression	19.47	4	.327	2.35	0.003 ^a
Residual	42.35	276	1.264		
Total	61.82	280			

a. Predictors: (Constant), Maritime security, Maritime defense, Maritime safety and Maritime ecosystem protection

b. Dependent Variable: Harnessing of the blue economy

Source: Field Data (2024)

The findings presented in Table 4.9 revealed that overall significance of the model, indicated by an F-value of 2.35 and a p-value of 0.003, demonstrates that the predictors collectively have a statistically significant effect on harnessing the blue economy. This low p-value (less than 0.05) implies that the regression model is a good fit for the data and that the relationship between the predictors and the dependent variable is not due to random chance.

The findings revealed that improving maritime governance through enhanced security, defense, safety, and ecosystem protection measures can significantly impact the harnessing of the blue economy along the Kenyan coastline. Each of these factors contributes to creating a stable and secure maritime environment, which is crucial for economic activities such as fishing, tourism, and maritime transport. Improved maritime security ensures safe passage and reduces piracy, while effective maritime defense protects the maritime territory from external threats. Maritime safety protocols help in preventing accidents and ensuring the wellbeing of those who operate in the maritime sector, and robust ecosystem protection ensures the sustainability of marine resources, which is essential for long-term economic benefits.

4.5.3 Regression Coefficients

In order to establish the individual influence of independent variables on dependent variables, the researcher conducted regression analysis. The findings are as shown in Table 4.10.

Table 4.10 Regression Coefficients

Variables	Unstandardized Coefficient*		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	2.432	0.121		2.359	.001
Maritime security	0.257	0.0136	1.258	2.617	.003
Maritime defense	0.245	0.0127	1.325	2.498	.005
Maritime safety	0.234	0.0142	1.285	2.372	.002
Maritime ecosystem protection	0.232	0.0135	1.263	2.264	.004

Source: Field Data (2024)

The Multiple Regression Model was as follows:

$$Y = 2.432 + 0.257X_1 + 0.245X_2 + 0.234X_3 + 0.232X_4$$

Where Y = Harnessing of the blue economy

X₁ = Maritime security

X₂ = Maritime defense

X₃ = Maritime safety

X₄ = Maritime ecosystem protection

The coefficient for maritime security is 0.257, and a t-value of 2.617, which is statistically significant with a p-value of 0.003. The standardized coefficient (Beta) of 1.258 indicates that maritime security has a substantial positive effect on harnessing the blue economy. This suggests that improvements in maritime security such as reducing piracy, enhancing surveillance, and ensuring safe passage significantly contribute to better economic outcomes in the maritime sector.

The coefficient for maritime defense is 0.245, and a t-value of 2.498, which is statistically significant with a p-value of 0.005. The standardized coefficient (Beta) of 1.325 is the highest among the predictors, indicating that maritime defense has a very strong positive effect on harnessing the blue economy. Effective maritime defense, which includes protecting territorial waters from external threats and maintaining maritime sovereignty, is crucial for creating a secure environment that fosters economic activities.

The coefficient for maritime safety is 0.234, and a t-value of 2.372, which is statistically significant with a p-value of 0.002. The standardized coefficient (Beta) of 1.285 suggests that maritime safety also has a significant positive impact on the blue economy. Ensuring the safety of maritime operations, preventing accidents, and

safeguarding the lives of those working in the maritime sector are essential for sustainable economic development.

The coefficient for maritime ecosystem protection is 0.232, and a t-value of 2.264, which is statistically significant with a p-value of 0.004. The standardized coefficient (Beta) of 1.263 indicates that protecting the maritime ecosystem is also a critical factor in harnessing the blue economy. Preserving marine biodiversity, preventing pollution, and managing resources sustainably ensure the long-term viability of maritime economic activities. The findings are supported by Mbaru (2020) revealed that ensuring safe navigation, preventing accidents, and minimizing pollution are essential for maintaining the ecological balance of marine environments and supporting sustainable economic activities.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, conclusion and recommendations are based on the on the findings. Suggestions for further studies are also drawn.

5.2 Summary of Study Findings

The findings are summarized as per study objectives. The objective one of the study was to identify the effect of maritime security in harnessing the blue economy along the Kenyan coastline. The findings revealed that robust governance frameworks are essential in mitigating threats such as piracy, smuggling, and illegal fishing, which have historically plagued the Kenyan coastline. Enhanced maritime security through coordinated efforts between national and international agencies helps safeguard maritime trade routes, contributing to a stable and secure environment for economic activities.

The second objective of the study was to establish the effects of maritime defense in harnessing the blue economy along the Kenyan coastline. The results established that presence of a capable maritime defense deters potential aggressors and ensures the sovereignty of Kenya's territorial waters. Investments in naval infrastructure, training, and technology are shown to enhance the country's ability to respond to maritime threats, thereby ensuring the uninterrupted exploitation of marine resources and the safe passage of vessels.

The third objective of the study was to examine the effects of maritime safety in harnessing the blue economy along the Kenyan coastline. The findings revealed that

implementation of stringent safety regulations, the establishment of search and rescue operations, and the development of modern port facilities are critical in minimizing accidents and ensuring the well-being of maritime personnel. By prioritizing safety, Kenya attracts more maritime traffic and enhance its competitiveness in the global shipping industry. Moreover, improved safety standards contribute to the prevention of marine pollution incidents, thereby protecting the marine environment and ensuring the sustainability of the blue economy.

The fourth objective of the study was to determine the effect of maritime ecosystem protection in harnessing the blue economy along the Kenyan coastline. From the findings, it was established that health of marine ecosystems is critical to the long-term viability of the blue economy, and governance mechanisms must emphasize conservation and sustainable use of marine resources. The study identifies maritime protected areas, habitat restoration projects, and community-based conservation programmes as effective options. These activities contribute to biodiversity preservation, fish stock maintenance, and coastal community livelihoods, resulting in a more resilient and sustainable blue economy.

5.3 Conclusion

The study concludes that maritime security, maritime defense, maritime safety and maritime ecosystem protection significantly affect the harnessing of the blue economy. Effective maritime governance plays a crucial role in harnessing the blue economy potential along the Kenyan coastline. Robust maritime defense strategies enable the protection of maritime borders and sovereignty, ensuring a secure environment for economic activities to thrive. Kenya protect its maritime resources from dangers like piracy and illegal fishing by boosting maritime security in

collaboration with international partners. Furthermore, prioritizing maritime safety through regulations, training programs, and advanced technology enhances the overall operational efficiency of maritime activities. This not only reduces the risks of accidents and environmental disasters but also instills confidence in investors and stakeholders in the blue economy sector. Moreover, sustainable maritime ecosystem protection measures are essential for preserving the rich biodiversity and maintaining the ecological balance of the marine environment.

5.4 Recommendation

From the findings, the study recommends that;

- i. Government of Kenya should continue investing in maritime security measures by strengthening cooperation with international partners, enhancing surveillance capabilities, and implementing effective strategies to combat piracy and illegal fishing activities. This will safeguard maritime resources and create a secure environment for economic development.
- ii. The ministry of internal security should put concerted effort to bolster maritime defense capabilities through investments in naval assets, training programs for personnel, and the establishment of a robust maritime defense strategy. This will not only protect Kenya's maritime borders and sovereignty but also contribute to regional stability and security in the waters surrounding the country.
- iii. The government should focus on enhancing regulations, implementing stringent safety standards, providing adequate training for maritime personnel, and leveraging advanced technology to prevent accidents and environmental disasters. These efforts will instill confidence in investors and stakeholders,

thereby attracting more investments and spurring economic growth in the blue economy sector.

- iv. The sustainable maritime ecosystem protection measures should be prioritized to safeguard the rich biodiversity and ecological balance of the marine environment. This can be achieved through the implementation of conservation initiatives, responsible fishing practices, marine protected areas, and awareness campaigns to promote environmental stewardship among coastal communities and industry players.

5.5 Suggestions for Further Study

A research should be done to assess the effectiveness of existing maritime governance policies in promoting sustainable economic growth and environmental conservation in the blue economy sector. Another study should be done to explore the role of local communities in shaping maritime governance decisions and their participation in blue economy activities. Further, a study should be done on investigating the adoption of innovative technologies in maritime governance and their impact on enhancing efficiency, safety, and sustainability in blue economy operations.

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APPENDICES

Appendix I: Letter of Introduction

Dear Participant,

I am a student at the **Kenyatta University** pursuing a **Master's Degree in Public Policy and Administration**. I am undertaking a research project on, "*Effects of maritime governance in harnessing the blue economy along the Kenyan coastline.*"

Findings help Kenya's maritime agencies in enhancing maritime governance by informing on policies and practices aimed at supporting development of a blue economy that benefits all stakeholders and as well as growing the body of knowledge on maritime governance.

Thank you.

Appendix II: Research Questionnaire

Kindly answer all the questions. Use a Tick (√) as appropriate.

Section A: Demographic Information.

A1. Gender Male [] Female []

A2. What is your age bracket?

Between 18-25 years []

Between 26-35 years []

Between 36 to 45 years []

Between 46-55 years []

Above 55 years []

A3. What is your education level?

Primary school []

Secondary school []

Tertiary education []

Section B: Maritime Security in Harnessing the Blue Economy

	Statement	5	4	3	2	1
B1	There is presence of police officers who provide security along the coastline.					
B2	There are adequate police stations along the coastline.					
B3	Response to security along the coastline is fast					
B4	The security agencies collaborate with the public to get crucial security information.					
B5	There is a police hotline to report security concerns along the coastline.					

How effective are existing maritime security measures in preventing and addressing security threats in the Kenyan maritime space, and what impact do they have on the blue economy?

How do maritime security policies align with the needs and challenges of stakeholders involved in the blue economy?

Section C: Maritime Defense in Harnessing the Blue Economy

	Statement	5	4	3	2	1
C1	Anti-piracy measures have assisted to enhance the blue economy.					
C2	The anti-maritime terrorism measures have been effective in enhancing maritime defence.					
C3	Commercial fishing along the coastline has been enhanced through adequate antipiracy measures					
C4	Maritime transportation has been enhanced through elaborate security measures by the security agencies					
C5	The anti-terrorism laws have enhanced maritime tourism along the Kenyan coastline.					

What are the implications of maritime defense policies on the economic activities within the blue economy, and how do they influence local and international collaborations?

How do stakeholders perceive the balance between maritime defense priorities and the economic development goals of the blue economy?

Section D: Maritime Safety in Harnessing the Blue Economy

	Statement	5	4	3	2	1
D1	Anti-pollution measures put in place have enhanced tourism along the coastline					
D2	There is minimal pollution in the environment along the coastline.					
D3	Government response to accidents and disasters along the coastline has been fast.					
D4	Marine food fished along the coastline is of good quality and quantity.					
D5	There are adequate personnel to deal with marine safety along the Kenyan coastline.					

What role does maritime governance play in ensuring the safety of maritime activities along the Kenyan coastline?

To what extent do existing maritime safety regulations contribute to mitigating risks and accidents in the maritime sector, and how do they impact economic activities?

Section E: Maritime Ecosystem in Harnessing the Blue Economy

	Statement	5	4	3	2	1
E1	There is presence of illegal mining along the coastline.					
E2	There is responsible fishing along the Kenyan coastline.					
E3	Laws to curd illegal mining have been efficient to curb the problem.					
E4	There is adequate implementation of laws against irresponsible and illegal fishing.					
E5	There are adequate personnel to deal with illegal fishing along the Kenyan coastline.					

What are the specific ecological effects of existing maritime governance policies and practices on the marine ecosystem in the studied region?

How do different components of the blue economy, such as fisheries and marine conservation, respond to the regulatory frameworks governing maritime activities?

Section F: Harnessing the Blue Economy

	Statement	5	4	3	2	1
F1	Transportation of goods and people along the coastline is smooth.					
F2	There is responsible commercial fishing along the Kenyan coastline.					
F3	Tourism is thriving along the Kenyan coastline.					
F4	There is legal mining activities along the Kenyan coastline					
F5	There is adequate security along the Kenyan coastline.					

Thank you for your time and contribution!

Appendix III: Research Authorization From KU



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 4150

Website: www.ku.ac.ke

Internal Memo

FROM: Executive Dean, Graduate School

DATE: 22nd May, 2024

TO: Wanjiru Leah Nyokabi
C/o Public Policy and Administration Dept.

REF: C153/MSA/PT/27478/2018

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 15th May, 2024 approved your Research Project Proposal for the M.PPA Degree Entitled, "Effects of Maritime Governance in Harnessing the Blue Economy along the Kenyan Coastline."

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your project before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

A handwritten signature in blue ink, appearing to read 'Elijah Mutua'.

ELIJAH MUTUA
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

c.c. Chairman, Public Policy and Administration Department.

Supervisors:

1. Dr. Daniel Mbirithi
C/o Department of Public Policy and Administration
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EM/mo



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Our Ref: C153/MSA/FT/27478/2018

DATE: 22nd May, 2024

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR WANJIRU LEAH NYOKABI – REG. NO. C153/MSA/FT/27478/2018

I write to introduce Wanjiru Leah Nyokabi who is a Postgraduate Student of this University. The student is registered for M.PPA degree programme in the Department of Public Policy and Administration.

Wanjiru intends to conduct research for a M.PPA Project Proposal entitled, “Effects of Maritime Governance in Harnessing the Blue Economy along the Kenyan Coastline.”





Any assistance given will be highly appreciated.

Yours faithfully,

PROF. ELISHIBA KIMANI
EXECUTIVE DEAN, GRADUATE SCHOOL

EM/mo

Appendix IV: NACOSTI Research Permit

 <p>REPUBLIC OF KENYA</p>	 <p>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
Ref No: 392834	Date of Issue: 04/June/2024
RESEARCH LICENSE	
	
<p>This is to Certify that Ms. LEAH NYOKABI WANJIRU of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: EFFECTS OF MARITIME GOVERNANCE IN HARNESSING THE BLUE ECONOMY ALONG THE KENYAN COASTLINE for the period ending : 04/June/2025.</p>	
License No: NACOSTI/P/24/36332	
392834	
Applicant Identification Number	Director General
	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
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