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"NAVIGATING TROUBLED WATERS: UNDERSTANDING THE IMPACT OF PIRACY IN THE RED SEA ON INTERNATIONAL TRADE & SHIPPING MANAGEMENT STRATEGIES AMIDST THE GEOPOLITICAL TENSIONS"

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Abstract

The Red Sea serves as an essential maritime route that is increasingly jeopardized by piracy, geopolitical conflicts, and maritime terrorism, which threaten the sustainability of international trade and shipping strategies. This thesis explores the effects of these risks on vessel operations and decision-making in high-risk zones, while assessing the effectiveness of maritime frameworks and industry policies, such as the Djibouti Code of Conduct and Best Management Practices.

An expert-informed matrix, grounded in bibliographic insights and professional maritime security experience, was developed to design a targeted questionnaire assessing vessel-specific and company-wide risk factors. By quantifying qualitative data, the study identifies critical strategies such as the role of private maritime security companies, vessel hardening, adaptive routing, and dynamic risk reassessment.

The research highlights the importance of scalable, tech-based solutions and improved international collaboration, linking theoretical perspectives on global security dynamics with the practical necessities of maintaining trade continuity in a maritime environment that is becoming more unstable.

Περίληψη

Η Ερυθρά Θάλασσα αποτελεί μια κρίσιμη θαλάσσια αρτηρία που βρίσκεται σε ολοένα και μεγαλύτερο σε κίνδυνο λόγω της πειρατείας, των γεωπολιτικών συγκρούσεων και της θαλάσσιας τρομοκρατίας, συνθήκες που απειλούν τη βιωσιμότητα του διεθνούς εμπορίου και των ναυτιλιακών στρατηγικών. Η παρούσα διπλωματική εργασία εξετάζει τις επιπτώσεις αυτών των κινδύνων στη λειτουργία των πλοίων και τη λήψη αποφάσεων σε ζώνες υψηλού κινδύνου, ενώ παράλληλα αξιολογεί την αποτελεσματικότητα ναυτιλιακών πλαισίων και πολιτικών του κλάδου, όπως ο Κώδικας Δεοντολογίας του Τζιμπουτί και του Εγχειριδίου Βέλτιστων Πρακτικών.

Ένας εμπεριστατωμένος πίνακας κινδύνων, βασισμένος σε βιβλιογραφικές πηγές και επαγγελματική εμπειρία στον τομέα της ναυτιλιακής ασφάλειας, σχεδιάστηκε για τη διαμόρφωση ενός στοχευμένου ερωτηματολογίου που αξιολογεί τους κινδύνους που σχετίζονται παράγοντες εξαρτώμενους από τα πλοία και τις εταιρείες. Μέσα από την ποσοτικοποίηση ποιοτικών δεδομένων, η μελέτη εντοπίζει κρίσιμες στρατηγικές, όπως τον ρόλο των ιδιωτικών εταιρειών ναυτικής ασφάλειας, τη θωράκιση των πλοίων, τη προσαρμοστική χάραξη θαλάσσιων οδών και τη δυναμική επανεκτίμηση των κινδύνων.

Η έρευνα αναδεικνύει τη σημασία ευέλικτων, τεχνολογικά προηγμένων λύσεων και ενισχυμένης διεθνούς συνεργασίας, συνδέοντας τις θεωρητικές προσεγγίσεις γύρω από τη δυναμική της παγκόσμιας ασφάλειας με τις πρακτικές ανάγκες διατήρησης της συνέχειας του εμπορίου σε ένα ολοένα και πιο ασταθές ναυτιλιακό περιβάλλον.

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Chapter 1: Introduction

1.1 Background

The Red Sea has long served as a crucial maritime corridor, linking the continents of Europe, Asia, and Africa. It is a vital segment of the global maritime trade network, with the Suez Canal at its northern end facilitating the passage of over 12% of the world's trade. The strategic importance of the Red Sea is amplified by its proximity to key oil-producing regions and its role as a gateway for energy supplies to global markets. More than 50 ships transit the Suez Canal daily, carrying goods worth billions of dollars, making the Red Sea an indispensable artery for international commerce.

However, the Red Sea and the broader northwestern Indian Ocean region have become increasingly volatile, marked by rising geopolitical tensions and the persistent threat of piracy. In recent years, this region has emerged as a strategic theatre of great power rivalries, where geopolitical interests converge, leading to a complex security environment. The instability in Yemen, the activities of non-state actors such as the Houthis, and the influence of regional powers like Iran have exacerbated the security challenges in this vital maritime corridor.

Piracy, which once dominated the maritime security landscape in the region, particularly off the coast of Somalia, has evolved. While international efforts have significantly reduced piracy incidents, the underlying socio-economic conditions that fueled this phenomenon still need to be addressed. The recent resurgence of piracy in the Gulf of Aden underscores the persistent vulnerability of this region to maritime threats. Moreover, the intersection of traditional piracy with modern geopolitical conflicts has further complicated the security dynamics in the Red Sea.

The Red Sea's security challenges are not confined to piracy alone. The rise of maritime terrorism, particularly in the context of the ongoing conflicts in the Middle East, poses a significant risk to global trade. The Houthis' maritime operations in support of regional

conflicts, including the recent escalation linked to the Hamas-Israel war, have demonstrated the ability of non-state actors to disrupt international shipping routes, thereby impacting global trade flows. The strategic manipulation of maritime chokepoints, such as the Bab el-Mandeb Strait, by these actors has heightened the risk of maritime terrorism, making it a critical concern for shipping companies and global trade.

Understanding the impact of piracy and geopolitical tensions on international trade and shipping management strategies is essential in this complex and evolving landscape. This thesis aims to explore these challenges, providing a comprehensive analysis of how shipping companies can navigate these troubled waters through effective risk management strategies.

1.2 Objectives of the Study

The notion of piracy has historically posed a significant threat to merchant vessels throughout the annals of seafaring and was certainly not an unprecedented concern for shipping companies during the mid-2010s to 2020s. The image that individuals often conjure from cinematic portrayals, ancient tales, or Halloween attire diverges considerably from the reality of piracy, which remains profoundly critical for the effective management of a shipping company's fleet.

The Red Sea has historically served as a crucial artery for global trade, connecting two significant chokepoints: the Suez Canal and the Strait of Bab-el-Mandeb. This waterway links the U.S. East Coast and Europe to Asia. Despite the associated premiums, traversing the Red Sea has been regarded as the industry standard for transporting goods among the three continents. The alternative route, which involves navigating around the Cape of Good Hope, is perceived as unwise business practice. This route extends the vessel's journey by an additional 3,500 nautical miles, leading to substantially increased transportation and operational expenses. Consequently, the Cape alternative not only prolongs the journey but also limits the vessel's ability to access reliable Mediterranean and Egyptian ports for cargo loading and unloading, spare parts provisioning, bunkering, and crew change operations.

The convergence of security threats presently confronting the Red Sea poses considerable risks to international shipping. Although the region's significance as a maritime corridor is widely recognized, the evolving security landscape—characterized by both traditional piracy and escalating geopolitical tensions, such as those presented by the Houthis—introduces intricate challenges for the shipping industry.

Historically, piracy off the coast of Somalia has significantly dominated the maritime threat terrain in the Red Sea and the broader Indian Ocean region. Although concerted international efforts—including naval patrols and employment of private maritime security companies—have resulted in a decline in piracy incidents, the underlying causes remain unresolved. This persistent fragility conveys that while the threat of piracy has diminished, it is far from

eradication. Recent occurrences, notably the resurgence of piracy attacks in late 2023, demonstrate the potential for piracy to re-emerge as a substantial menace, particularly when regional instability furnishes opportunities for criminal initiatives. Moreover, the geopolitical pressures in the Red Sea have escalated, driven by regional rivalries and the engagement of both state and non-state actors in maritime terrorism.

The conflict in Yemen, exacerbated by the involvement of Houthi rebels, has introduced pristine security risks in the Red Sea. The Houthis' use of advanced weaponry, such as anti-ship missiles, drones, and water-borne improvised explosive devices (WBIEDs), has targeted not only military assets but also commercial vessels, thereby threatening the safe passage of ships through critical maritime chokepoints and primarily the Bab el-Mandeb Strait. As stated, these movements have caused substantial disruptions to global trade flows, with shipping companies forced to reroute vessels (risking even being considered off-hire), thereby incurring higher operational costs and extended delivery times.

The intersection of these threats—resurgent piracy and maritime terrorism, in conjunction with geopolitical tensions—establishes a highly unpredictable and volatile environment for international shipping. The associated risks are not solely theoretical; they possess tangible implications for global trade, with prospective upheavals resulting in elevated shipping costs, increased insurance premiums, and the reconfiguration of global supply chains.

For shipping companies operating in this region, the primary challenge lies the development and implementation of effective risk management strategies that could adapt to the rapidly transforming security landscape. This entails decisions related to route planning, the utilization of armed security personnel, and the adoption of new technologies and practices aimed at mitigating potential threats. However, there exists a considerable gap in the current literature and industry practices concerning the visibility of these strategies and the potential for their optimization to effectively address the dual challenges of piracy and geopolitical instability in the Red Sea.

This thesis addresses the existing gap by examining the impact of security challenges on

international trade and analyzing the efficacy of the current shipping management strategies. The quality factors that illustrate the overarching context are forged into a Matrix that may assist a shipping company's management in determining whether to utilize the Red Sea passage or not. Therefore, this study seeks to examine whether the prevailing trend of rerouting through the Cape is supported by tangible evidence and is not solely influenced by prevailing trends or personal reticence. Additionally, this research aspires to provide actionable insights into how shipping companies can adeptly navigate the complexities of operations in the Red Sea, as the risks and the perceptions of risk frequently contradict established notions, thereby ensuring the safety of their vessels and the continuity of global trade.

1.3 Problem Statement

The landscape of the Red Sea- one of the most critical maritime corridors for shipping companies- confronts an undisputably volatile security landscape. From 2005 through 2011, a total of 149 vessels and more than 3,700 crew members were captured by Somali pirates, demanding ransoms that aggregated to over $300 million, with a consequent annual loss exceeding $18 billion to the global economy in cost of trade – according to the World Bank. At about this time, Somalia engaged in a civil war that ultimately rendered the country a failed state that generously offered considerable havens for hijacked vessels. Since the last quarter of 2023 and as a result of the turbulent domino effect deriving from the Gaza crisis, the resurgence of piracy in the Gulf of Aden and the rising geopolitical hazards posed by non-state actors like the Houthis have ushered in a complex and erratic environment. These factors underscore the imperative for shipping companies to develop dynamic and adaptive risk management strategies to ensure safe and effective operations.

The first core issue to address in the problem statement is the resurgence of piracy and last year's incidents. The main reason behind this is that the prevailing regional instability has a "fertilizer" effect on the recent revival of piracy in the Gulf of Aden, despite international efforts to curb piracy off the coast of Somalia. The current resurgence, powered by the Houthi conflict in Yemeni territory and the all-pervasive lack of strong governance in the coastal areas of the Bab el-Mandeb Strait, suggests a revived risk for the commercial activities of vessels transiting this significant chokepoint.

Piracy has eventually updated its tactics by taking the opportunity to acculturate more sophisticated operations—enhanced by collaboration with organized crime networks. Thus, the need for new risk management strategies beyond traditional naval patrols and onboard security (such as armed guards) has become more vital than ever.

Secondly, the rising geopolitical threats have escalated the security risks in the Red Sea. The Houthis' obtrusion on the area, mainly due to their access to more advanced weaponry, such as anti-ship missiles, drones, and WBIEDs, has redirected the course of global trade almost

overnight. The imminent threat of the attacks that used to focus on military assets shifted to commercial vessels, leading to higher insurance premiums, rerouting, and operational delays.

The Red Sea constitutes a theatre for great power rivalries, with Iran utilizing the Houthis as proxies to challenge Saudi Arabian and Western interests. Intermittent missile attacks and military actions have raised the necessity for exhaustive threat assessments for shipping companies unwilling or unable (e.g., due to time-charter party clauses) to add operational expenses or delays to their vessels' itineraries.

The interconnected essence of geopolitical conflicts (e.g., the Hamas-Israel war) aggravates regional instability, leading to an unpredictable security environment for passing vessels due to their affiliations with one of the two evolving parties. These conflicts are no longer fettered to distinct areas and bear broader implications for global maritime trade, such as traffic and oil spills in the port of Singapore and deficiencies in the logistics networks of the ports of Oceania.

That said, it would be a terrible understatement not to portray the socio-political landscape in the region as highly volatile, with war threats and maritime risks altering daily. Political agreements, religion-driven alliances and conflicts, changes in military control, and diplomatic shifts can lead to rapid fluctuations in the echelon of threats posed by piracy and terrorism. Such a broad spectrum of volatility makes decision-making based on consistent risk data significantly challenging for shipping companies.

Therefore, considering the complex and ever-growing threat terrain, shipping companies must review their existing risk management frameworks. Strategies used during earlier piracy surges (e.g., armed security personnel or naval escorts) may not fully address the new dimensions of geopolitical instability.

The shipping companies should assimilate data-driven, constantly adaptive security measures that account for real-time intelligence, fluctuating geopolitical risks, and the potential for rapid changes in the security environment. Nevertheless, anti-drone equipment for each

vessel would not be a prudent nor canny solution as the cost of the equipment alone—without the operational team—would amount to a minimum of half a million dollars.

Hence, a proactive and holistic approach (addressing both traditional piracy and emerging geopolitical risks) would be imperative. This would counterbalance the economic costs of rerouting or increasing insurance premiums against the need for vessel and crew safety and cargo protection.

Utterly, the problem statement focuses on the intersection of piracy and geopolitical threats in the Red Sea, which creates a highly unpredictable operating environment for shipping companies. As piracy evolves and geopolitical conflicts like the Gaza crisis, attacks in Lebanon, and the Houthis' actions escalate, shipping companies must develop new risk management strategies to navigate the troubled waters of the most volatile maritime corridor.

Consequently, this thesis will examine in depth how shipping companies could adapt their strategies on a case-by-case basis in order to minimize risks while ensuring vessel and crew safety and defending the continuity of global trade amidst these geopolitical tensions.

1.4 Research Questions

In light of the evolving security challenges in the Gulf of Aden area, piracy and its latest resurgence undoubtedly pose a significant threat to the safe passage of merchant vessels through the Red Sea. This research seeks to illuminate the complex interplay between piracy, geopolitical tensions, and their combined effects on international trade and shipping operations.

With the assistance of three research questions, the study will delve into the evolving nature of piracy. The study will focus on the specific impact of piracy on international shipping through critical chokepoints in the region, such as the Bab el-Mandeb Strait and the Suez Canal, by portraying piracy's overall disruptive effects on global trade routes, the subsequent increased operational costs, and finally the erosion of supply chain reliability for shipping companies.

With the following research questions as a compass, this thesis will provide a comprehensive analysis of the above issues while exploring shipping companies' strategic responses, aiming at risk mitigation and securing the continuity of global commerce.

1. **What are the impacts of piracy in the Red Sea on international trade?**

The current Red Sea crisis could not better illustrate the vital importance of critical waterways—like the Suez Canal—to the international economy. Hence, the same denotes its degree of vulnerability to disruption. This crisis reflects a worrying plot that already has a plethora of repercussions and consequences for the rest of the trade routes and countries exposed to geopolitical events, as we have witnessed with the ship seizure in the Strait of Hormuz (e.g., the seizure of MSC Aries from Iranian special forces in international waters near the UAE coast).

2. **How do geopolitical tensions exacerbate these impacts?**

The ripple effect of geopolitical tensions constitutes one of the main axes shaping the security landscape in the Red Sea. In particular, the already existing risks posed by piracy itself are amplified by the events shaking the worldwide arena since last year, including but not limited to the Gaza crisis, the ongoing conflict in Yemen, the emergence of Houthi maritime terrorism, and the broader Iran-Saudi rivalry. This situation is significantly potentiated by the state of other major chokepoints as well, namely the drought of the Panama Canal and the disruption of the Black Sea trade route due to the Russian-Ukrainian conflict.

3. **What strategies can shipping companies employ to manage these risks?**

The shipping companies were called to tackle the twofold threat of piracy and geopolitical tensions by adapting their risk management strategies, ending with more vessels diverting their routes through the Cape of Good Hope. This profligate route (fuel cost- and time-wise) was an undeniable necessity for shipping companies to protect their vessels, crew, and cargo. On the other hand, those who had to opt for the Red Sea passage have faced an equivalent cost raise due to premiums paid to marine insurance and crew salaries, employment of armed security personnel, and assessment of investment in advancing threat detection technologies. This question will also examine how companies counterbalance cost efficiency with the need for safety and operational continuity and whether there are gaps in the current approaches that require innovation or more proactive measures.

Utterly, by manning these three research questions, this thesis aspires to contribute to a sounder understanding of the multifaceted challenges in the Red Sea and suggest actionable discernment tools for how shipping companies could enhance their risk management practices. In a nutshell, the ultimate goal is no other than the identification of insightful strategies ensuring not only fleet safety but also assisting in the maintenance of the global trade's continuity in the highly volatile maritime environment, with the assistance of a new Matrix tool.

High Risk Areas Matrix						
Key Considerations						
Vessel						
Speed	Type of VSL	Weather				
Freeboard	Type of VSL	Ballast/Laden				
Weather/ Monsoon Period	Swell	Wind				
Previous experience & training	Master / Crew experience	Previous incident	Management company's experience	Trianings and Drills		
Hardening Materials	Razor Wire	Water Hoses	Dummies			
Flag State	Categorization of flag (white/grey/black)	EU Law	Affiliations	Permission or Obligation for Armed Guards	LSA	
Citadel Existence & Communications	BMP5 precautions	Type of vessel				
Shipping Company						
Route	Operations	BMP5 precautions	AIS	Communications	Insurance	
AIS Policy	Operations	BMP5 precautions				
Affiliations / Interests with at War Countries	Risk of dispute	Mitigation of losses and delays	Geopolitical developments	Possible new battlefronts	Origin of shipping company/ charterers /shippers	
Join IRTC Convoy	Operations	BMP5 precautions	Route modification			
Incidents of the last 6 months	Experience	Risk				
Charter Party Limitations	Delivery Delays	Insurance coverage	P&I coverage	Cargo damages		
Cost	Operational Expenses	Bunkers	Insurance / war risk	Vessel's condition (e.g. need for more frequent drydockings)	Vessel's value on S&P market / loss of profit-foregone revenue	Type of vessel

Table 1, "The Matrix"

1.5 Summary of Thesis Structure

This thesis consists of five key chapters that systematically follow the research goals and provide an in-depth examination of the challenges and strategies related to maritime security in the Red Sea.

Chapter 1: Introduction

This chapter lays the groundwork for the research, highlighting the Red Sea's vital role in global trade and the growing vulnerabilities in the region caused by piracy, maritime terrorism, and geopolitical tensions. It outlines the study's objectives, identifies the research problem, poses guiding questions, introduces the Matrix, and concludes with an overview of the thesis structure.

Chapter 2: Literature Review

This chapter offers a thorough examination of relevant literature, commencing with the historical context of piracy in the Red Sea and its implications for global commerce. It analyzes the geopolitical dynamics of the region, assesses the effectiveness of current shipping management strategies, and investigates relevant international relations theories, including Neo-Realism, the English School, and Watson's framework. Additionally, the chapter draws historical parallels to underscore recurring systemic patterns.

Chapter 3: Methodology

This methodology details the research design, explaining how an expert-informed matrix was created and a questionnaire tailored for shipping professionals was developed. It provides a thorough overview of the data collection process, the rationale behind sampling approach, and the application of statistical tools for analyzing qualitative and quantitative responses. This chapter guarantees methodological rigor by clarifying how the study quantifies complex risk factors and tackles real-world operational challenges.

Chapter 4: Results & Discussion

This chapter outlines and evaluates the results from the questionnaire. The findings are

organized into categories: vessel-specific, company-wide, geopolitical, and environmental factors, linking them to the theoretical frameworks discussed in Chapter 2. The analysis includes practical recommendations for shipping companies, stressing the importance of adaptive risk management strategies and highlighting the implications of the findings for industry policies and trade security.

Chapter 5: Conclusion

The concluding chapter brings together the main findings and their wider significance for the shipping industry. It highlights the limitations of the study and suggests paths for future research, such as investigating emerging geopolitical trends and innovations in maritime security technology. Additionally, it offers practical management recommendations, connecting theoretical insights with real-world applications to improve operational resilience.

Chapter 2: Literature Review

2.1 Historical Context of Piracy in the Red Sea

The Indian Ocean region has been an important trade arena for centuries. The Arabian Sea and the north-western Indian Ocean is a dynamic, fast-evolving arena that has become major strategic theatre during the twenty-first century. As one of the world's most important routes for international maritime long-haul cargo, the northwestern Indian Ocean remains vulnerable to piracy and highly unpredictable potential acts of maritime terrorism.

Piracy has long been a persistent threat in the Red Sea and Gulf of Aden region, with a history stretching back centuries. However, the issue gained global prominence in the late 2000s, as a surge of piracy attacks off the Somali coast threatened the flow of international shipping through the vital chokepoint of the Bab-el-Mandeb Strait (Onuoha, 2009).

In the early 2000s, Somali piracy operations expanded rapidly, with pirates targeting an increasing number of commercial vessels transiting the region. (Onuoha, 2009) The motivations behind this rise in piracy were complex, stemming from a combination of poverty, lack of economic opportunities, and the breakdown of Somalia's central government in the 1990s. As the situation deteriorated, piracy became a lucrative criminal enterprise, with pirates preying on the high-value cargoes and ransoms that could be extracted from captured ships.

The escalation of Somali piracy in the late 2000s had a significant impact on international trade and shipping. Hundreds of vessels were targeted, with many being hijacked and held for ransom. The costs of these attacks, including increased security measures, rerouting of ships, and ransom payments, were estimated to have reached billions of dollars annually (DeAngelo & Smith, 2020).

The high-profile hijacking of Maersk Alabama, in 2009 garnered international attention toward the ongoing piracy crisis in the region. The capture of the American cargo ship, along with the subsequent hostage situation, highlighted the vulnerabilities of commercial vessels

and emphasized the necessity for coordinated international action to address this pressing issue.

In 2011, the hijacking of the oil tanker Irene SL and the siege of the cruise ship Seabourn Spirit further illuminated the severity of this threat. These incidents, among numerous others, prompted the deployment of international naval forces to the region, as well as the implementation of stricter security measures by shipping companies.

In the middle of the year 2023, piracy, which has represented the primary maritime threat to the shipping industry for numerous decades, exhibited a noteworthy decline, ultimately resulting in the abolishment of the High-Risk Area.

The assertion that geostrategic rivalries among dominant states in the north-western Indian Ocean littoral may lead to significant political instability throughout the region, thereby posing a substantial threat to the shipping industry, has been confirmed conspicuously. Most importantly, the involvement of non-state actors in the maritime landscape has emerged as a concerning and perilous development.

2.1.1. Somali Piracy

Piracy in Somalia has been a phenomenon that has presented the international community with many issues and challenges since the beginning of the 21st century. International organizations have long argued that statelessness, poverty, and unemployment in coastal communities are underlying causes of piracy. Others believe that problems related to local fisheries are connected to piracy, based on reports that many pirates are, essentially, members of inland nomadic clans or criminal gangs (Raj M. Desai & George E. Shambaugh, 2021). In all cases, failed and fragile states, where lawlessness and weak governance prevail, provide underlying conditions that are perfect for piracy to grow and enable pirate gangs to operate with minimal risk. On top of that, the transformation of Somali piracy from a haphazard activity into a highly organized, professionalized criminal enterprise is briefly elucidated by the greed-grievance theory and supplemented by the theory of crime, also known as routine-activity theory (Rulah Odeh Alsawalqa & Denis Venter, 2021). In essence, pirates were fully

aware that they would carry out hijackings, securing exorbitant ransoms from shipping companies for the release of crews (Rulah Odeh Alsawalqa & Denis Venter, 2021).

A steep increase in piracy threats from 2011 onwards prompted a vigorous reaction at the international and regional levels, leading to a significant decrease between 2016 and 2022. More specifically, according to data provided by Statista, the number of attacks off the Somali coast fell dramatically to just eight in the seven-year period between 2016 and 2022. Piracy attacks in Somali waters peaked in 2011, when 160 attacks were recorded, and incidents soared to 358 during the five-year period between 2010 and 2015 (Statista Research Department, 2023).

The presence of coordinated international and regional naval forces was also critical to the suppression of Somali piracy. More specifically, in late 2008, the Council of the European Union adopted Joint Action 2008/851/CFSP to launch the EU Naval Force Operation Atalanta (EUNAVFOR) and contribute to the deterrence, prevention, and repression of acts of piracy and armed robbery off the Somali coast. In late 2022, despite the decision for the abolishment of the HRA, the EUNAVFOR Operation Atalanta was extended to December 2024 with a new mandate in place, reflecting achievements, challenges, and the way ahead for the Operation. After the resurgence of Somali pirates in late 2023, this effort has been further enhanced, with additional ships and forces deployed to the region (Lori Ann LaRocco, 2024).

Additionally, crucial was also the extensive use of Privately contracted armed security personnel (PCASPs), which have demonstrated an effective presence in the Indian Ocean and have proven effective alongside BMP5 measures, protecting the crew and assisting in the fortification of merchant vessels in the region (Diaplous reports, 2024).

Nevertheless, the reporting of several suspicious approaches during 2022-2023, although they did not escalate further, led many security providers to assume that the piracy threat is still present and the root causes of piracy have not been eradicated. While it was the enhanced forces in the region, as well as the properly implemented mitigation measures on the ships,

that largely discouraged Pirate Action Groups (PAGs) from targeting merchant vessels, resulting in a notable decrease in successful attacks. As it often happens, it is always just a matter of opportunity, and Somali pirates appear to be well aware of the chances presented by regional instability. Clear evidence supporting this argument was the hijacking of the Malta-flagged bulk carrier RUEN in mid-December 2023, approximately 340 nautical miles east of Socotra Island, the first successful hijacking involving Somali pirates since 2017. This incident occurred soon after Houthi attacks, which subsequently began the Red Sea crisis in November 2023. Within the next six months, five more piracy incidents were recorded. (Diaplous Reports)

2.1.2 Modus Operandi of Pirates

Throughout the decades, the pirates' modus operandi has remained fairly the same. The typical pirate strategy involves the seizure and hijacking of dhows, vessels, and whalers, which are subsequently used as motherships. Motherships allow PAGs to drill at long distances from the coast and to remain at sea for longer periods of time compared to skiffs. They then blend in with usual traffic and deploy skiffs from the mothership to attack vessels navigating as far as 600 nautical miles or more (MSCHOA Report, 2024). Where the size of the mothership allows, skiffs are increasingly carried onboard and camouflaged to reduce the chances of interdiction by Naval and military forces.

In detail and as per UKMTO, pirates typically function within Pirate Action Groups (PAG) that utilize various boat configurations, most commonly employing small, high-speed vessels or skiffs capable of reaching speeds of up to 25 knots. The configurations of PAG vessels include:

a. Skiffs only.
b. Open whalers transporting substantial quantities of fuel and frequently towing one or more attack skiffs.
c. Motherships encompass merchant vessels and fishing boats; however, they are more commonly represented by dhows.

In instances where motherships are employed, the crew is frequently held onboard as hostages. Motherships serve the dual purpose of transporting pirates and their supplies, including provisions, fuel, and attack skiffs. Thus, pirates can conduct operations across a substantially larger geographic area while exhibiting reduced susceptibility to adverse weather conditions. Typically, attack skiffs are towed behind motherships; however, when the dimensions of the mothership permit, skiffs may be transported onboard and effectively camouflaged.

Pirates may employ small arms fire and Rocket-Propelled Grenades (RPGs) to coerce shipmasters into reducing speed or halting operations, thereby facilitating their boarding. The bridge and accommodation areas are typically the primary targets for these munitions. Moreover, pirates employ elongated, lightweight ladders, knotted climbing ropes, or extended, hooked poles to ascend the side of the vessel. Upon boarding, they proceed to the bridge in an attempt to seize control of the ship. Once on the bridge, they will demand that the vessel reduce speed or come to a halt to facilitate the boarding of additional pirates. Attacks can occur at any time, whether during daylight hours or nighttime; however, empirical evidence indicates that such attacks are statistically more prevalent at dawn and dusk.

The primary objective of Somali pirates is to seize control of vessels and subsequently hold the crew for ransom. Typically, the standard procedure involves retaining the crew aboard the vessel during negotiations, thereby ensuring the simultaneous custody of both the crew and the ship. On certain occasions, seafarers have been segregated based on their nationality and taken ashore. It is in the interest of the pirates to guarantee the survival of their captives; however, instances of intimidation and torture have been documented.

According to maritime security experts, Somalis tend to approach a vessel from one or both sides in order to achieve the element of surprise, limit the crew's immediate response, and eventually enable one or more armed pirates to climb onboard. Sometimes, they even pretend to be fishing boats. As soon as they manage to get alongside the vessel, they use ladders and hooks to climb up to the vessel's deck. Once onboard, pirates generally make their way to the bridge to try to take control of the vessel. They are often equipped with AK-47 automatic

rifles and RPGs, in addition to possessing advanced communication and navigation equipment. In the new era of Somali piracy that commenced in December 2023, a security source has disclosed that Somali pirates have taken additional measures to fortify their operations. Following the recent raid by Indian navy commandos, which resulted in the apprehension of 35 pirates and the liberation of the vessel M/V Ruen, the source revealed that the pirates have incorporated anti-aircraft weaponry onto the vessel (Horn Observer, 2024). In accordance with their established procedures, upon the seizure of a vessel, it is transported to the Somali coast where it is retained while ransom negotiations are conducted (MSCHOA Report, 2024).

It is imperative to recognize that Somali pirates exhibit a notable increase in operational activity during both the pre-monsoon and post-monsoon periods, which coincide with the northeastern monsoons- when maritime conditions are relatively calm. Conversely, the summer season, characterized by southwest monsoons, presents less favorable weather for piracy, culminating in a decrease in attacks. Notably, over 90% of pirate assaults have transpired in sea conditions classified as wave state four or below (with wave heights not exceeding 2.5 meters), as incidents of piracy notably decline following the tumultuous seas of the summer monsoon. Moreover, wind speeds and wave heights encountered during the winter monsoon, pre-monsoon (March to May), and post-monsoon (September to November) seasons do not deter pirate activities within the Indian Ocean region. Ultimately, the elevated sea states associated with summer monsoon winds significantly hinder the operations of pirates employing small vessels (Duncan Cook & Sally Garrett, 2013).

2.2 Geopolitical Landscape of the Red Sea and Surrounding Area

2.2.1 An Introduction of the Evolving Geopolitical Landscape of the Red Sea

The Red Sea embodies an eternally crucial maritime corridor that links the Mediterranean Sea with the Indian Ocean and has emerged as a focal point of geopolitical tensions in recent years. The Red Sea region has long been a hotbed of geopolitical tensions and power struggles, which have presented significant challenges in addressing the persistent threat of maritime piracy (Vreÿ, 2010). The involvement of numerous regional and international stakeholders, each with their distinct agendas and priorities, has further complicated the circumstances.

For instance, the Horn of Africa represents a geopolitically sensitive region, with countries like Ethiopia, Eritrea, and Djibouti vying for influence and asserting their strategic interests. The establishment of foreign military bases within the area, specifically those of the United States, China, and France, has further complicated the security dynamics. The persistent conflict in Yemen, in conjunction with the escalating influence of Iran in the region and the participation of various regional stakeholders, has undoubtedly rendered the Red Sea a precarious zone for international shipping.

2.2.2 The Geopolitical Landscape of the Red Sea and Surrounding Areas

The intricate geopolitical dynamics within the Red Sea region present substantial challenges in effectively confronting the issue of maritime piracy. This region is characterized by a complex intertwining of competing interests, power struggles, and security concerns, which can occasionally hinder a cohesive and coordinated response to this threat.

The involvement of various regional and international actors, each with their own agendas and priorities, has added to the complexity of the situation. The Horn of Africa, for instance, is a geopolitically sensitive area, with countries like Ethiopia, Eritrea, and Djibouti vying for influence and jockeying for position. The presence of foreign military bases in the region, such as those of the United States, China, and France, has further complicated the security landscape. (Onuoha, 2009)

Furthermore, the persistent conflicts and political instability in nations such as Yemen and Somalia have created a conducive environment for the emergence and proliferation of piracy activities. The absence of effective governance and law enforcement in these regions has facilitated the flourishing of piracy networks, thereby complicating the efforts of the international community to mount a coordinated and sustained response.

In this context, the geopolitical tensions and power dynamics within the Red Sea region have presented considerable challenges in effectively addressing the issue of maritime piracy.

2.2.3 Geopolitical Tensions in the Red Sea Throughout recent years

The Red Sea region has historically been defined by intricate political dynamics, wherein various parties contend for influence. The growing presence of Russia in the Mediterranean and the Middle East has underscored the significance of the three southern seas, including the Red Sea, as a crucial military-security zone. Consequently, this development has resulted in increased tensions and competition between Russia and NATO in the region.

Furthermore, the Yemeni conflict, which has endured for multiple years, has exerted a substantial influence on the geopolitical landscape of the Red Sea. The involvement of regional powers, including Saudi Arabia and Iran, has further intensified the situation, rendering the Red Sea a battleground for their proxy war.

In light of the expanding influence of Russia in Central Asia and the Middle East, the region of the three seas is evolving into a vital, interconnected military-security zone for Russia. This development concurrently poses significant challenges for NATO and Western nations.

Iran's growing influence in the region has also been a source of concern for the international community. Iran's involvement in the Syrian conflict and its support for Hezbollah have contributed to the rising tensions in the Red Sea area. (Furlan, 2019) The strategic importance of the Red Sea, which serves as a vital trade route between the East and the West, has

attracted the attention of various global powers—including the United States, China, and India—further complicating the geopolitical landscape. (Ylönen, 2022; Lewis, 2019)

2.2.4 Implications for International Shipping

The volatility of the Red Sea region has substantial implications for international shipping. The competition for influence in this area has resulted in an increased military presence, thereby heightening the risk of accidents or incidents that may disrupt the flow of maritime traffic.

The conflict in particular, has posed a direct threat to maritime operations in the Red Sea. Attacks on commercial vessels and the closure of critical ports have disrupted the movement of goods and energy resources through this vital waterway. The increasing influence of Iran within the region has generated apprehensions regarding the potential disruption of shipping, given that Tehran has been alleged to support Houthi rebels in Yemen, who have conducted attacks on commercial vessels. These geopolitical tensions have had far-reaching consequences, as the Red Sea is a critical maritime route for global trade, with approximately 12% of the world's seaborne trade passing through this waterway. (Ylönen, 2022; Åtland & Kabanenko, 2019)

Thus, the geopolitical landscape of the Red Sea has become increasingly complex, with various regional and global powers vying for influence. The Yemeni conflict, Iran's growing presence, and the competition between Russia and NATO have all contributed to the transformation of the Red Sea into a volatile region for international shipping. As global powers continue to jostle for position in this strategically crucial area, the implications for maritime trade and security will remain a pressing concern for the international community. (Lewis, 2019 ; Hokayem, 2014; Attanayake & Atmakuri, 2021;Ylönen, 2022)

2.2.5 The Shifting Alliances and Power Dynamics

The geopolitical landscape of the Red Sea region has been further complicated by the shifting alliances and power dynamics within the Middle East. The disintegration of nation-states established by colonial powers, coupled with the emergence of non-state armed groups, has

profoundly transformed the regional dynamics.

The growing cooperation between Israel and Saudi Arabia, propelled by their mutual apprehension regarding Iran's influence, exemplifies the shifting alliances within the region. Additionally, the formation of an alliance between Turkey and Qatar, founded upon their ideological affinity for the Muslim Brotherhood, has offered an alternative to the Gulf Cooperation Council and fostered a rapprochement with Tehran.

These shifting alliances and power dynamics have contributed to the volatility of the Red Sea region as various actors jockey for influence and control over this strategic waterway. Naturally, the Red Sea has become a hotbed of geopolitical tensions, with the Yemeni conflict, Iran's influence, and the involvement of other regional and global powers transforming the region into a volatile area for international shipping. The shifting alliances and power dynamics in the Middle East have further complicated the geopolitical landscape, making the Red Sea a crucial yet precarious area of strategic importance. (Ylönen, 2022; Furlan, 2019; Hokayem, 2014; Lewis, 2019)

2.2.6 Navigating Geopolitical Tensions Related to Piracy in the Red Sea Over the Past Decade

The geopolitical complexities of the Red Sea region have added another layer of challenge to combating maritime piracy. Governments and piracy suspects in the region may attempt to downplay the similarities between their local piracy operations and those seen in other parts of the world, in an effort to avoid increased pressure or accountability for addressing the problem. (Onuoha, 2009) The international response to piracy off the coast of Somalia has demonstrated a greater level of robustness in comparison to the more regionally led initiatives observed in Southeast Asia, where incidents of piracy have notably decreased.

This contrast underscores the necessity for a comprehensive and coordinated strategy that duly considers the unique political and security dynamics of the Red Sea region. In order to effectively navigate this complex and continually evolving security landscape, shipping companies and vessel operators must engage in a multifaceted approach, which incorporates

measures such as utilizing private security contractors, enhancing monitoring and surveillance, and ensuring close collaboration with regional and international authorities.

Given that the Red Sea remains a crucial chokepoint for global trade, the effective management of piracy-related risks will continue to be a foremost priority for both the shipping industry and the international community at large.

2.2.7 Maritime Terrorism: An Examination of State and Non-State Actors

In recent years, threats of maritime terrorism have been predominantly identified in the Persian Gulf. Iranian naval forces have historically engaged in the regular harassment or seizure of merchant vessels to exert pressure during diplomatic negotiations or disputes, as well as in response to the enforcement of United States sanctions. These forces have employed small boats and helicopters during boarding operations and have endeavored to compel merchant vessels into Iranian territorial waters. The primary category of vessels targeted has been tankers; however, other vessels have also been subjected to targeting based on their flag state, ownership, and cargo affiliations.

This threat and the frequency of related incidents have slowed, while the Red Sea and the Gulf of Aden have become hotbeds for maritime terrorism since Ansar Allah (the ‘Houthis’) became involved in the ongoing Hamas-Israel war. Maritime terrorism has emerged explicitly in the form of a. missile/drone attack and b. vessel seizure.

Houthi militants are situated in Yemen and govern a considerable portion of the western region of the country. Amid escalating tensions and following the onset of the Yemeni civil war in 2014, which pits the internationally recognized government against the Houthis, the latter have demonstrated a propensity for conducting maritime assaults targeting rival Yemeni ports, terminals, oil facilities, as well as commercial vessels engaged in trade with the Iranian Revolutionary Guard (IRG) or associated with nations supporting the IRG, including Saudi Arabia and the United Arab Emirates (UAE). During this period, the Houthis employed three distinct methods to execute their attacks:

a. **Anti-ship missiles** represent long-range, precision-guided, and potent munitions. Their deployment against merchant vessels linked to regional conflicts must not be overlooked. Additionally, there exists the potential for collateral damage if the missile operator misidentifies the intended vessel or if the missile inadvertently engages a non-target.

b. **Sea mines** have been employed to deter and restrict access to critical ports in Yemen. These mines are typically tethered or anchored; however, they may become dislodged from their moorings and subsequently drift into shipping lanes.

c. **Water-Borne Improvised Explosive Devices (WBIED) attacks** have been used against warships and merchant ships in the southern Red Sea/BAM/western area of the Gulf of Aden. Incidents have highlighted attacks by different groups operating in the region. For example, WBIED used in the regional conflict have been aimed at harming those associated with the conflict. These boats have been unmanned and operated remotely. On the other hand, WBIED used by extremists have been aimed at merchant ships. These boats have been manned. An attack involving a WBIED is likely to involve one or more speed boats operated by a number of individuals approaching and firing both small arms and RPGs.

These attacks had decreased significantly in 2022–2023, as negotiations and agreements between rival sides began to produce results, although these results were limited and far from achieving a final resolution. (Diaplous White Paper, 2022)

2.2.8 The emergence of the Houthi threat in the period of 2023 to 2024.

The Houthi rebels in Yemen have emerged as a significant threat to the security and stability of the Red Sea region. Their attempts to seize control of Yemeni territory have led to a distortion of social norms, as the group has resorted to increasingly aggressive and violent tactics to achieve its goals (Hariyani et al., 2022).

The Houthis' efforts initially began as a protest against the presence of power, but as they grew in strength and influence, they crossed the boundaries of social norms, engaging in actions that have exacerbated the conflict in Yemen (Hariyani et al., 2022). The Houthis'

rising power dynamics have led to a severe conflict, with the group's attempts to control Yemeni territory causing widespread disruption and instability.

The factors that have contributed to the Houthis' distortion of social norms in the conflict include their desire to seize control of strategic resources and territory, as well as their willingness to engage in violent and coercive tactics to achieve their objectives.

According to the image presented below, the country is divided into five distinct zones of varying influence:

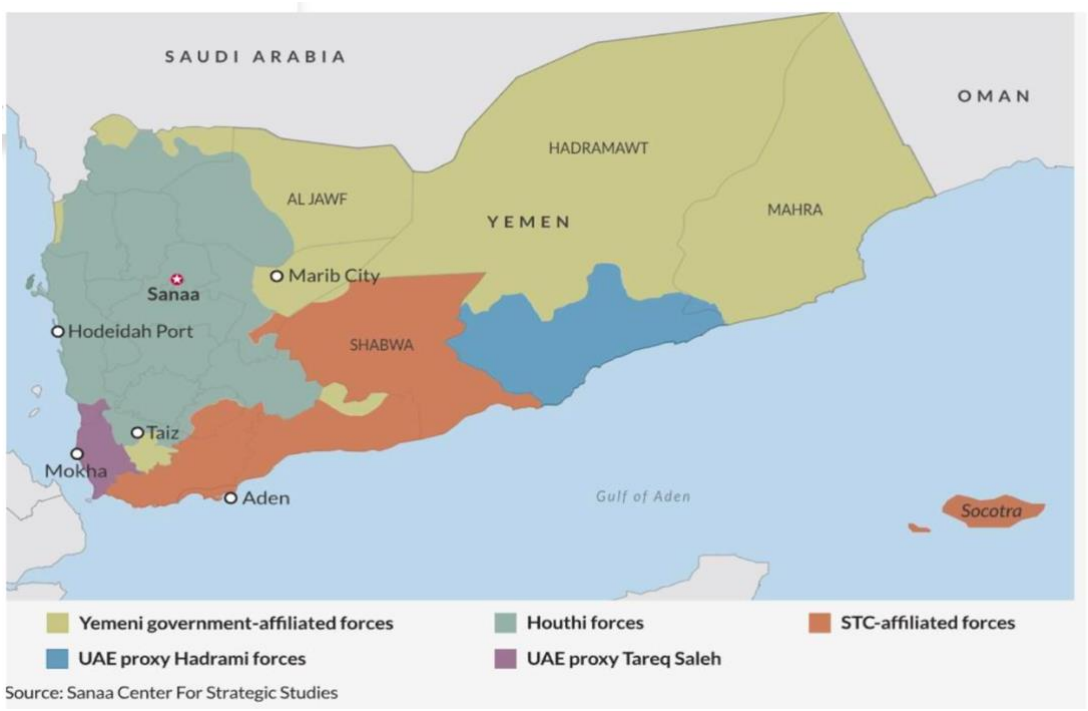

Figure 1

The following are those of utmost importance:

a. STC: Southern Transition Council, UAE backed Groups and affiliated forces (Aden City)

b. Yemen’s coastline overall length, from Oman in the Arabian Sea to Saudi Arabia in the Red Sea: 1200 miles (1930 km)

c. Houthis controlled coastline in the Red Sea: 260 miles (420 km)

The blockade of the port of Hodeidah, a major entry point for humanitarian aid and essential supplies, imposed by the coalition partners has significantly hindered the delivery of humanitarian assistance to the Yemeni population. The pervasive poverty in Yemen has fostered a "war economy," leading to local speculative pricing of goods and the imposition of both formal and informal fees on aid material deliveries. Moreover, the control plateau of Taiz is of paramount significance, as it serves as the Houthis' operational base for their drone and missile activities, owing to the extensive visibility that the area provides.

The dynamics associated with the Houthis' authority in Yemen have manifested as a distortion of social norms. The actions of this group have significantly contributed to the fragmentation of Yemeni society and the exacerbation of the persistent conflict.

2.2.9 A catalogue of piracy incidents and Houthi attacks.

The comprehensive catalogue is located in ***Appendices E*** and ***F***, which detail all incidents that have occurred since the outbreak of the Gaza conflict last year.

2.2.10 Assumptions Regarding the Analysis of Incidents

Recent assessments indicate that missile and drone assaults constitute the principal strategy employed by the Houthis to target vessels affiliated with Israel, the United States, or the United Kingdom, including the utilization of sea drones (Unmanned Surface Vehicles, USV). The intention seems to be the infliction of maximum damage while employing cost-effective weaponry, with minimal consideration for the potential repercussions.

Data indicates that 11,148 merchant vessels are projected to transit through Bab el Mandeb from November 19, 2023, to July 31, 2024. Among these, seventy-eight (78) vessels were subjected to attacks, representing approximately 0.70% of the total. Furthermore, fatalities, injuries, or damage were sustained by thirty-two (32) of the assaulted vessels, corresponding to 41% of those that were attacked. Notably, sixteen (16) vessels have been specifically

targeted by Houthi forces, with no verified affiliations to Israel, the United Kingdom, or the United States. In at least fourteen (14) documented incidents, warnings were issued by purported Yemeni authorities to divert the vessels from their course and vacate the area prior to the assaults. Additionally, twenty-five (25) of the seventy-eight (78) affected vessels operated with their Automatic Identification System (AIS) deactivated.

Following a comprehensive analysis of the Houthi attacks conducted to date—considering weapon types, accuracy, range, and success statistics—a recommendation has been issued for vessels to operate with their AIS deactivated when navigating specific regions identified as heightened risk zones. It is imperative to clarify that this recommendation is not directed towards any specific vessel, shipping company, or maritime route, nor does it imply any imminent threat of an attack.

There exists no discernible pattern pertaining to the timing of imminent attacks. Although the majority of reported incidents have occurred during daylight hours, 33% of the attacks transpired during nighttime (25 out of 78). The risk level in the Red Sea and the Gulf of Aden remains classified as HIGH in August 2024, with no indications of mitigation. Moreover, the assassination of the Hamas political leader in Tehran and the military leader of Hezbollah in Beirut, following purported Israeli airstrikes, may exacerbate the already precarious situation in the Middle East.

In conclusion, the geopolitical tensions in the Red Sea region, driven by the Yemeni conflict and the growing influence of both regional and global powers, have transformed this strategic waterway into a volatile area for international shipping. The Houthi rebels in Yemen have emerged as a significant threat, with their endeavors to seize control of Yemeni territory resulting in a distortion of social norms and the intensification of the ongoing conflict.

Primarily, the blockade of Hodeidah port and the establishment of a "war economy" in Yemen have further complicated the challenges encountered by the international community in addressing the security and stability of the Red Sea region.

As the geopolitical landscape continues to evolve, it is imperative for policymakers and stakeholders to partake in a comprehensive and coordinated effort to tackle the complex issues at hand, thereby ensuring the safe and uninterrupted flow of shipping through this vital maritime corridor.

2.3 Impact of Piracy on International Trade

Piracy has become a significant threat to international trade and shipping in the Red Sea region, particularly along the Somali coast and in the Gulf of Aden. The prevention of maritime piracy carries significant economic consequences, as well as risks to the vessel crews that facilitate roughly 90% of all global trade, with over 10 billion tons of world seaborne trade each year. The situation has become particularly worrisome in the past three years, with observers concluding that "piracy and its fruits have become the largest, single industry of that impoverished country." (Onuoha, 2009) Maritime piracy is not isolated to the region of Somalia, but rather an international problem, with pirates operating in Southeast Asia, West Africa, the Arabian Sea, and South America. (DeAngelo & Smith, 2020)

The Red Sea and Gulf of Aden are crucial maritime chokepoints, with over 20,000 vessels transiting the region annually. This high volume of maritime traffic makes the region a prime target for piracy, as pirates prey on the valuable cargoes passing through. The prevention of maritime piracy in these regions is of serious concern to shipping companies, vessel crews, and insurance companies. Over 3,000 vessel trips from 2009 to 2014 experienced a piracy-related incident, with over half of these incidents resulting in some form of negative piracy-related outcome.

2.3.1 The Houthi crisis on 2023-2024 Affecting Trade

The persistent conflict in Yemen, driven by the rise of the Houthi rebel group, has further complicated the security dynamics within the Red Sea region. The Houthi group’s dominion over critical port cities and their targeted assaults on commercial vessels have significantly disturbed trade flows and imposed further obstacles for shipping companies operating in the area. (DeAngelo & Smith, 2020; Onuoha, 2009; Hoesslin & Lugo, 2017)

During the period of 2023-2024, the Houthi crisis intensified, characterized by the rebels initiating a sequence of assaults on merchant ships and oil tankers navigating the Red Sea. This escalation, in conjunction with the broader regional instability, has compelled shipping companies to modify their management strategies in order to traverse these perilous waters.

In particular, shipping companies have been necessitated to enhance their collaboration with both regional and international authorities, including naval forces, coast guards, and maritime security entities, to exchange intelligence, synchronize response initiatives, and safeguard the well-being of their vessels and crew members.

Moreover, the deployment of private security contractors has markedly risen, with armed personnel providing protection for vessels operating in the high-risk zones of the Red Sea.

2.3.2 The Red Sea Maritime Crisis of 2023-2024

The Israeli-Gaza war, which officially started after the October 7th Hamas attack on Israeli territory, triggered various reactions, including sharp opposition against Israel's fierce war operations in the Gaza Strip. One of these oppositions came from the Yemeni-based Houthi rebels, who, in support of Hamas and the Palestinian people, initiated a massive and unprecedented maritime operation in the Red Sea, aiming to disrupt Israeli trade and the economy.

The Red Sea maritime crisis of 2023-2024 is a stark reminder of how the actions of what may seem like a faraway nonstate actor have impacted global economic dynamics. It also presents a new phenomenon in geo-economic conflict regarding how a non-state actor uses asymmetric warfare not just to fight conventional armed forces but also to impose targeted economic sanctions by selectively attacking international shipping. The repercussions are immediately visible (Francois Vreÿ & Mark Blaine, 2024).

For 154 years, the Suez Canal has provided the shortest maritime route between Europe and Asia, effectively linking the Mediterranean Sea to the Red Sea. The Bab-el-Mandeb Strait, which has constituted a significant component of the connection between the Mediterranean and East Asia since the Suez Canal's construction in northern Egypt, plays a particularly vital role in the maritime supply of oil. Approximately 12% of global trade transits through the Suez Canal, with over 50 vessels navigating the canal on a daily basis, transporting goods valued at approximately $10 billion to Northern Europe, the Mediterranean region, and the

eastern coast of North America (Nuran Erkul, 2024).

The attacks have convulsed shipping from the Red Sea through the Gulf of Aden to the Western Indian Ocean, through which 25% of global shipping traffic flows (Francois Vreÿ & Mark Blaine, 2024). In the first seven weeks of 2024, cargo volumes to and from the ports in the Gulf of Aden and Red Sea experienced a decline of 21% year-over-year. According to BIMCO, the number of vessels transiting through the Gulf of Aden and the Suez Canal in February was 50% and 37% lower, respectively, compared to the previous year. Additionally, container ship transits decreased by 70% through both the Gulf of Aden and the Suez Canal (Niels Rasmussen, 2024).

Global shipping companies have altered their routes away from the Red Sea, thereby modifying shipping flows between the extensive global markets of Asia and Europe. Consequently, insurance premiums for shipping have increased, leading to higher costs for consumers in Africa and across the globe. The diversion of shipping routes to the Cape of Good Hope in southern Africa results in an extended travel time of 10 to 14 days and an additional distance of 4,000 nautical miles (6,500 kilometers). This prolonged operation incurs an estimated additional expense of $1 million in fuel costs (Nuran Erkul, 2024).

For instance, with regard to Russian wheat originating from the Black Sea port of Novorossiysk, transporting it via the Cape of Good Hope- rather than the Suez Canal- results in an increase of 5,607 nautical miles. Assuming an average ship speed of 12 knots, this modification would more than double the duration of the voyage from 14.7 days to 34.2 days, consequently elevating the costs associated with fuel and ship operations significantly. This escalation, in turn, raises the landed costs of Russian grain in Mombasa, with a portion of the additional shipping expenses absorbed by Russian exporters. Should such disruptions endure, Kenyan importers may consider transitioning to alternative suppliers, such as Australia or Argentina, whose exports are not subjected to shipping disruptions.

Distance to Mombasa, Kenya via alternative sea routes

Nautical miles

Exporter/port	Suez Canal	Cape of Good Hope	Panama Canal	Strait of Magellan
France (Rouen)	6,128	8,518	18,445	18,967
Russia (Novorossiyk)	4,231	9,838	20,342	20,304
Ukraine (Odesa)	4,117	9,724	20,228	20,190
Canada (Thunder Bay)	5,134	10,677	18,003	20,253
United States (New Orleans)	9,472	9,783	15,164	18,984
Argentina (Rosario)	10,374	6,351	14,288	13,264

Table: Joseph Glauber • Source: Sea-Distances.org

Table 2

2.3.3 Vulnerability & Risk Assessment

The comprehensive risk assessment pertaining to commercial vessels navigating between Europe and Asia through the Suez Canal markedly differs from the risk assessment associated with the conventional threat of piracy. Distinct factors regarding vessel vulnerability are applicable and are duly considered in relation to maritime terrorism threats, particularly those associated with war risk, with affiliations being the most critical factors.

More specifically, the risk associated with vessels maintaining connections with Israel, the United States, and the United Kingdom, transiting through the Red Sea and the Gulf of Aden, as well as the Arabian Sea to a lesser extent, has now escalated to a critical level. The threat is evaluated to not extend to other merchant shipping; however, the potential risk of erroneous targeting and collateral damage exists, raising serious concerns for all shipping companies, irrespective of their affiliations. Although the correlation between the three nations and the targeted vessels has been identified in most reported instances, no affiliations aligning with the Houthi targeting profile were confirmed in a few cases. (Diaplous Reports)

During the initial months of the Houthi assaults, the status of the Houthi target profile

remained fluid, as the situation was subject to continual and dynamic changes. The affiliations involving Israeli, U.S., U.K., and other entities should be examined and evaluated regularly in accordance with the most recent developments and incidents. In comparison to the recorded attacks in November, during which affiliations were primarily associated with Israeli ownership, registration, chartering, and management of vessels, the current list of "Israeli-affiliated vessels" now includes information regarding destination, cargo, partnerships, and/or presence in Israel. Identical affiliation filters are applicable for connections related to U.S. and U.K. linkage.

2.4 Shipping Management Strategies in High-Risk Areas

2.4.1 The Significance of the Red Sea Passage

Extending from the Bab al-Mandab Strait, situated off the coast of Yemen, to the Suez Canal in northern Egypt, the Red Sea constitutes a crucial maritime corridor, facilitating 12% of global trade and 30% of global container traffic. This narrow passage assumes a vital role in international commerce, as vessels typically traverse this route from the south to access Egypt's Suez Canal located further north.

Although it is premature to ascertain the duration of the terrorist threats in the Red Sea, it is anticipated that disruptions to the global supply chain will be extensive. The recent attacks have fostered an atmosphere of uncertainty, undermining the safety of crew members and impeding the flow of essential goods to the more than 44 affected countries.

2.4.2. Geopolitical Tensions and Shipping Management Strategies

The emergence of piracy in the Red Sea has transpired in the context of broader geopolitical tensions in the region, complicating efforts to address the issue effectively. The international response to piracy off the coast of Somalia has been notably significant, in contrast to the more regionally-driven approach observed in Southeast Asia, where incidents have diminished. Governments and piracy suspects within the region may endeavor to minimize the similarities between their local piracy operations and those encountered in other parts of the world, with the intention of mitigating increased scrutiny or accountability regarding the resolution of the problem.

Shipping companies and vessel operators have been compelled to adapt their management strategies to navigate the intricate and perpetually evolving security landscape within the Red Sea. The employment of private security contractors, the implementation of enhanced monitoring and surveillance measures, and the establishment of close collaboration with both regional and international authorities have emerged as indispensable aspects of shipping

management in this region.

Given the ongoing significance of the Red Sea as a vital chokepoint for global trade, the diligent management of risks associated with piracy will persist as a paramount priority for both the shipping industry and the wider international community.

Figure 2

2.4.2.1 Rerouting and Escalating Costs

In order to mitigate the risks associated with the recent attacks, prominent shipping companies such as CMA CGM Group, Evergreen, Hapag-Lloyd, and Maersk are choosing to reroute their vessels around the Cape of Good Hope, thereby circumventing the Red Sea. Nevertheless, this alternative route introduces a new challenge: a considerable prolongation of the shipping timeframe. The extended journey is also expected to result in a 15 to 20% increase in shipping costs, even when considering the impending rise in Suez Canal toll fees, which are projected to escalate by 15% in January 2024. This heightened expenditure is anticipated to have a significant impact on businesses and shippers.

2.4.2.2 Capacity Constraints and Decreased Efficiency

The decision to reroute vessels, in conjunction with the established limitations at the Panama Canal due to a significant drought, may result in a 17% to 25% reduction in overall carrier capacity between Asia, the Mediterranean, and Europe. This limitation in capacity intensifies the challenges associated with sustaining the efficient movement of goods across essential shipping routes, consequently resulting in inefficiencies and delays.

2.4.2.3 The Escalation of Shipping Rates and Subsequent Adjustments

The reduction in capacity, increased risks, and the necessity for rerouting have collectively resulted in a significant escalation of shipping rates. According to reports from Xeneta, there has been an extraordinary 20% increase in spot rates since December 15. This development indicates a marked upward trend in shipping rates, creating challenges for shippers who are contending with elevated transportation costs. Furthermore, an additional rate increase is anticipated, along with a significant adjustment to the General Rate Increase (GRI), which is expected to extend due to the prevailing turmoil.

2.4.2.4 Blank Sailings and Capacity Challenges

Major shipping carriers, such as EMC, YML, CMA CGM, THE, OA, and the 2M alliance, are currently facing significant logistical challenges. The occurrence of blank sailings is becoming increasingly common, resulting in space limitations for cargo. These complications are exacerbating an already intricate situation, as carriers are encountering difficulties in deploying additional vessels in a timely manner.

2.4.2.5 International Response

In response to the recent attacks, the United States has initiated an international naval operation aimed at safeguarding vessels traversing the Red Sea route. Nations including the United Kingdom, Canada, France, Bahrain, Norway, and Spain have actively participated in this endeavor to date. The objective of the multinational force is to ensure the security of trade routes within the Red Sea. However, despite the implementation of enhanced security measures, certain shipping companies remain cautious, exhibiting reluctance to promptly resume operations along this route.

More specifically, Operation Guardian and Operation Aspides are crucial components of the global response strategy, illustrating the collaboration of joint naval forces to tackle security threats and improve maritime safety in the Red Sea. These joint efforts highlight the significance of collective efforts in combating piracy and geopolitical risks, fostering a safer environment for global trade in the face of ongoing challenges.

2.4.2.6 Addressing Piracy in the Red Sea: The Role and Evolution of Private Maritime Security Companies (PMSCs)

Undoubtedly, piracy in the Red Sea and Gulf of Aden has benefitted from the rise of private maritime security companies. In the face of increasingly severe piracy, these specialized companies began to provide armed security teams for vessels' passage through regions where the risk is significantly high. The role of private security contractors has evolved over time; as both shipping companies and Private Maritime Security Companies (PMSCs) adjust their strategies in response to the evolving threats in the region. Initially, deploying armed guards on merchant vessels effectively reduced and deterred pirate activity. Yet, with the progression of piracy techniques, PMSCs have had to continuously improve their methods by incorporating more sophisticated technologies for surveillance, interdiction, and evacuation. In addition to physical protection at sea, PMSCs play a vital role in intelligence collection, risk assessment, and the development of best practices for maritime security issues.

2.4.2.7 Shipping Management Best Practices

The successful management of shipping operations in the Red Sea region requires a multifaceted approach that combines various best practices:

a. **Robust security protocols**: Shipping companies are required to implement comprehensive security measures, which may include the deployment of armed guards, the establishment of secure communication systems, and the utilization of advanced vessel tracking technologies, in order to enhance the protection of their vessels and crews.

b. **Collaborative intelligence sharing**: The effective collaboration and exchange of information among shipping companies, maritime authorities, and international

organizations are essential for the timely identification and response to emerging threats.

c. **Diversification of shipping routes**: To mitigate the risks associated with piracy in the Red Sea, shipping companies ought to consider alternative routes and modes of transportation, where feasible, to ensure the uninterrupted flow of goods.

d. **Stakeholder engagement and advocacy**: Shipping companies ought to proactively engage with policymakers, regional authorities, and international organizations in order to advocate for the implementation of stronger maritime security measures and the establishment of regional cooperation frameworks aimed at combatting piracy.

By adopting these best practices and continuously adapting to the evolving security landscape, shipping companies can navigate the troubled waters of the Red Sea and minimize the impact of piracy on international trade and their operations.

2.4.2.8 Understanding the Houthi attacks as a response to Israel and the connection with Iran's politics

The assaults conducted by the Houthi rebel group on commercial vessels in the Red Sea are broadly perceived as a reaction to the engagement of Israel and other regional powers in the Yemeni conflict. The Houthis, receiving support from Iran, have aimed to disrupt trade and international shipping to exert pressure on their adversaries and draw attention to their cause.

The Houthi attacks on merchant ships and oil tankers are facilitated by their control of key port cities in Yemen and their access to sophisticated weapons and technology, a portion of which is suspected to be supplied by Iran. These assaults have not only endangered the safety of crew members and the security of cargo, leading to significant disruptions in global trade flows, particularly within the crucial Red Sea region.

2.4.2.9 The Strategies of Shipping Companies in Response to Houthi Attacks

The ongoing assaults by Houthi forces on vessels in the southern Red Sea and the western Gulf of Aden have resulted in multiple attacks on ships, several vessels sustaining damage,

and, regrettably, the loss of lives among seafarers. Such indiscriminate attacks pose a substantial risk to ships traversing the affected region. Consequently, it is the general stance of shipping companies to avoid passage through the Red Sea; however, exceptions may be considered and determined at the board level. Thus, the earlier a proposed transit is submitted to a shipping company, the sooner upper management can provide guidance regarding our stance on any exemptions to this policy.

Over the course of the past few months, the actions undertaken by the Shipping Companies have included, but are not limited to, promptly informing the Chief Operating Officer and the Commercial Operations Manager of any discussions, communications, or intentions regarding the transit of the Red Sea, thereby allowing sufficient time to engage with charterers and owners to reassess or potentially avoid the transit.

Should the Owners or Charterers demand transit through the Gulf of Aden, Bab el Mandeb, and the Southern Red Sea (SRS), the primary responsibility is to provide the transit risk assessment to the Chief Operating Officer's Office for their review.

The aforementioned information should be submitted within an appropriate timeframe. Most shipping companies adhere to key limits as a guideline for optimal planning. Specifically, when transiting eastbound, the Suez Canal (except when calling at Red Sea ports located north of 17N), the deviation point for Mediterranean Sea transit, or the point of transit via COGH when departing from Northern Europe must be considered. In instances of westbound transit, similar conditions apply prior to departure from any port along the western coast of the Indian continent, prior to passing southbound of Fujairah, or prior to navigating westbound past Sri Lanka.

In the event that the transit receives approval from all relevant parties, it is imperative that the insurance provisions related to Hull, War, Piracy, Terrorism, and associated risks, as well as Kidnap and Ransom, be reviewed as a matter of utmost urgency. Moreover, communication regarding Red Sea indemnity should be directed to all pertinent stakeholders, including vessel owners and Charterers. Should the transit obtain approval, the existing recommendations

shall remain in effect, requiring the continuous presence of armed guards during transit through this region.

The issue of the AIS involves a degree of complexity, with diverging guidance recommendations, which will be elaborated upon in the forthcoming alternative approaches and actions. Generally, even when authorization is granted to proceed to the Indian Ocean Region (IOR), there remains the option to reroute via the Cape of Good Hope. Therefore, it is crucial that all relevant parties are kept consistently updated on the latest developments and the increased risks associated with navigation through these areas.

In light of the aforementioned considerations, the security measures, guidance, and precautions pertaining to the Red Sea, as defined by the Safety Management System (SMS) and policies of each shipping company, must be enforced without delay. Moreover, the crew on board is entrusted with the responsibility of 'duty of care.'

Therefore, when traversing the Indian Ocean Region (IOR), the subsequent actions signify the essential measures that must be carried out. First and foremost, shipping companies should confirm that seafarers provide their consent to remain on board throughout the transit, as certain nationalities, particularly Filipinos, display a heightened reluctance to accept this risk. On top of that, it is imperative that they facilitate arrangements for the carriage of armed guards during this transit.

Secondly, the hardening arrangements shall be implemented in accordance with the Company’s Security Manual and BMP 5. It is of paramount importance to conduct a security drill and to complete SSAS and Iridium phone tests in collaboration with the office prior to transit. The concluding steps usually include the execution of a Transit Risk Assessment and strict compliance with the highest standards of security protocols, which include registration with the United Kingdom Maritime Trade Operations (UKMTO) and the Maritime Security Centre Horn of Africa (MSCHOA).

Needless to say, that is standard procedure for deck work to be restricted to the minimum

necessary to ensure the safety of the vessel, as the primary objective is to maintain the highest level of vigilance at all times. Without a shadow of a doubt, the relevant departments of the shipping companies should consistently remain informed.

Concerning the Bab-el-Mandeb Straits, it is essential to ensure that the engine room personnel are sufficiently staffed and equipped to implement emergency procedures, which include the operation of pumps to control flooding and sustain machinery functionality. Moreover, all crew members are required to convene in the accommodation area or at a location near the designated muster point for security reasons. It is advisable to plan the passage through the Straits and the adjacent narrow waters during nighttime hours. Transit should be executed at the maximum feasible speed. In the unfortunate event of being contacted via VHF from the "Yemeni Navy" and obtaining directives to modify course toward Al Hudaydah or any other position along the northwest coast of Yemen, compliance with the following guidelines is imperative.

Initially, if it is considered safe, the VHF call should be disregarded, and the vessel should continue on her predetermined course. The Master is required to initiate communication with a coalition warship on VHF Channel 16, conveying the current location, detailing the situation, outlining the intentions, and requesting guidance. Furthermore, it is imperative to contact the UK Maritime Trade Operations (UKMTO), the company's Security Officer (SSO), as well as the U.S. Naval Forces Central Command Maritime Operations Centre.

The Master is advised to maintain continual communication with the task force warships should they attempt to establish contact. Otherwise, the vessel should maintain a listening watch on Channel 16. Nonetheless, certain restrictions should be imposed on communications with warships to ensure that the VHF channel remains unobstructed, thus allowing for its use by other vessels when necessary.

Moreover, it has been observed that insurgents tend to focus their attention more keenly on any ships that do not transmit an AIS signal. The current recommendation is to deactivate the AIS during nighttime and activate it during daylight hours. In the event that the AIS is

deactivated, the vessel must increase reporting to the UK Maritime Trade Operations (UKMTO) and/or reactivate the system in the unfortunate event of an attack.

In conclusion, considering the various challenges present in the region, vessels are required to adhere to the recommendations outlined in BMP 5 and the OCIMF document regarding Loitering Munitions – The Threat to Merchant Ships.

2.5 Theoretical Framework

2.5.1 International Relations Theories

This section explores the application of International Relations (IR) theories to attain a comprehensive understanding of the maritime security challenges and geopolitical tensions in the Red Sea. These theories establish a foundational framework for the analysis of piracy, terrorism, and the interactions among state and non-state actors in influencing global trade and security dynamics.

A. R**ealism**

Although many theories within International Relations can be applied to the instances of piracy and geopolitical conflicts in the Red Sea, **Realism**, as the source of all theories, possesses substantial explanatory power in elucidating the current circumstances. Both "classical realism" and "neo-realism" could deeply deconstruct the contexts of piracy and geopolitical tensions. In the case of "classical realism" (Thucydides and Hans Morgenthau), the emphasis on power and national interests in driving state behavior is particularly intriguing. This theory can support the explanation of the actions of regional powers like Iran, Saudi Arabia, and the Houthis in the Red Sea, as well as the principle of self-help in a state of anarchy where piracy flourishes due to weak state control.

Neo-realism or Structural Realism (Kenneth Waltz) is especially relevant, as it focuses on the structure of the international system and the security dilemmas. The notion that the states prioritize security and survival in an anarchic world system, the concept of self-help, and the security dilemma introduced by Kenneth Waltz are of utmost importance in explaining why countries deploy naval forces or hire private maritime security companies (PMSCs) to protect their shipping interests in the Red Sea. This concept is directly applicable and particularly crucial for shipping companies and states navigating this high-risk zone, where piracy and terrorism heighten security concerns.

B. English School (Society of States)

A correlation can also be found in the **English School (Society of States)**. Hedley Bull's idea of the "society of states" is valuable in understanding how states manage piracy through international cooperation (e.g., Operation Atalanta, ASPIDES, and Combined Maritime Forces). The English School stresses the importance of the fact that, while anarchy exists, states form international societies where rules, norms, and institutions like international maritime law shape behavior. This theoretical framework can explain how states and non-state actors attempt to maintain order in the Red Sea despite tensions and piracy.

Bull's concept of order versus justice is also applicable in this context, as regional actors such as Iran and Saudi Arabia pursue their respective visions of justice in relation to Yemen. Concurrently, shipping companies and naval forces endeavor to maintain order to facilitate the flow of trade.

C. Neo-Marxism

Moreover, **Neo-Marxism** (Susan Strange and Critical IPE) could be proven very handy as well. Susan Strange's work on International Political Economy (IPE) could be employed to interpret the global economic structures that allow piracy to endure. In particular, Strange mainly focuses on the power of markets, transnational actors, and economic forces that are most relevant when discussing the broader financial implications of piracy and how the global economy and the uneven distribution of wealth perpetuate weak governance in places like Somalia, allowing piracy to thrive. Thus, "Neo-Marxism" could naturally explain the rise of non-state actors like the Houthis, who disrupt global trade through ideological goals and as part of an economic war.

D. Adam Watson's Approach

Adam Watson's *The Evolution of International Society* provides a historical lens through which one can analyze the evolution of international systems, focusing on power, hierarchy, and institutionalization. These concepts are critical for comprehending contemporary maritime security challenges and geopolitical tensions in the Red Sea.

Undoubtedly, Adam Watson's work presents a comparative historical analysis of the

evolution of international societies, providing insights into the balance of power, the role of empires, and how different states within a given system. Watson's analysis of the evolution of the international order is useful for understanding the Houthi conflict within the larger context of the Red Sea as a strategic region that has historically experienced struggles for dominance. In greater detail, Watson's concept of the 'pendulum of international systems,' which postulates that power transitions between different levels of centralized authority (ranging from empires to fragmented regions), holds significant relevance.

Watson underscores the significance of dominant powers in maintaining systemic stability. Within the realm of maritime security, naval coalitions such as EUNAVFOR and ASPIDES assert their authority over strategic chokepoints like the Bab el-Mandeb Strait, thereby stabilizing critical trade routes. In contrast, weaker states such as Yemen frequently function as theaters for proxy conflicts, depending on external actors to mitigate systemic vulnerabilities.

Moreover, Watson's concept of external actors influencing regional systems is evident in the Red Sea. Global powers, such as the United States and China, strategically balance regional players, including Saudi Arabia and Iran. Additionally, non-state actors, such as the Houthis, disrupt established orders, aligning with Watson's perspective that peripheral entities exploit systemic weaknesses to challenge dominant hierarchies.

The formalization of maritime security protocols, including the Best Management Practices (BMP) guidelines and the Djibouti Code of Conduct, exemplifies Watson's theory regarding the institutionalization of norms that address vulnerabilities. The evolving role of Private Maritime Security Companies (PMSCs), which initially focused on countering piracy but have since expanded their capabilities to tackle broader geopolitical threats, demonstrates how systemic frameworks adapt to emerging challenges.

Ultimately, Watson's insights concerning the emergence of rising powers that disrupt established hierarchies are highly relevant to Iran's maritime strategy and the Houthi conflict, illustrating how systemic shifts challenge established norms. By connecting historical patterns with contemporary realities, Watson's theory enhances this framework, providing a

nuanced perspective on power dynamics and systemic evolution in maritime security.

E. Other Theories

Furthermore, we should briefly mention the theories of **Liberalism, Neo- functionalism, and Constructivism.** Liberalism (Robert Keohane, Joseph Nye, and Rosenau's Social Liberalism) focuses on international institutions and interdependence, applying the role of multilateral naval operations and international cooperation in curbing piracy and maritime terrorism. However, the limits of liberalism should not be overlooked, as nowadays, the international institutions responsible for setting the regulatory framework to safeguard the flow of global trade and the safety of vessels and crews, such as the United Nations (UN) and IMO (International Maritime Organization), struggle to control piracy and non-state actors like the Houthis fully.

"Neo-functionalism" (Ernst Haas, Leon Lindberg, and Philippe Schmitter) traditionally focuses on regional integration. While this theory could manifest how regional organizations (like the EU's Operation ATALANTA) engage in counter-piracy efforts, given the global and transnational nature of piracy, it might be less applicable to a more in-depth analysis.

While not the first thought that would naturally come to mind, Constructivism could be deployed to explain how norms about piracy and international law influence state behavior. The stigma against piracy and militia is a socially constructed norm that shapes global responses, but constructivism can not examine the other (and more substantial) aspects of the prevailing situation.

Navigating through the above-mentioned international relations theories, Neo-Realism and English School notably emrege as the most suitable theory frameworks to explain the volatile chessboard we examine.

As far as Kenneth Waltz's Neo-Realism is concerned, the focus should be on how *"self-help"* and *"security dilemma"* concepts apply to the prevailing situation in the Red Sea.

Waltz describes the international system as an “anarchic” place where the states must solely rely on self-help to secure their interests, as no overarching authority guarantees security. This concept is directly applicable to the actions undertaken by states in the Red Sea, where these entities mobilize their naval forces to safeguard shipping routes and combat piracy and terrorism.

Neo-Realism's security dilemma is admiringly relevant. As states (e.g., Saudi Arabia, Iran, Israel) take increasingly more steps to enhance their own security, they inadvertently increase the insecurity of others. The same could be seen in the Red Sea, where Iran's presence through the Houthis provokes rival states, creating further instability and leading to more military interventions, exacerbating the situation.

From a realist's perspective, the rise of piracy could be interpreted as a product of weak state structures, where local governments (like Somalia) are unable to enforce law and order. Waltz's emphasis on anarchy as a driving force helps explain why shipping companies hire private maritime security (self-help) and why states form temporary alliances to protect global trade in the absence of solid international authority.

On the other hand, Bull's English School focuses on the idea that states -despite existing in an anarchic international system- form a *“society of states”* governed by shared rules and norms. Hence, this theory is ample to explain the formation of naval coalitions (e.g., Operation Atalanta, Combined Maritime Forces) aimed at curbing piracy in the Red Sea, as these operations rely on international cooperation and legal norms, such as the United Nations Convention on the Law of the Sea (UNCLOS), to regulate maritime activity.

Finally, Bull's contrast between *“order”* and *“justice”* is particularly relevant when analyzing the Houthi attacks. The Houthis, supported by Iran, may justify their actions as a form of justice—supporting Palestine and challenging Western/Israeli influence. However, for international actors involved in trade, the focus is on maintaining order in the maritime domain. This dynamic illustrates Bull’s assertion that actions deemed just by one actor can destabilize the broader system of order that others strive to uphold.

While Neo-Realism and the English School offer robust theoretical foundations, Adam Watson's *The Evolution of International Society* bridges the gap between theoretical models and real-world practices by providing a historical and systemic perspective. Watson's comparative historical methodology enhances the discourse on power dynamics by analyzing the systemic evolution of both regional and global interactions. His insights regarding the role of hierarchy and the institutionalization of norms significantly enrich the comprehension of maritime security. Naval coalitions, such as ASPIDES, and the progressively pivotal role of Private Maritime Security Companies (PMSCs), align with Watson's assertion that dominant actors play a critical role in stabilizing systems by addressing vulnerabilities and institutionalizing cooperative frameworks.

Moreover, Watson's examination of the roles of peripheral actors in disrupting established hierarchies—illustrated by the Houthis' exploitation of regional instability—provides a nuanced perspective on how non-state entities challenge centralized authority. His framework complements Waltz's focus on anarchy and Bull's emphasis on societal norms, effectively bridging the gap between theoretical expectations and adaptive strategies observed in practice.

Consequently, International Theories are more than just mere theories; their foundation is rooted in the essence of actual events, or they serve to fulfill the human need to comprehend similar phenomena and derive lessons from experience. Throughout history, ample evidence exists of minor regional powers employing maritime disruption and strategic alliances to undermine their rivals in pursuit of economic and political preeminence.

2.5.2 Historical Parallels

The current geopolitical situation in the Red Sea and the Middle East, involving Houthi attacks and piracy, is undoubtedly not new throughout history; it mirrors historical cases where maritime power, control of trade routes, and alliances played a pivotal role in shaping the political landscapes. This emphasis on partnerships adds an intriguing dimension to our

understanding of history and its relevance to current events. By examining some key historical events—such as the Peloponnesian War, the Florence vs. Pisa rivalry during the Renaissance, and Dutch politics in the 17th century—we can draw valuable parallels that underline the enduring nature of these strategies and illuminate the consistent patterns in international relations.

A. The Peloponnesian War

The Peloponnesian War and its involved parties are always topical and provide a rich historical context that can be paralleled with almost any historical event, making it a compelling subject for this thesis analysis. In our case, we will not examine the two great powers of the Peloponnesian War (431–404 BCE), namely the city-states of Athens and Sparta, but smaller city-states that sided with one of them due to their conflicts to safeguard their survival in the status quo system.

The conflict between Thebes and Plataea during the Peloponnesian War serves as the first vivid historical parallel for a sounder understanding of the Houthis' regional strategy. Thebes, a minor regional power, aspired to expand its power by aligning with Sparta, the dominant land power of the time, against their mutual rival, Athens.

Their alliance, not purely military, was actually a well-calculated political maneuver conceived to shift the regional status quo in favor of Thebes. The conflict between these smaller city-states could not be more backed by more considerable powers (Sparta and Athens). Yet, slowly and steady evolved into a virus that attacked the microcosm of the balance of power of the Hellenic city-states and finally led to the Peloponnesian War. As all parties with regional alliances and control of resources at its core, a strategic dynamic continues to intrigue us.

Without a shadow of doubt, the Theban-Spartan alliance closely resembles the Houthis' relationship with Iran, where a smaller power (Thebes/Houthis) aligns with a more prominent regional actor (Sparta/Iran) to challenge a dominant state (Athens/Saudi Arabia). Following the same pattern of Plataea's dependency on Athens for security and protection, Saudi Arabia relies on its alliances with Western powers to safeguard its regional interests. The Houthis'

attacks on Saudi oil tankers and Red Sea shipping routes are part of a broader strategy to destabilize Saudi Arabia's dominance, much like Thebes sought to weaken Plataea's economic and political alignment with Athens.

The crucial part played by the Corinthians in the outbreak of the Peloponnesian War would also serve as another outstanding historical parallel, explaining the current disruptions in the Red Sea. More in detail, the city-state of Corinth, a powerful maritime nation unto itself, was fairly terrified of Athens' territorial ambitions and its hold on vital shipping routes essential to its economic existence.

The Corinthians had to weigh carefully their options in order to survive. They had carefully foreseen that their best option would be to form an alliance with Sparta, the opposing pole of power, to weaken Athens' hold over trade and preserve a position for themselves within the system. With this decisive move, the Corinthians played a crucial role in inciting tensions between Sparta and Athens. Corinthians formed this alliance as part of a detailed strategy to curtail Athens' expanding naval might and domination over the Aegean trade routes. In addition to complex political maneuvering to establish alliances that would challenge Athens' dominance, this plan featured numerous naval confrontations.

Hence, the Corinthian strategy essentially focused on protecting their economic interests by undermining the Athenian trade network, thereby safeguarding their regional influence and perpetual commercial power- before Athens established herself as the only hegemon of the Greek states, leading to their elimination.

The Houthi strategy of focusing on the Red Sea marine trade of Saudi Arabia and the West is similar to the approach of the Corinthians, who aim to interrupt the trade routes of Athens. Similarly to the way that the Corinthians sought to diminish Athens' economic supremacy, the Houthis targeted shipping lanes and oil tankers in an effort to threaten Saudi Arabia's economic lifeline. Equally significant chokepoints for maritime trade as the Aegean Sea was in ancient Greece, the Bab el-Mandeb Strait is to modern world trade just as much.

B. Florence vs. Pisa During the Renaissance (12th–15th Century)

The rivalry between Florence and Pisa during the Renaissance and their contest for regional dominance serve as another historical parallel with maritime control and economic interests at their core.

During the Renaissance, Pisa, a significant naval power, held a strategic port as a gateway to Mediterranean trade routes. On the other hand, Florence, an inland city, aimed to expand its influence and seize control of Pisa's port to bolster its position in Tuscany and enhance its economic power.

More than a military triumph, Florence's victory over the siege of Pisa in 1406 was a symbolic milestone. It was a complex conflict involving economic warfare, political diplomacy, and military tactics. Florence's attempt to use geopolitical pressure and alliances to suppress Pisa's independence stood as a testament to the multifaceted nature of the conflict. The battle affirmed the importance of maintaining control over maritime gateways as Florence attempted to establish Pisa as a vassal state to safeguard its political and economic stability.

The rivalry between the Houthi and Saudi governments over control of vital maritime routes, especially the Bab el-Mandeb Strait, is more than a military tactic; it mirrors the war between Florence and Pisa. This competition echoes Florence's endeavor to conquer Pisa's port to acquire access to vital trade routes. The Houthis' persistent maritime assaults aimed not just to hinder trade (as a symbolic act to support Palestine, undermining Israel) but also destabilize their opponents economically, much like Florence attempted to annihilate Pisa's naval might and economic autonomy.

C. Dutch Politics and Trade Control in the 17th Century

During the 17th century, the Dutch Republic emerged as a global naval powerhouse, determined to control major commercial routes and impose supremacy over rivals, including Spain, Britain, and Portugal. The Dutch recognized the strategic necessity of securing maritime chokepoints. While consistently demonstrating their proactive approach and determination, they engaged in naval warfare and economic competition to protect their

commercial interests.

The Dutch Republic's enduring dominance in the East Indies and Atlantic was an amalgam of military might and a profound understanding of the relationship between economic growth and control of trade routes. The Dutch, with their keen economic acumen, recognized that economic growth was inextricably linked to controlling the marine roads that connected Europe to the rest of the globe. This understanding guided their strategies, as they used their maritime strength to impede competing nations' trade, thereby weakening their economic foundations and protecting their own commercial interests.

The Dutch Republic aimed to dominate maritime trade routes and employed naval power to weaken its rivals, paralleling the Houthis' efforts to disrupt Saudi and Emirati maritime interests. Although the Houthis do not possess a formal navy, their strategies of asymmetric warfare—like drone attacks and marine terrorism—are designed to threaten their competitors' economic lifelines in the Red Sea, similar to how the Dutch obstructed Spanish and British trade in the 17th century. Today, control over crucial chokepoints like the Bab el-Mandeb Strait remains vital for global trade, just as it was when the Dutch Republic once held power over these straits and routes.

All things considered, excellent insights into the current Red Sea strategy of the Houthi rebels could be furnished by the aforementioned historical cases. It is surprisingly common how, often throughout history, smaller nations have shown remarkable resilience by employing alliances, naval control, and economic disruption in order to challenge the supremacy of more significant regional players and defend their survival. The Houthis' use of "maritime terrorism" to disrupt Saudi and Emirati trade stands as a testament to this provocative resilience, resonating with the techniques employed millennia ago by Thebes, Corinth, Florence, and the Dutch Republic, where control of critical maritime chokepoints was imperative in upsetting the regional balance of power, underscoring that nowadays—due to globalization—this affects almost everybody.

Chapter 3: Methodology

3.1 Research Design

This study adopts a qualitative research design to investigate the perceptions of shipping professionals concerning risk management in regions susceptible to piracy and geopolitical sensitivities, specifically focusing on the Red Sea and Gulf of Aden. Insights are gathered through questionnaires based on the Matrix (Table 1), meticulously crafted to elicit nuanced responses pertaining to both vessel-specific and company-wide factors that influence maritime operations.

The questionnaire contains both open-ended and 1-7 Likert scale questions. Open-ended questions let respondents provide detailed answers based on their experiences and insights, while the Likert scale quantifies the importance of various risk factors, yielding measurable data. This combination of question types enhances data accuracy and produces quantifiable results, as qualitative data is converted into quantitative data, allowing for more robust analysis.

The qualitative approach has been selected to capture the nuanced perspectives of shipping professionals regarding risk management, facilitating in-depth responses that reflect their unique experiences. According to Creswell (2014), qualitative methods are particularly effective for exploring complex social phenomena, such as risk perception, through the use of open-ended data collection techniques. Furthermore, this study employs a mixed-methods approach, integrating qualitative insights derived from open responses with quantitative coding from Likert-scale questions, as supported by Denzin and Lincoln (2018). This dual approach enables a systematic analysis that combines thematic insights with measurable data, thereby enhancing the depth and reliability of the findings.

3.2 Data Collection Methods

Data was collected through the deployment of a structured survey via Google Forms, which was distributed among industry professionals. The survey questions were meticulously formulated based on the key parameters of the **Matrix** (see ***table 1***), ensuring comprehensive insights into vessel-specific factors (such as vessel type and security measures), company-wide factors (including risk perception and resource allocation), and geopolitical and environmental variables. The Matrix (refer to ***table 1***) served as the foundational framework for the development of the questionnaire, facilitating a structured approach to the collection of data regarding the impact of geopolitical threats on shipping operations. This structured methodology enabled the capture of diverse dimensions of risk perception and responses, thus facilitating a comparative analysis between vessel-specific risks and broader organizational dynamics.

3.3 Sampling and Participant Details

3.3.1 Target Population and Rationale: Selection of Participants:

The target population consists of shipping professionals from diverse backgrounds, including Operations, Health, Safety, Quality, and Environment (HSQE), as well as Crew Department managers and both senior and junior employees, Maritime Security officers, Senior Executives, and Captains. These individuals were selected for their practical knowledge and decision-making roles, providing varied perspectives on maritime security and risk management.

The selection of this demographic is predicated upon the necessity to acquire insights from professionals who actively oversee or influence security protocols and operational decision-making. Nonetheless, the pool of respondents comprised professionals from departments not explicitly associated with piracy or terrorism decision-making roles, such as Finance or Claims Analysts, thereby introducing a wider array of viewpoints and guaranteeing a

balanced sample. Shipping professionals possessing varied backgrounds offer a thorough perspective on risk management strategies, incorporating both operational and strategic dimensions.

i. Data Analysis: SPSS for Quantitative Analysis

The responses collected were systematically coded and analyzed utilizing the SPSS statistical analysis software, concentrating on the quantitative coding of responses derived from the 1-7 Likert scale inquiries. This methodical approach facilitated an in-depth examination of risk factors and their perceived significance, thereby furnishing numerical insights regarding the priorities of professionals.

Additionally, the thematic coding of qualitative responses obtained from open-ended questions permitted the study to discern recurring themes and perspectives among the respondents. This dual coding methodology effectively bridged the substantial divide between qualitative insights and quantitative data patterns.

ii. The Final Question Antithesis

In conclusion, the final question presented participants with a practical decision-making scenario: would they choose to traverse the Red Sea route or opt for an alternative route, such as the Cape of Good Hope, considering the prevailing security circumstances? This juxtaposition reflects the participants' overall risk tolerance and decision-making considerations, encapsulating their perspectives on maritime risk in high-threat regions. Furthermore, the open-ended question soliciting respondents to elucidate their choice offers unique insights into each individual's rationale.

Chapter 4: Results & Discussion

4.1 Presentation of Findings

This chapter offers a thorough examination of the findings derived from the survey, beginning with the demographic and professional profiles of the respondents. This contextual foundation is essential for comprehending risk perception and management practices within the maritime industry, especially in high-risk regions such as the Red Sea and Gulf of Aden. The diverse range of respondents' ages, experience levels, educational backgrounds, roles, and vessel responsibilities of the respondents provide an extensive perspective on the existing operational and security challenges.

4.1.1 Age and Professional Experience

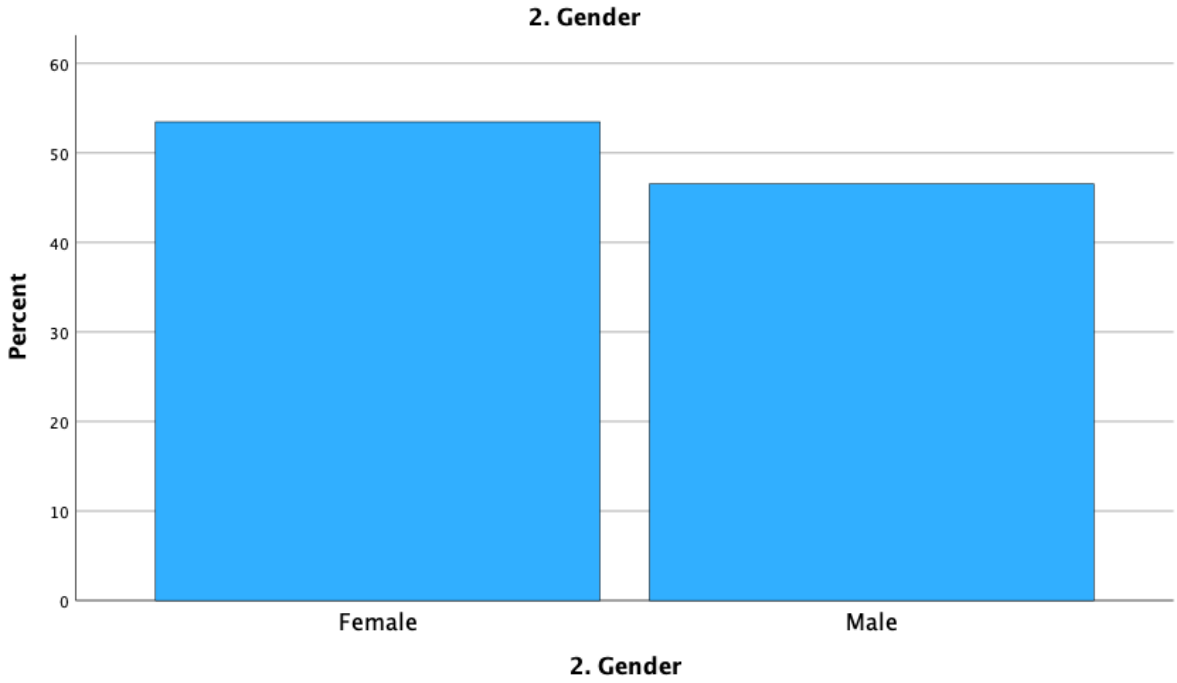

Figure 3

The gender distribution is notably balanced, with a marginal majority of female respondents (53.5%). This equilibrium offers a diverse array of insights that may reflect varying

approaches and attitudes toward risk management in the context of maritime security.

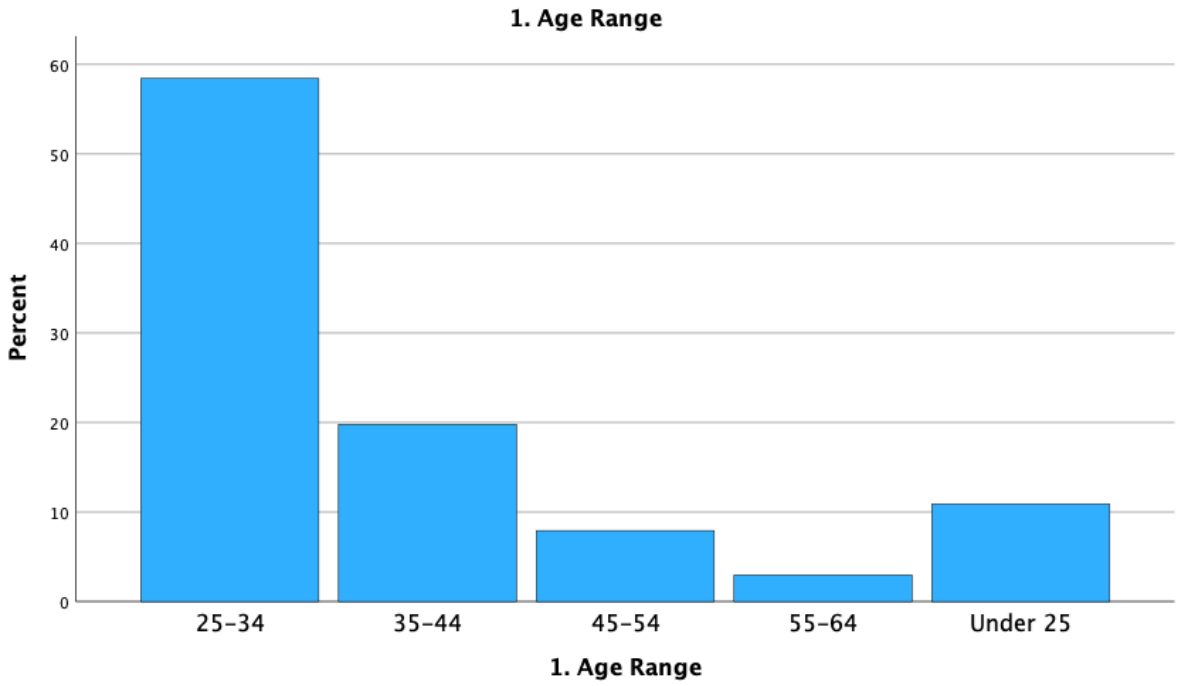

Figure 4

The respondent pool is predominantly comprised of early-career to mid-career professionals. The largest segment (58.4%) is within the 25 to 34 age range, accompanied by a substantial proportion (19.8%) within the 35 to 44 age range. This relatively youthful demographic indicates that the majority of participants are either entering or consolidating their careers in the shipping sector, thereby contributing fresh perspectives and recent training to industry practices. Nevertheless, the survey also encompasses experienced professionals, with 7.9% in the 45 to 54 age category and 3.0% aged 55 to 64, who may provide valuable insights drawn from extensive and seasoned careers in maritime security and operations. Professional experience further underscores the diversity of perspectives within the sample.

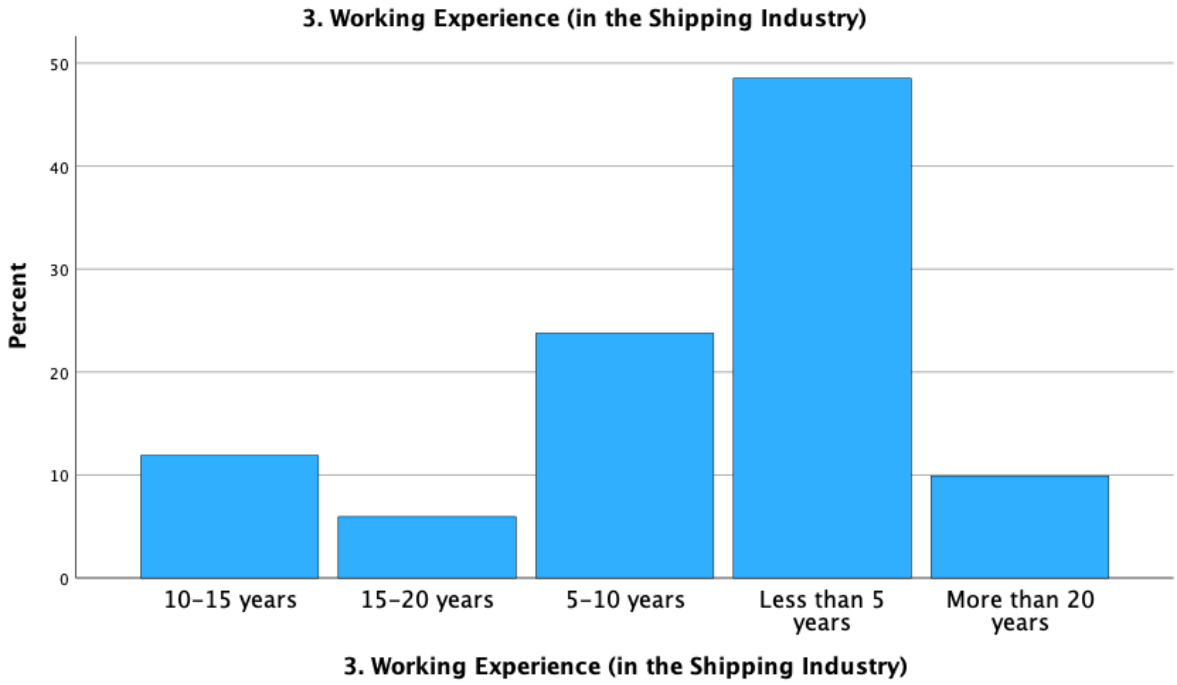

Figure 5

Nearly half of the respondents (48.5%) possess less than five years of experience in the shipping industry, while another 23.8% have between five and ten years of experience. Collectively, these groups constitute a majority that is relatively new to the industry, suggesting that their viewpoints may reflect the evolving training and risk management practices that have been adopted in recent years. An additional 11.9% have between ten and fifteen years of experience, and 9.9% possess more than twenty years, thereby enriching the sample by incorporating the insights of those who have navigated long-term changes in maritime security risk strategies.

4.1.2 Educational Background and Professional Roles

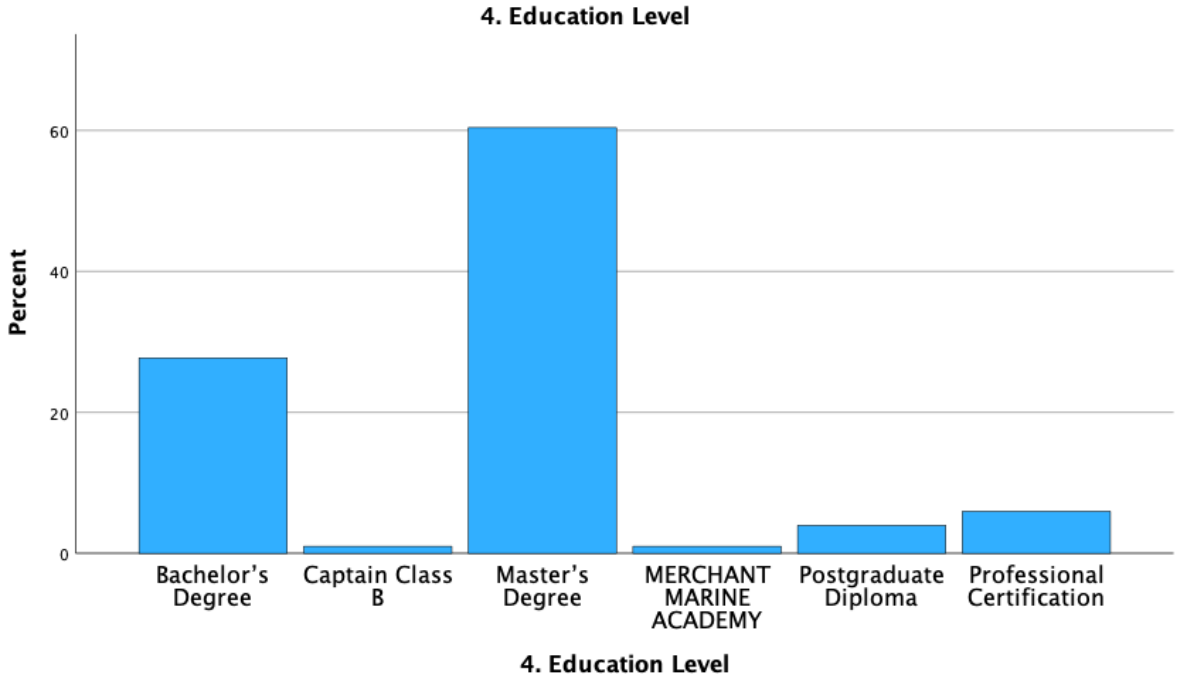

Figure 6

The survey results indicate a highly educated sample, with 60.4% of participants possessing Master's degrees and an additional 27.7% possessing Bachelor's degrees. This advanced level of education signifies that the majority of respondents are likely to have received formal training in areas pertinent to shipping management, including risk assessment, compliance, and operational strategy. Such educational backgrounds imply that these respondents are well-equipped to comprehend and analyze complex issues, such as piracy threats, geopolitical tensions, and the implications of shifting regulatory frameworks on shipping.

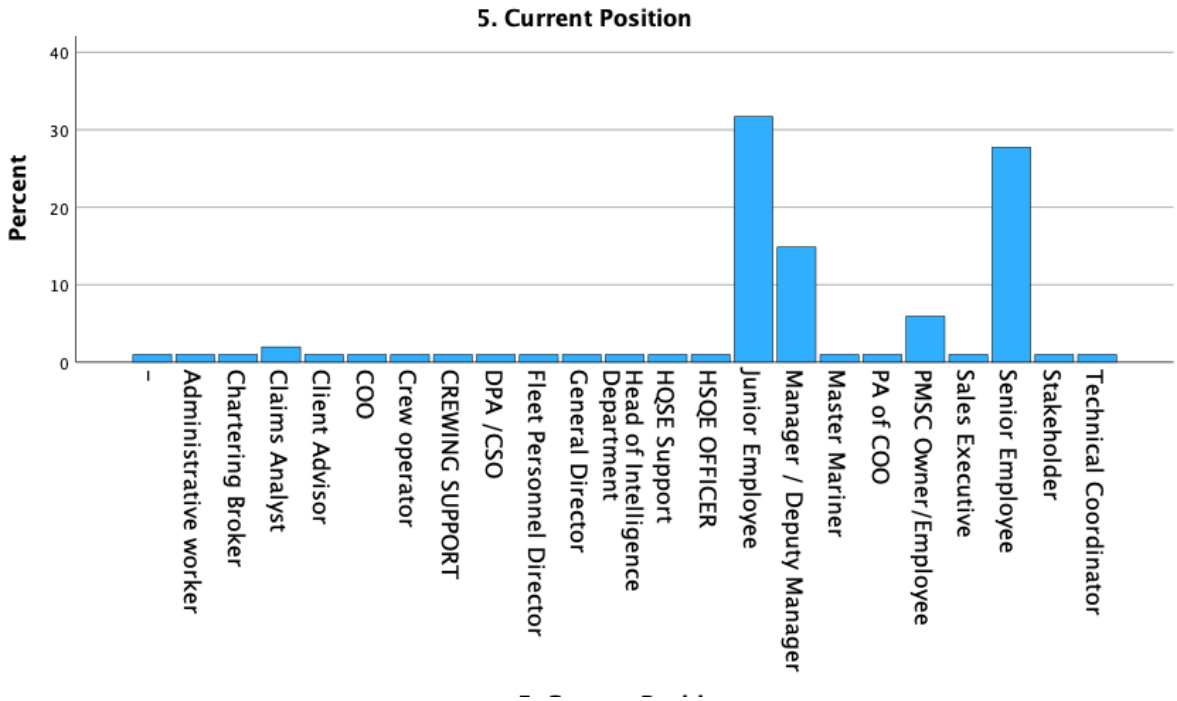

Figure 8

The participants' current positions encompass various levels and departments, offering a comprehensive perspective of the industry. Notably, the highest concentrations are among junior employees (31.7%) and senior employees (27.7%), capturing insights from both entry-level and senior staff. Moreover, 14.9% of respondents occupy managerial roles, while the remainder hold specialized positions, including Client Advisors, DPA/CSOs, and HSQE Officers. These diverse roles suggest that the responses represent viewpoints across the full spectrum of shipping operations, ranging from onboard security measures to compliance and strategic planning.

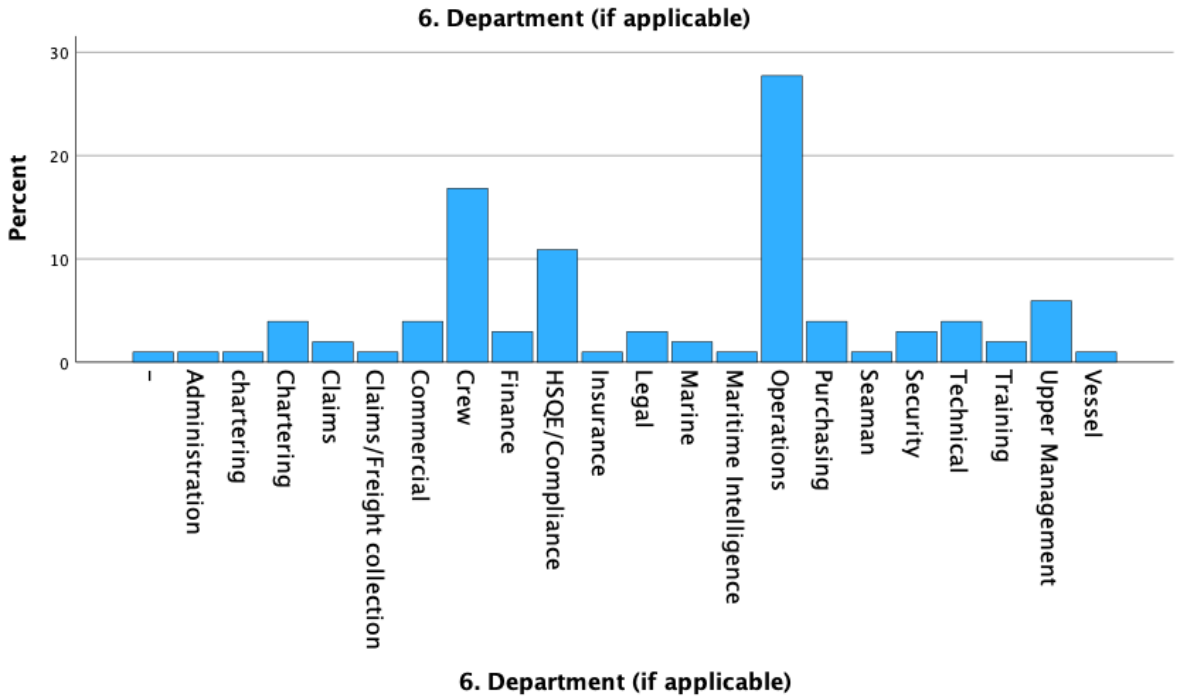

Figure 9

Departmentally, the respondents represent critical areas within shipping companies, with Operations being the most represented at 27.7%. This indicates that operational considerations—such as route planning, security protocols, and response measures—are likely to be central themes in the respondents' perspectives on risk management. The Crew department follows closely with 16.8% of respondents, emphasizing the human element of risk management, as these professionals directly address onboard safety, crew training, and preparedness. Additionally, HSQE/Compliance departments constitute 10.9% of respondents, likely highlighting an emphasis on regulatory adherence and quality assurance within maritime operations. Other departments, such as Finance, Legal, and Chartering, are represented in smaller proportions, thereby broadening the range of perspectives concerning the influence of risk management decisions on various aspects of shipping companies' operations.

4.1.3 Classification of Vessel Types Primarily Accountable For

The categories of vessels managed by the respondents indicate a predominant emphasis on bulk carriers, with 25.7% of respondents being solely accountable for this type of vessel.

Additionally, there is a significant portion of respondents who manage bulk carriers alongside other vessel categories, such as tankers and LNG/LPG carriers. Specifically, 12.9% of respondents oversee a mixed fleet that comprises bulk carriers, tankers, LNG/LPG carriers, and container ships, thereby providing a nuanced understanding of the risk factors associated with various vessel types. Respondents reporting exclusive responsibility for tankers constitute 11.9%, while those exclusively overseeing LNG/LPG vessels amount to 7.9%, highlighting the diversity of vessel categories represented in the sample.

The prevalence of bulk carriers and tankers signifies a primary concentration on vessels that are often regarded as susceptible to piracy and security threats, attributed to their slower speeds, lower freeboard, and significant cargo value. Bulk carriers, in particular, are frequently targeted in high-risk regions, rendering the insights provided by these respondents particularly relevant to the analysis of security protocols and risk mitigation strategies. The high percentage of bulk carriers is intricately associated with the background of participants within the Greek maritime market, wherein the majority of companies typically own bulk carriers. Moreover, the number of respondents overseeing a wider range of vessels, including Roll-on/Roll-off vessels, passenger ships, and yachts, although limited, contributes to the comprehensiveness of the data by incorporating diverse vessel categories that encounter distinct security and operational challenges in geopolitical hotspots.

In summary, the demographic profile of the survey respondents illustrates a diverse, well-educated, and relatively young group of shipping professionals who occupy significant operational and management roles across various departments and vessel types. This profile furnishes essential context for the forthcoming analysis of risk perception and management strategies. With a particular emphasis on bulk carriers and tankers—vessel types frequently subjected to piracy and geopolitical risks—the insights derived from this data are not only informative but also actionable. These findings will contribute to the broader discourse on maritime security challenges in the Red Sea and Gulf of Aden and can be utilized to enhance security protocols and risk mitigation strategies within the industry.

4.2. Analysis of Risk Parameters

4.2.1 Analysis of Survey Risk Factors' Results

1. Vessel Speed

1. How important is the vessel's speed in mitigating piracy risks during transit through the Red Sea

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1.0	1.0	1.0
	3	1	1.0	1.0	2.0
	4	6	5.9	5.9	7.9
	5	24	23.8	23.8	31.7
	6	38	37.6	37.6	69.3
	7	31	30.7	30.7	100.0
	Total	101	100.0	100.0	

Table 3

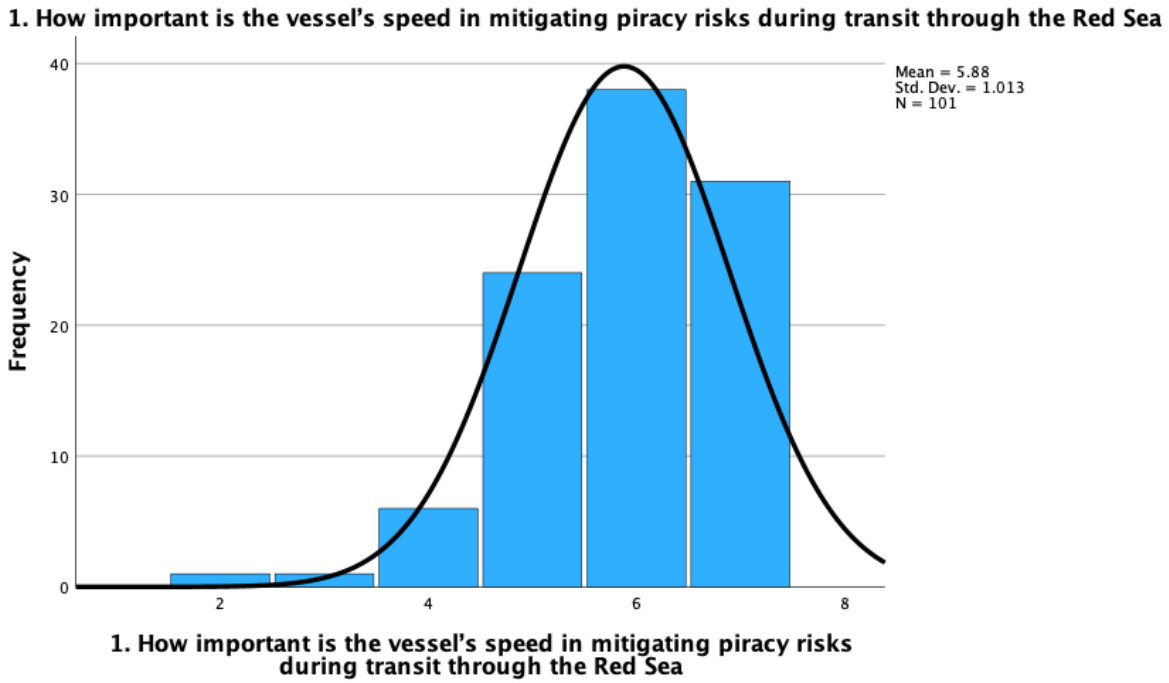

Figure 10

The frequency data indicates that 68.3% of respondents categorized vessel speed as a significant factor (rated 6 or 7 on a 7-point scale) in mitigating piracy risks during transit through the Red Sea. This finding suggests a prevailing conviction among shipping professionals that increased vessel speeds diminish vulnerability to piracy by minimizing the duration available for pirates to intercept the vessel. A lesser proportion of respondents deemed it as moderately important, which reflects the diverse operational realities encountered across different types of vessels.

Research Questions Integration:

a. **Impact of Piracy:** The prioritization of speed as a critical factor underscores the industry's imperative to mitigate the economic and operational repercussions of piracy.

b. **Exacerbation by Geopolitical Tensions**: Geopolitical unrest intensifies the focus on speed, as expedited transit minimizes a vessel's vulnerability in high-risk regions.

c. **Risk Management Strategy:** Many companies prioritize the maintenance of elevated transit speeds in piracy-afflicted zones, incorporating this approach into their risk management strategies to enhance security.

2. Freeboard Height

2. Does the freeboard height of the vessel you are responsible for significantly influence your decision-making when navigating piracy-prone areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	10	9.9	9.9	9.9
	5	38	37.6	37.6	47.5
	6	25	24.8	24.8	72.3
	7	28	27.7	27.7	100.0
	Total	101	100.0	100.0	

Table 4

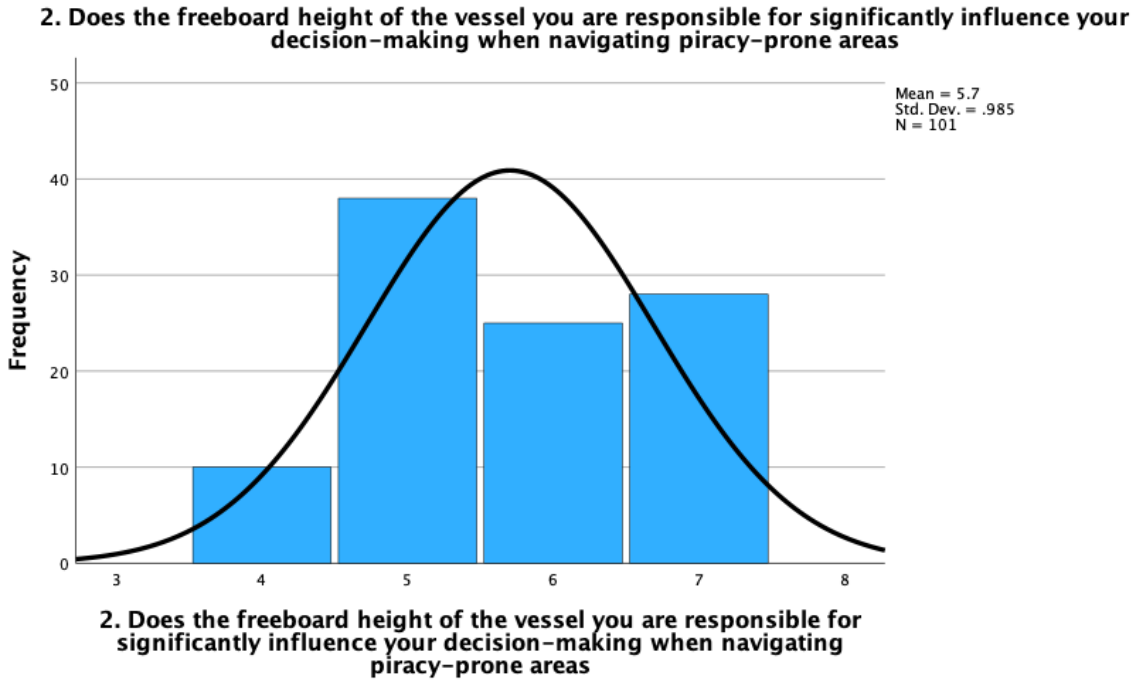

Figure 11

More than 90% of respondents are of the opinion that freeboard height plays a significant role in influencing the risk of piracy, with the majority of responses indicating a higher range (5-7

on the scale). This highlights the critical importance of vessel design in conducting risk assessments. Elevated freeboards are perceived as a deterrent to boarding attempts, particularly in the case of slower vessels that may otherwise be susceptible to attacks.

Research Questions Integration:

a. **Impact of Piracy:** The height of the freeboard constitutes a significant physical parameter that serves to mitigate the risks associated with piracy, thereby reducing operational interruptions caused by attacks.

b. **Exacerbation by Geopolitical Tensions:** Increasing geopolitical tensions coupled with piracy threats in particular regions may intensify the significance of freeboard, particularly for vessels that possess low freeboard heights.

c. **Risk Management Strategy:** Integrating freeboard height considerations into vessel selection processes and route planning represents a prudent and effective risk management strategy against piracy.

3. Vessel Type

Do you believe that the vessel's type affects its vulnerability to piracy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	8	7.9	7.9	7.9
	4	11	10.9	10.9	18.8
	5	26	25.7	25.7	44.6
	6	31	30.7	30.7	75.2
	7	25	24.8	24.8	100.0
	Total	101	100.0	100.0	

Table 5

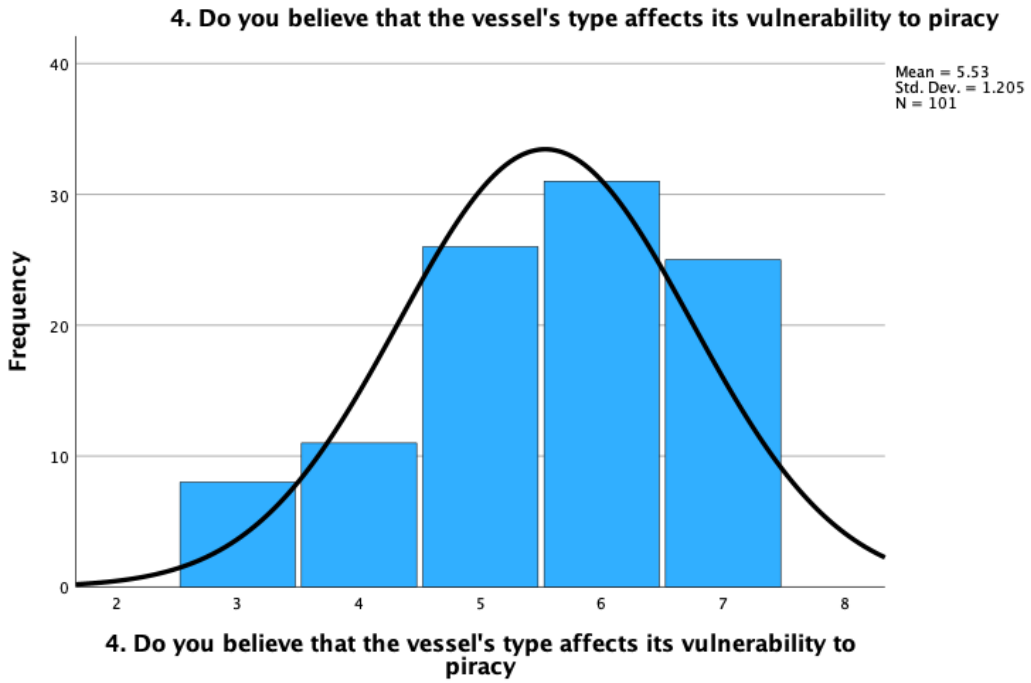

Figure 12

The type of vessel is a significant factor, with approximately 80% of respondents indicating that it influences vulnerability to piracy. Bulk carriers and tankers, which typically operate at slower speeds and possess higher freeboards, are especially susceptible, highlighting the increased concerns among professionals responsible for managing these types of vessels.

Research Questions Integration:

a. **Impact of Piracy:** The distinctive characteristics of bulk carriers and tankers augment the risk of piracy, consequently influencing trade costs and schedules.

b. **Exacerbation by Geopolitical Tensions:** The intensification of conflicts in regions susceptible to piracy necessitates consideration of vessel types during route planning.

c. **Risk Management Strategy:** It is imperative to customize risk mitigation strategies to address the specific vulnerabilities associated with each vessel type, thereby minimizing risks in areas of elevated threat.

4. Influence of Ballast/Laden Condition on Piracy Risk Assessment

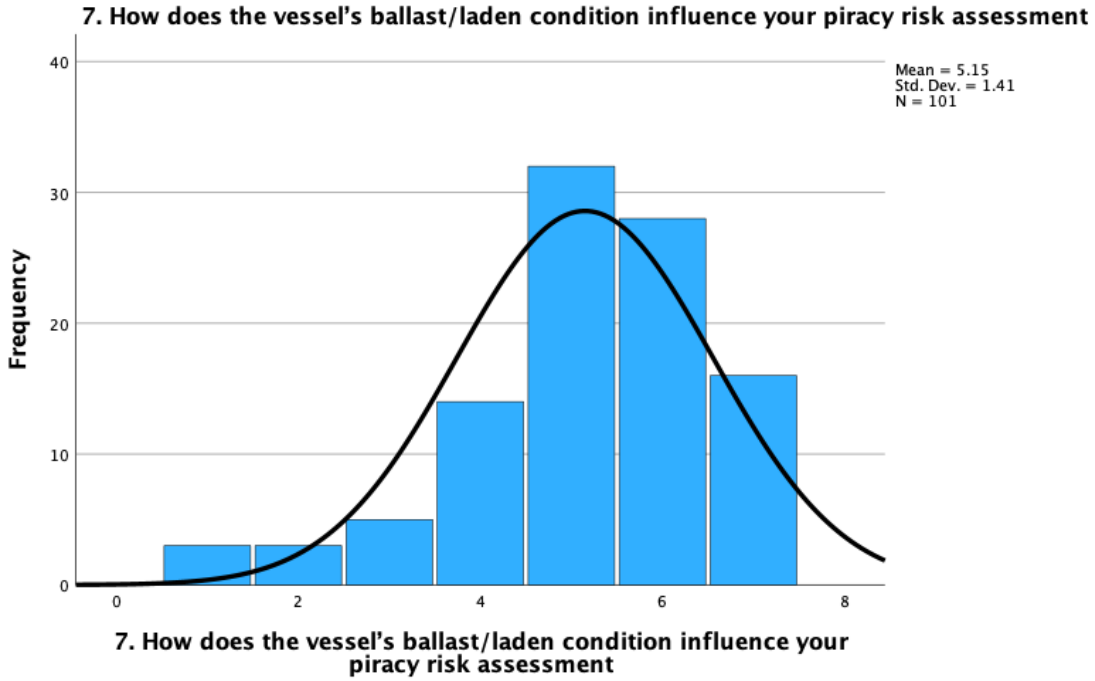

Figure 13

According to the frequency data, 75.2% of respondents identified the ballast/laden condition as a critical factor in risk assessments, with ballast conditions regarded as safer. Another 13.8% considered it moderately impactful, while a mere 11% rated it as a low priority. Laden vessels, characterized by their diminished maneuverability and reduced freeboard, are perceived as more susceptible to piracy. The frequency data demonstrates that companies actively incorporate vessel conditions into their risk planning, preferring ballast transit when feasible to enhance safety.

Research Questions Integration:

a. **Impact of Piracy**: Laden conditions of vessels enhance the risk of piracy by rendering them significally slower and more vulnerable. Thus, it could be stated that laden conditions are affecting the continuity of trade operations.

b. **Exacerbation by Geopolitical Tensions**: The geopolitical risks exacerbate the concerns related to laden conditions of merchant vessels, taking into consideration that heavier vessels carrying valuable cargo present greater challenges for security in

volatile regions in comparison with the same vessels being in ballast condition.

c. **Risk Management Strategy**: Adjusting transit schedules to avoid laden transits in high-risk areas constitutes a strategic approach, thereby enhancing defensive agility and minimizing the duration spent in piracy-prone zones.

5. Citadel or Muster Station Availability

6. Does the vessel(s) you are responsible for have a citadel or designated muster station for the crew in case of a pirate attack

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Intention to designate and equip one	9	8.9	8.9	8.9
	No	8	7.9	7.9	16.8
	Yes	84	83.2	83.2	100.0
	Total	101	100.0	100.0	

Table 5

A substantial majority (83.2%) of participants affirmed the presence of a citadel or designated muster station, thereby reflecting robust industry standards in readiness for potential pirate attacks. The widespread utilization of citadels illustrates a collective adherence to security protocols that prioritize the safety of crew members in areas deemed high-risk.

Research Questions Integration:

a. **Impact of Piracy:** Citadels provide a defensive mechanism that significantly reduces crew vulnerability in case of an attack, thereby ensuring safer transit through areas susceptible to piracy.

b. **Exacerbation by Geopolitical Tensions:** Persisting geopolitical tensions necessitate the implementation of citadels and muster stations, as potential assaults from non-state actors demand the establishment of robust security protocols.

c. **Risk Management Strategy:** The deployment of citadels and muster stations forms a fundamental component of risk management strategies, highlighting the protection of personnel as a critical element of maritime security planning.

6. Hardening Materials

5. To what extent is the vessel you are responsible for equipped with hardening materials (e.g., razor wire, water hoses, dummies, barriers, reinforced doors) to prevent piracy attacks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The vessel is fully equipped with hardening materials	54	53.5	53.5	53.5
	The vessel is not equipped with hardening materials	7	6.9	6.9	60.4
	The vessel is partially equipped with hardening materials	40	39.6	39.6	100.0
	Total	101	100.0	100.0	

Table 6

The majority of vessels are sufficiently equipped with hardening materials, with 53.5% reporting full equipment and 39.6% reporting partial equipment. Respondents place a high priority on the hardening of materials, as most companies equip vessels with razor wire, water hoses, and reinforced barriers. These measures are regarded as essential deterrents, especially in combating piracy. Vessel hardening serves as the primary line of defense, employing physical barriers to prevent unauthorized boarding and to reduce direct confrontation with hostile entities. The data indicates a significant industry-wide adoption of vessel hardening, demonstrating its perceived effectiveness in mitigating piracy risks. Overall, the increased prevalence of vessel hardening aligns with the industry's focus on defensive strategies, which are designed to deter and manage piracy risks.

Research Questions Integration:

a. **Impact of Piracy:** The implementation of hardening materials mitigates the effects of piracy by obstructing successful boarding endeavors, thus ensuring the safety of cargo and crew members.

b. **Exacerbation by Geopolitical Tensions:** The escalation of ongoing conflicts necessitates the utilization of hardening materials, which establish a physical barrier to safeguard against potential attacks, particularly in regions characterized by unpredictable threats.

c. **Risk Management Strategy:** The implementation of hardening practices is fundamental to the security protocols of vessels, particularly those traversing areas vulnerable to piracy as well as geopolitical instability. The emphasis on vessel hardening signifies a strategic commitment to proactive security measures, which are essential not only for deterring acts of piracy but also for ensuring the safety of the crew.

7. Influence of Weather Conditions

11. Do the weather conditions (e.g.monsoon period) influence your decision to sail through piracy-prone regions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4.0	4.0	4.0
	2	7	6.9	6.9	10.9
	3	5	5.0	5.0	15.8
	4	12	11.9	11.9	27.7
	5	30	29.7	29.7	57.4
	6	30	29.7	29.7	87.1
	7	13	12.9	12.9	100.0
	Total	101	100.0	100.0	

Table 7

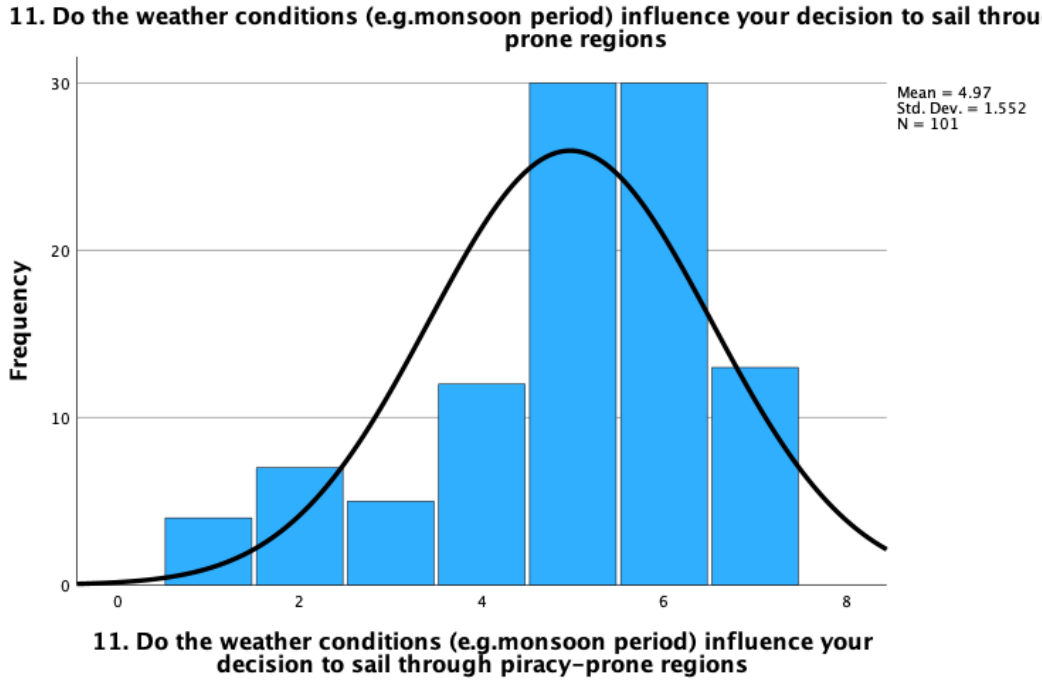

Figure 14

Weather plays a crucial role in formulating transit decisions, as evidenced by 58.5% of respondents reporting a moderate to high influence on risk assessments, especially during monsoon seasons. Adverse weather conditions may constrain the capacity of pirates to initiate attacks, thus rendering it a significant consideration in the strategic route planning.

Research Questions Integration:

a. **Impact of Piracy:** Meteorological conditions serve as a natural deterrent, influencing the operational capabilities of pirates and potentially contributing to a decline in incidents of piracy.

b. **Exacerbation by Geopolitical Tensions:** Climatic variables maintain their significance, even in the context of escalated geopolitical tensions, as natural conditions directly influence the feasibility of conducting attacks.

c. **Risk Management Strategy:** Strategically planning voyages in accordance with favorable weather conditions constitutes a proactive risk management strategy that effectively complements other security measures.

8. Influence of Weather Conditions (Monsoon Impact)

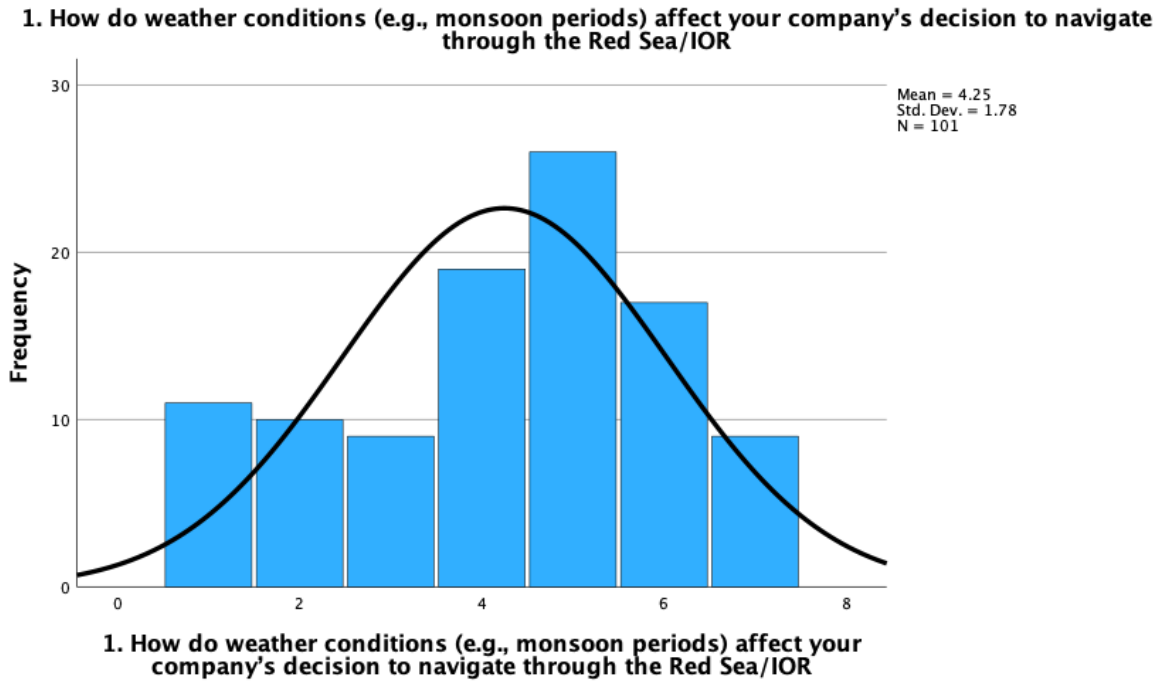

Figure 15

Meteorological influences, especially during monsoon periods, demonstrate a moderate significance in assessing risk. Approximately 55% of participants categorized it as a crucial element, with adverse weather conditions diminishing the prevalence of piracy attempts. Weather phenomena can function as inherent deterrents, influencing pirates' operational efficacy. For instance, monsoon seasons restrict access for small vessels, thereby indirectly affecting the occurrence of piracy incidents.

Research Questions Integration:

a. **Impact of Piracy:** Variability in weather conditions may diminish the risks associated with piracy, thereby influencing the frequency of incidents occurring during unfavorable weather situations.

b. **Exacerbation by Geopolitical Tensions:** Increased geopolitical tensions necessitate that companies consider weather factors in conjunction with conflict zones to effectively devise safe navigation routes.

c. **Risk Management Strategy:** Considerations pertaining to weather play a critical role in scheduling, allowing companies to circumvent areas susceptible to piracy during high-risk seasons, thus enhancing operational safety.

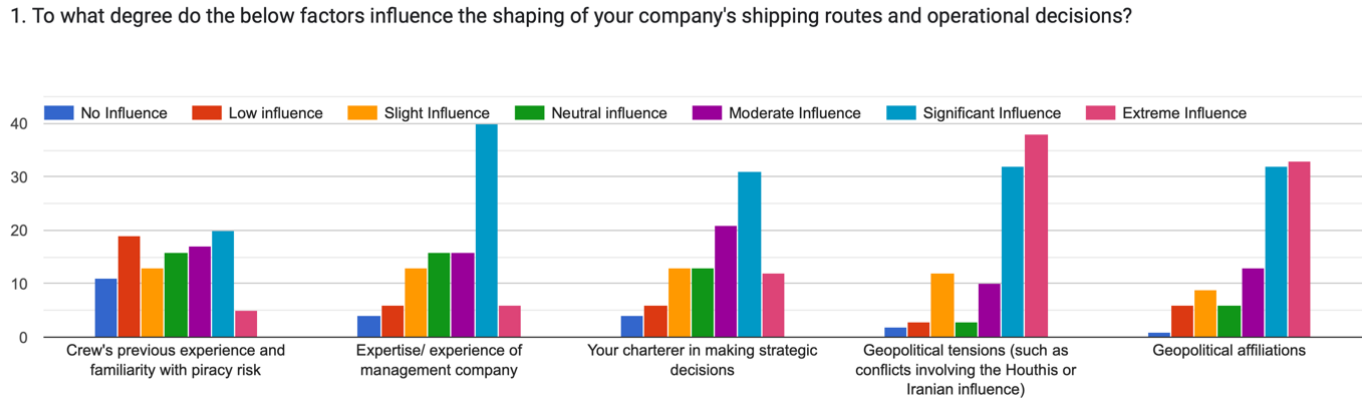

Figure 16

9. Influence of Crew's Previous Experience and Familiarity with Piracy Risk

1. To what degree do the below factors influence the shaping of your company's shipping routes and operational decisions? [Crew's previous experience and familiarity with piracy risk]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	10.9	10.9	10.9
	2	19	18.8	18.8	29.7
	3	13	12.9	12.9	42.6
	4	16	15.8	15.8	58.4
	5	17	16.8	16.8	75.2
	6	20	19.8	19.8	95.0
	7	5	5.0	5.0	100.0
	Total	101	100.0	100.0	

Table 8

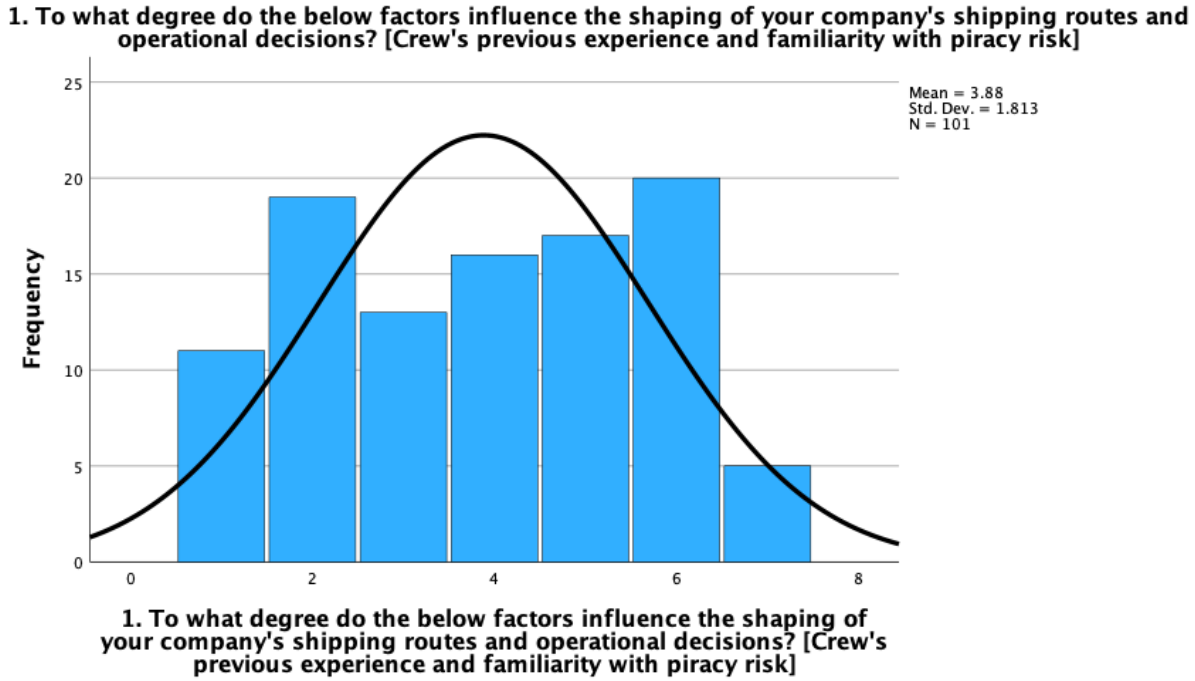

Figure 17

The data suggests that the impact of crew familiarity with piracy risk is disseminated across multiple levels, with a considerable percentage (47%) of respondents reporting a slight to moderate influence. A lesser percentage of 33%nreported no influence, while an even smaller proportion (20%) fell within the categories of "significant" and "extreme" influence.

The spread of responses indicates that crew experience is regarded as valuable and beneficial; however, it is not predominantly utilized for strategic decision-making pertaining to routes and operations. Instead, companies may place a higher emphasis on standardized risk protocols than on the individual experiences of the crew in order to ensure operational consistency.

Research Questions Integration:

a. **Impact of Piracy**: Experienced crew members can contribute to the reduction of piracy incidents by implementing effective, real-time security measures during high-risk passages; however, their role is subordinate to broader security protocols.

b. **Exacerbation by Geopolitical Tensions**: Although the familiarity of the crew with

piracy risks contributes to situational awareness, it is probable that geopolitical tensions exert a more substantial influence on route decisions, thereby reducing dependence on crew experience.

c. **Risk Management Strategy**: The moderate influence of this factor indicates a preference for standardized risk management practices that are independent of varying crew experience, thereby ensuring a consistent response across different vessels scenarios.

10. Influence of Expertise/Experience of Management Company

1. To what degree do the below factors influence the shaping of your company's shipping routes and operational decisions? [Expertise/ experience of management company]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4.0	4.0	4.0
	2	6	5.9	5.9	9.9
	3	13	12.9	12.9	22.8
	4	16	15.8	15.8	38.6
	5	16	15.8	15.8	54.5
	6	40	39.6	39.6	94.1
	7	6	5.9	5.9	100.0
	Total	101	100.0	100.0	

Table 9

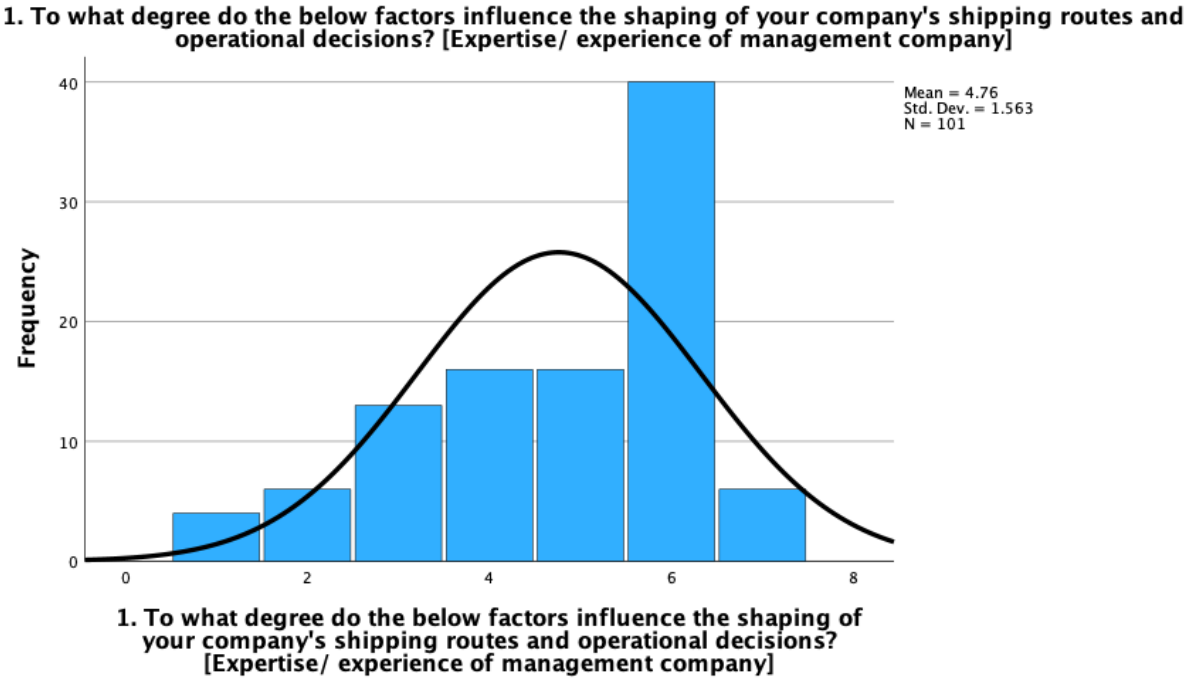

Figure 18

The predominant number of responses is categorized under neutral influence by 55%, with a smaller subset of 30% reporting slight to moderate influence. Very few responses (15%) indicate a significant level of influence attributed to the expertise of management companies.

This observation suggests that although management companies offer essential support, their specialized expertise does not play a pivotal role in shaping shipping routes or operational strategies in piracy-prone areas. Organizations seem to prefer adherence to established protocols and standards rather than relying on individualized input tied to their management teams.

Research Questions Integration:

a. **Impact of Piracy**: The restricted impact of managerial expertise indicates that prioritizing standardized security protocols prevails over tailored strategies derived from managerial experience.

b. **Exacerbation by Geopolitical Tensions**: Considering the limited dependence on managerial experience, it is probable that responses to geopolitical risks are primarily

dictated by overarching corporate policies as opposed to those established by individual management companies' insights.

c. **Risk Management Strategy**: This trend signifies a systematic methodology to risk management that is predicated upon standardized practices, thereby minimizing the impact of managerial expertise to uphold consistency and operational integrity.

11. Influence of Charterer in Making Strategic Decisions

1. To what degree do the below factors influence the shaping of your company's shipping routes and operational decisions? [Your charterer in making strategic decisions]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4.0	4.0	4.0
	2	6	5.9	5.9	9.9
	3	13	12.9	12.9	22.8
	4	13	12.9	12.9	35.6
	5	21	20.8	20.8	56.4
	6	31	30.7	30.7	87.1
	7	13	12.9	12.9	100.0
	Total	101	100.0	100.0	

Table 9

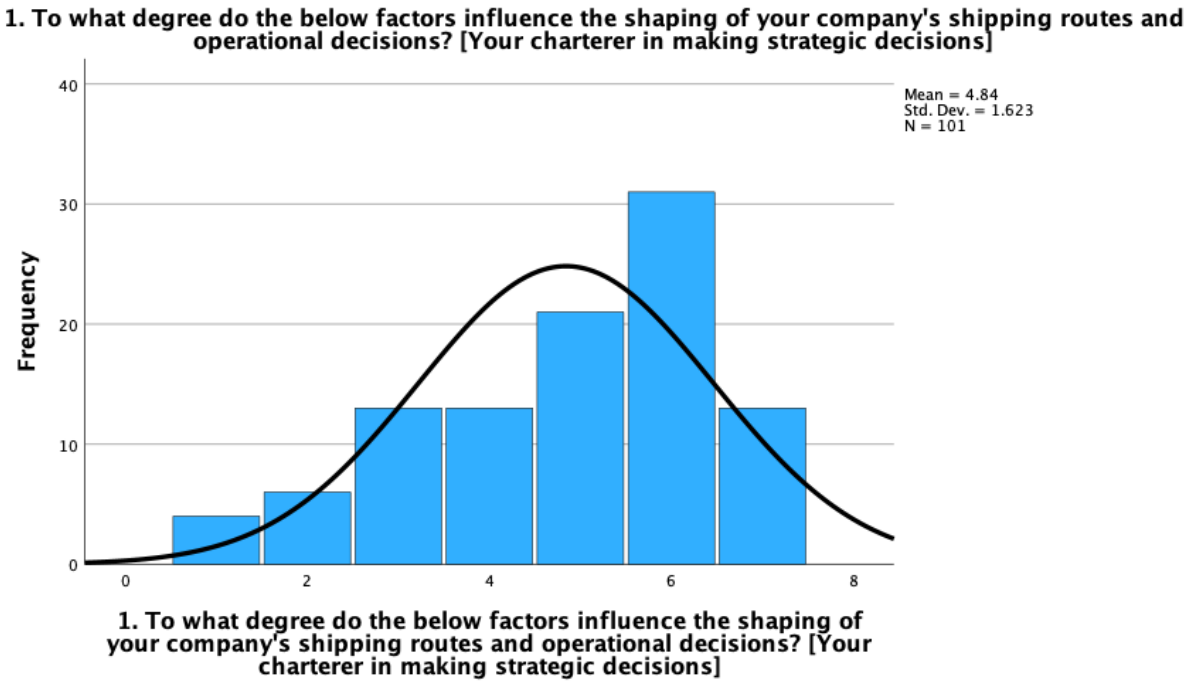

Figure 19

Responses of 45% indicate moderate to significant influence from charterers, with a minority of 33% noting slight influence. A limited percentage of 22% reported extreme influence from charterers in decision-making processes.

While charterer influence is evident, it is not predominant. This suggests that, although the input from charterers is valued, shipping companies maintain a significant degree of operational autonomy, particularly in high-risk areas. Considerations from charterers may impact specific aspects of decision-making, such as preferences; however, these do not take precedence over the established security protocols of the companies. Although the preferences of charterers are duly noted, they do not supersede critical security factors, suggesting that companies may adjust routes or strategies based on charterer input only when such adjustments are in alignment with broader objectives of risk mitigation.

It is noteworthy to emphasize that while the shipping companies claim to maintain their operational control, ultimately, the character's influence or decision represents one of the primary justifications for not traversing the Red Sea at the final part of the questionnaire. This situation effectively illustrates the possible illusion of control and the inclination to delegate

responsibility to a third party, both of which are prevalent aspects of the Greek mentality.

Research Questions Integration:

a. **Impact of Piracy**: The strategic preferences of charterers may influence certain tactical decisions; however, security measures are likely to take precedence in order to ensure the safety of the vessel safety.

b. **Exacerbation by Geopolitical Tensions**: In periods characterized by increased geopolitical risks, the stance and directives of charterers are typically aligned with the safety obligations of shipping companies, often imposing standards that are significantly more stringent.

c. **Risk Management Strategy**: The influence of charterers, as characterized by the responses, indicates a balanced strategy in which the contributions of charterers are recognized but appear to be secondary to the primary practices of risk management designed to mitigate threats related to piracy and geopolitical issues. In reality, the guidelines set forth by charterers are usually more stringent and proactive, thereby being the ones establishing the industry's standards.

12. Influence of Geopolitical Tensions (e.g., Conflicts Involving Houthis or Iranian Influence)

1. To what degree do the below factors influence the shaping of your company's shipping routes and operational decisions? [Geopolitical tensions (such as conflicts involving the Houthis or Iranian influence)]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.0	2.0	2.0
	2	3	3.0	3.0	5.0
	3	12	11.9	11.9	16.8
	4	3	3.0	3.0	19.8
	5	10	9.9	9.9	29.7

	6	32	31.7	31.7	61.4
	7	39	38.6	38.6	100.0
	Total	101	100.0	100.0	

Table 10

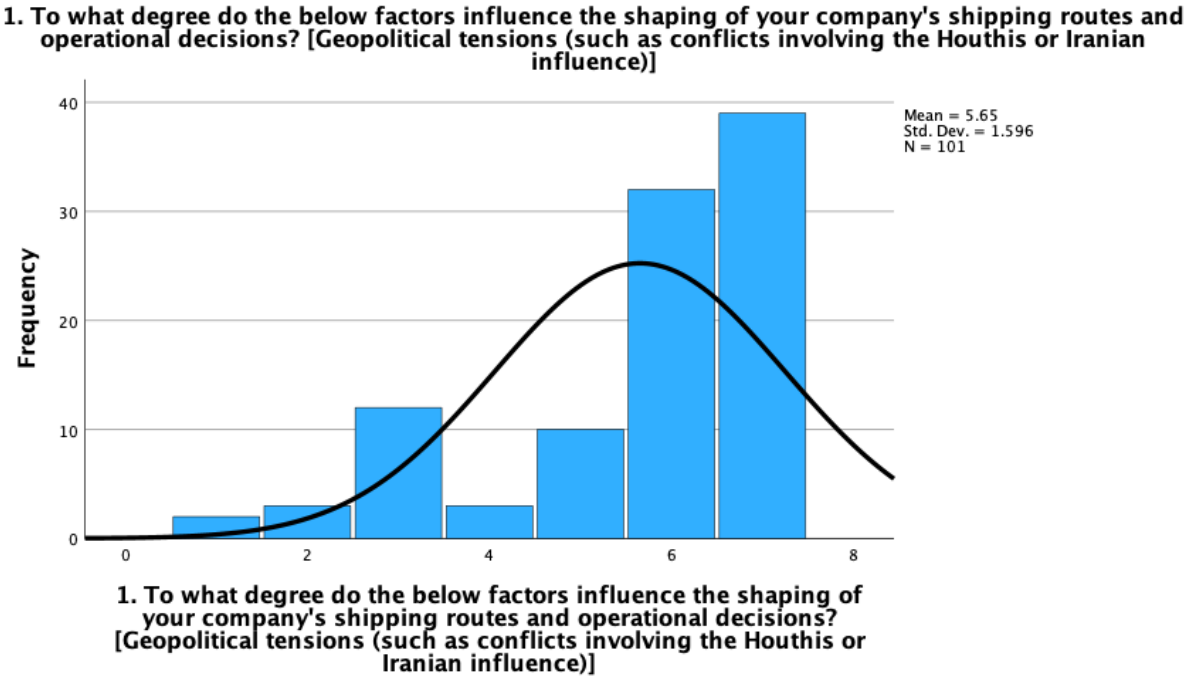

Figure 20

The data indicates that 68% of respondents perceive geopolitical tensions to be highly influence, whereas 18% acknowledge a moderate influence, and merely 14% assess it as low or neutral. This illustrates that geopolitical tensions represent a substantial determinant in the formulation of route and operational decisions.

Maritime shipping enterprises are acutely aware of the hazards linked to regional conflicts(such as Houthi activities and Iranian influence) and are diligently adjusting their routes to circumvent regions affected by instability. This proactive strategy emphasizes the paramount importance of adapting to current geopolitical dynamics to guarantee the safety of vessels and crew members.

Research Questions Integration:

a. **Impact of Piracy**: Geopolitical tensions frequently exacerbate piracy risks, reinforcing the necessity for route adjustments and the implementation of advanced security measures to circumvent areas of conflict.

b. **Exacerbation by Geopolitical Tensions**: The significant influence of geopolitical factors highlights their contribution to the exacerbation of piracy risks, necessitating companies to reevaluate and adjust their routes consistently.

c. **Risk Management Strategy**: The consistent, significant influence of geopolitical tensions reflects a dynamic risk management approach, incorporating real-time geopolitical assessments to safeguard vessels and mitigate evolving threats.

13. Influence of Geopolitical Affiliations

1. To what degree do the below factors influence the shaping of your company's shipping routes and operational decisions? [Geopolitical affiliations]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	6	5.9	5.9	6.9
	3	9	8.9	8.9	15.8
	4	6	5.9	5.9	21.8
	5	13	12.9	12.9	34.7
	6	32	31.7	31.7	66.3
	7	34	33.7	33.7	100.0
	Total	101	100.0	100.0	

Table 11

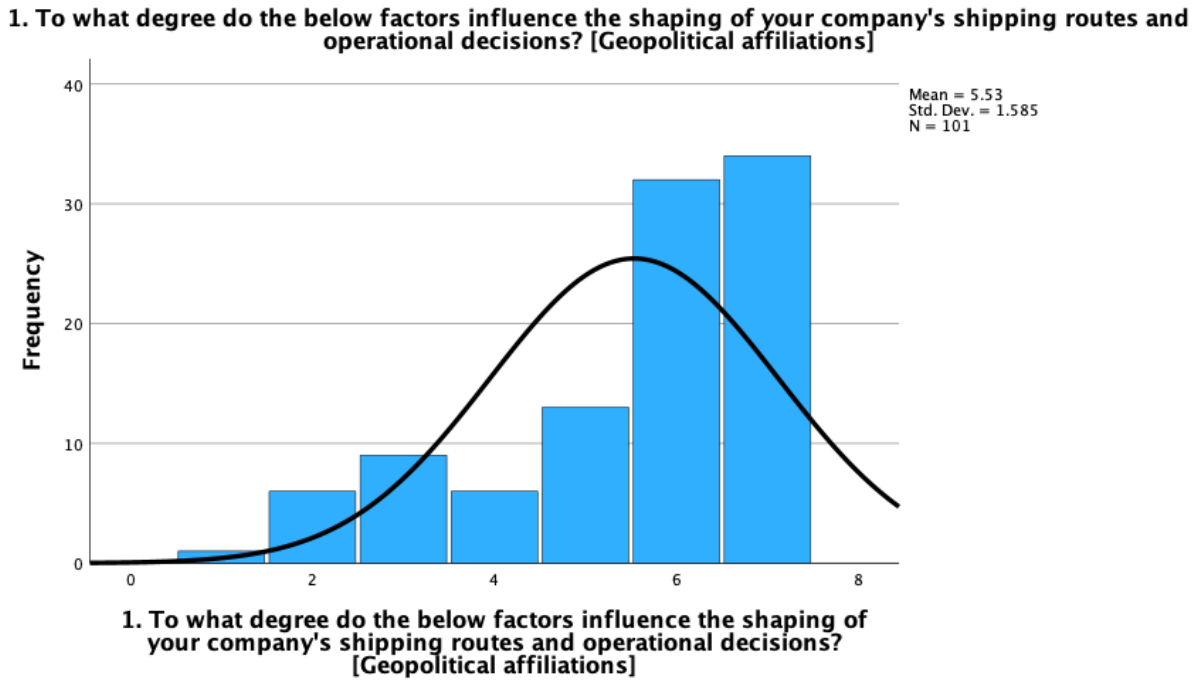

Figure 21

In a manner akin to geopolitical tensions, significant and extreme influence prevails among 65% of respondents, with 20% reporting moderate influence and the remaining 15% categorizing it as low or neutral. This underscores that corporations assign significant importance to political affiliations throughout the route planning process. The volume of responses advocating for diminished levels of influence was negligible.

Shipping enterprises acknowledge the heightened risks correlated with specific national affiliations in regions characterized by political volatility. This awareness illustrates a meticulous risk assessment methodology in which affiliations serve as a critical determinant for identifying secure passage routes.

Research Questions Integration:

a. **Impact of Piracy**: Political affiliations can heighten piracy and elevate security risks, rendering vessels more susceptible to targeted threats in high conflict zones.

b. **Exacerbation by Geopolitical Tensions**: Affiliations significantly contribute to the exacerbation of security threats, compelling companies to chart pathways that

mitigate exposure to political risks aftereffects.

c. **Risk Management Strategy**: The significant influence of geopolitical affiliations aligns with a risk-averse management strategy, prioritizing routes that avoid potential targeting based on political considerations and demonstrating an alignment with safety-driven decision-making frameworks.

14. Previous Piracy Incidents

12. Do previous piracy incidents involving the vessel(s) of the company you currently work for influence your/ your company's risk management decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	5.0	5.0	5.0
	2	4	4.0	4.0	8.9
	3	4	4.0	4.0	12.9
	4	17	16.8	16.8	29.7
	5	21	20.8	20.8	50.5
	6	32	31.7	31.7	82.2
	7	18	17.8	17.8	100.0
	Total	101	100.0	100.0	

Table 12

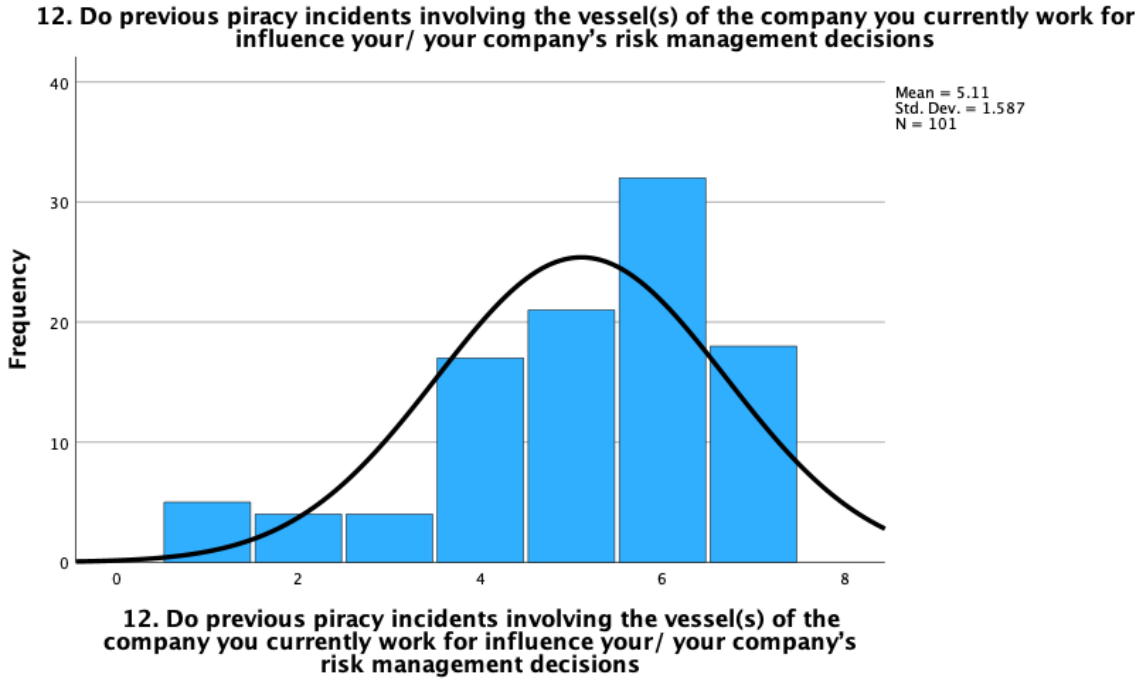

Figure 22

Previous piracy incidents have a significant impact on risk management decisions, with 69.3% indicating a moderate to high influence on the development of operational strategies. Shipping companies reasonably consider historical incidents to be a critical factor when planning navigation routes, thereby underscoring the importance of historical data in security assessments. Such past incidents provide predictive insights, enabling companies to anticipate potential threats. Therefore, shipping companies place a premium -both literally and metaphorically- on historical piracy data to comprehend patterns and identify high-risk areas, leveraging this information to enhance route planning and onboard security measures.

Research Questions Integration:

a. **Impact of Piracy**: Historical data offers valuable insights into high-risk areas, thereby guiding strategies to minimize piracy's impact and associated risks.

b. **Exacerbation by Geopolitical Tensions**: Recurring tensions heighten the significance of historical data, which is crucial for forecasting the likelihood - as it assists in forecasting likely attack areas - and adapting to shifting risks.

c. **Risk Management Strategy**: Utilizing historical data in conjunction with real-time

assessments allows organizations to proactively plan routes and modify operations in accordance with identified high-risk areas, which is crucial for effectively mitigating risks.

15. Frequency of Hiring Private Maritime Security Companies (PMSCs) in High-Risk Areas

3. How often do you hire Private Maritime Security Companies (PMSCs) when passing through the High-Risk Area (HRA) / Red Sea / Indian Ocean Region (IOR)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always, it is company policy/charterers' requirement	38	37.6	37.6	37.6
	Frequently, depending on management's/Charterers' decision	36	35.6	35.6	73.3
	Never, we only cross through Cape of Good Hope (COGH)	4	4.0	4.0	77.2
	Occasionally, we employ them based on management's/Charterers' decision	12	11.9	11.9	89.1
	Rarely, since we don't usually pass through this area	11	10.9	10.9	100.0
	Total	101	100.0	100.0	

Table 13

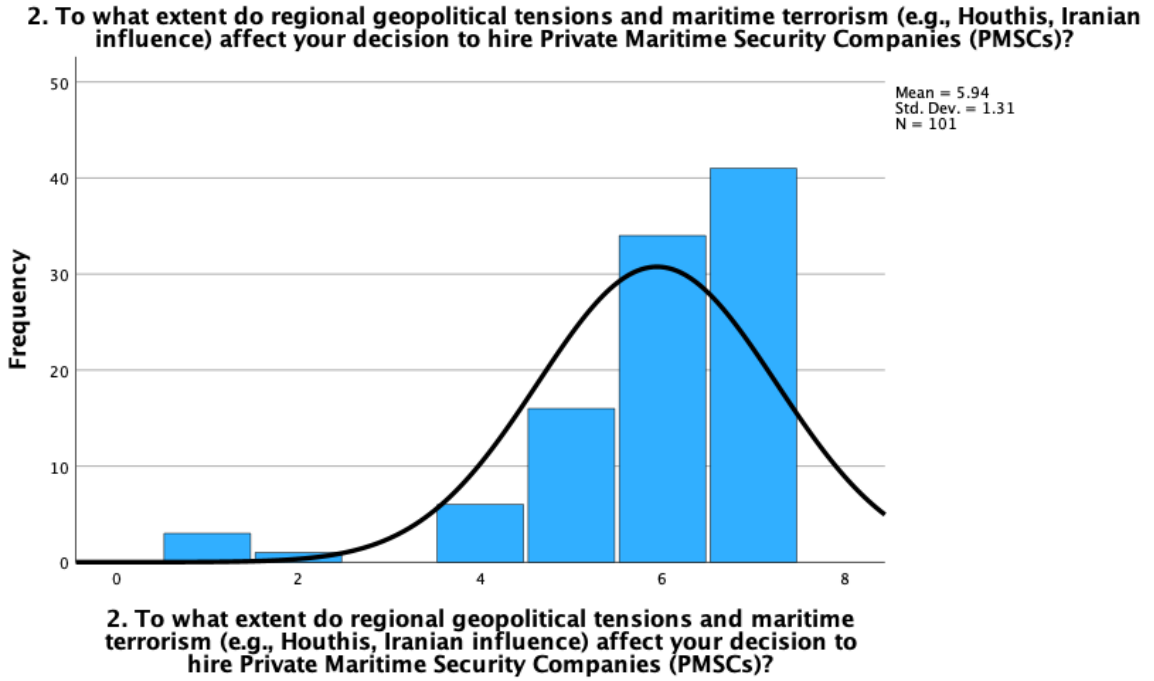

Figure 23

The frequency data indicates that 73.2% of respondents reported always or frequently engaging Private Maritime Security Companies (PMSCs) when traversing high-risk areas such as the Red Sea and Indian Ocean. An additional 22.8% indicated occasional or rare engagement, while only 4% reported never utilizing PMSCs.

With a vast majority frequently employing PMSCs, the data underscores the perceived necessity of external security in regions prone to piracy. This finding is consistent with a broader industry acknowledgment that PMSCs offer crucial deterrence onboard, with the presence of armed personnel being a standard within the industry, thereby enhancing vessel security through intelligence support.

Research Questions Integration:

a. **Impact of Piracy**: The elevated frequency of Private Military and Security Company (PMSC) engagement reduces the impact of piracy by offering immediate deterrents onboard, thereby decreasing the likelihood of successful attacks rates.

b. **Exacerbation by Geopolitical Tensions**: Geopolitical conflicts increase the necessity of PMSCs, as companies respond to elevated risks by reinforcing security measures with specialized personnel.

c. **Risk Management Strategy**: This consistent reliance on PMSCs) embodies a proactive risk management strategy, whereby external security expertise is incorporated as a standard procedure during high-risk transit operations.

16. Frequency of Company Reassessment of Risk Profiles and Security Measures

3. How often does your company reassess risk profiles and security measures in response to evolving piracy or geopolitical threats

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	After Every Major Incident	26	25.7	25.7	25.7
	Annually	11	10.9	10.9	36.6
	Monthly	18	17.8	17.8	54.5
	Quarterly	28	27.7	27.7	82.2
	Semi-Annually	18	17.8	17.8	100.0
	Total	101	100.0	100.0	

Table 14

The frequency curve indicates that 74% of respondents report that their companies reassess risk profiles and security measures at least on a quarterly basis. Furthermore, 18% indicated that bi-annual assessments are conducted, while only 8% stated that reviews occur annually or less frequently. The above data is a great reflection of a robust commitment to adaptive security practices based on the Industry's responsiveness to dynamic threats. Therefore, the elevated frequency of reassessment enables companies to remain informed about evolving risks and to promptly integrate new intelligence into their protocols.

Research Questions Integration:

a. **Impact of Piracy**: The frequent reassessments enable companies to proactively mitigate piracy threats, thereby diminishing response time and economic impact.

b. **Exacerbation by Geopolitical Tensions**: In light of heightened tensions, it is reasonably imperative to state that organizations should engage in ongoing reassessments to effectively adapt to emerging geopolitical challenges.

c. **Risk Management Strategy**: Regular reviews of risk profiles are essential for adaptive risk management, offering flexibility and enabling maritime organizations to react promptly to emerging developments in maritime security.

17. Influence of Proximity to Military Operations or IRTC Convoys on Routing Decisions

10. To what extent does the vessel's proximity to areas with active military operations (e.g., Operation Atalanta, ASPIDES, etc.) or joining IRTC convoys influence your routing decision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	2.0	2.0	2.0
	3	7	6.9	6.9	8.9
	4	15	14.9	14.9	23.8
	5	33	32.7	32.7	56.4
	6	21	20.8	20.8	77.2
	7	23	22.8	22.8	100.0
	Total	101	100.0	100.0	

Table 15

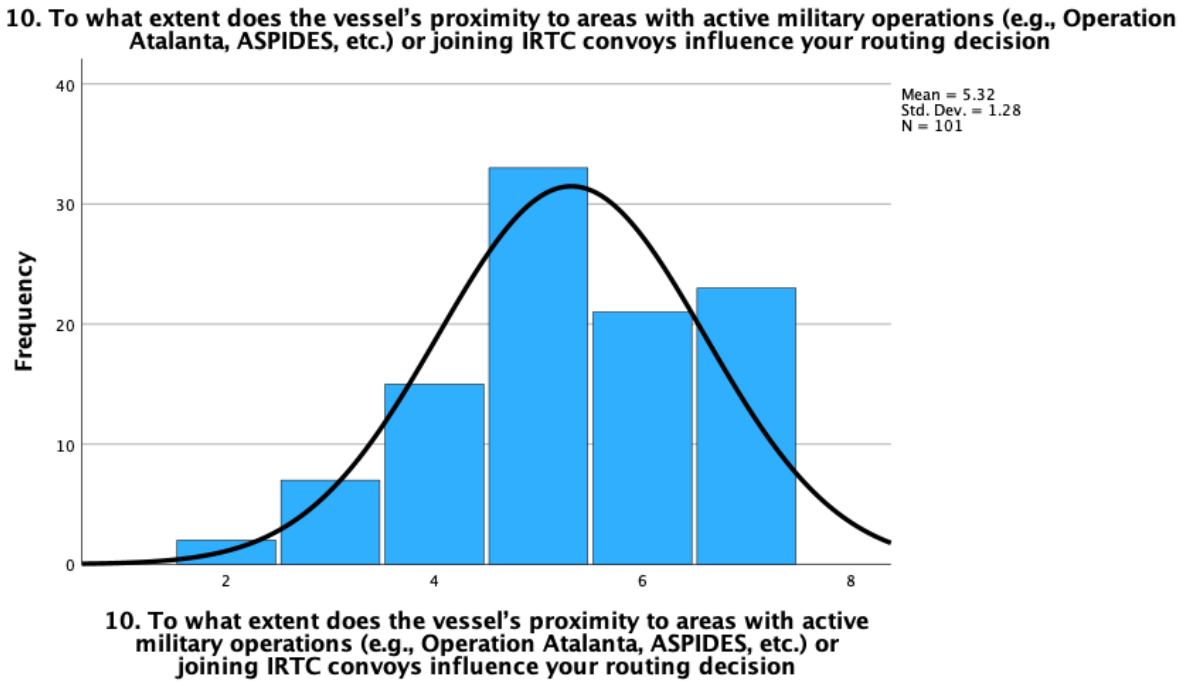

Figure 24

Data indicates that 82% of respondents place a high priority on proximity to military operations, such as Operation Atalanta or ASPIDES, or joining IRTC convoys. Only 12% reported a moderate impact of this factor, while 6% rated it as a low priority. The preference for routes near military presence underscores the industry's dependence on coalition naval forces for enhanced protection. Routing decisions are strategically formulated to capitalize on military patrols and convoy support, thereby augmenting operational security.

Research Questions Integration:

a. **Impact of Piracy**: Routing near military zones reduces piracy risk by leveraging patrol protections and creating safer passage areas.

b. **Exacerbation by Geopolitical Tensions**: Geopolitical conflicts increase the preference for military-proximate routes- as additional security becomes essential in conflict zones.

c. **Risk Management Strategy**: The industry's inclination towards military-proximate routing reflects a collaborative approach to risk management, balancing private security with naval support for enhanced protection in HRAs.

This comprehensive analysis elucidates how distinct risk factors influence decision-making processes within companies, clearly demonstrating the prioritization of geopolitical considerations in both routing and security assessments. Furthermore, this examination emphasizes the intricate interplay among piracy risk management, geopolitical tensions, and internal corporate protocols, all of which are pivotal in determining maritime operations within high-risk areas.

4.2.2 The Final Question: Routing Decision

4.2.2.1. Preferred Route Choice

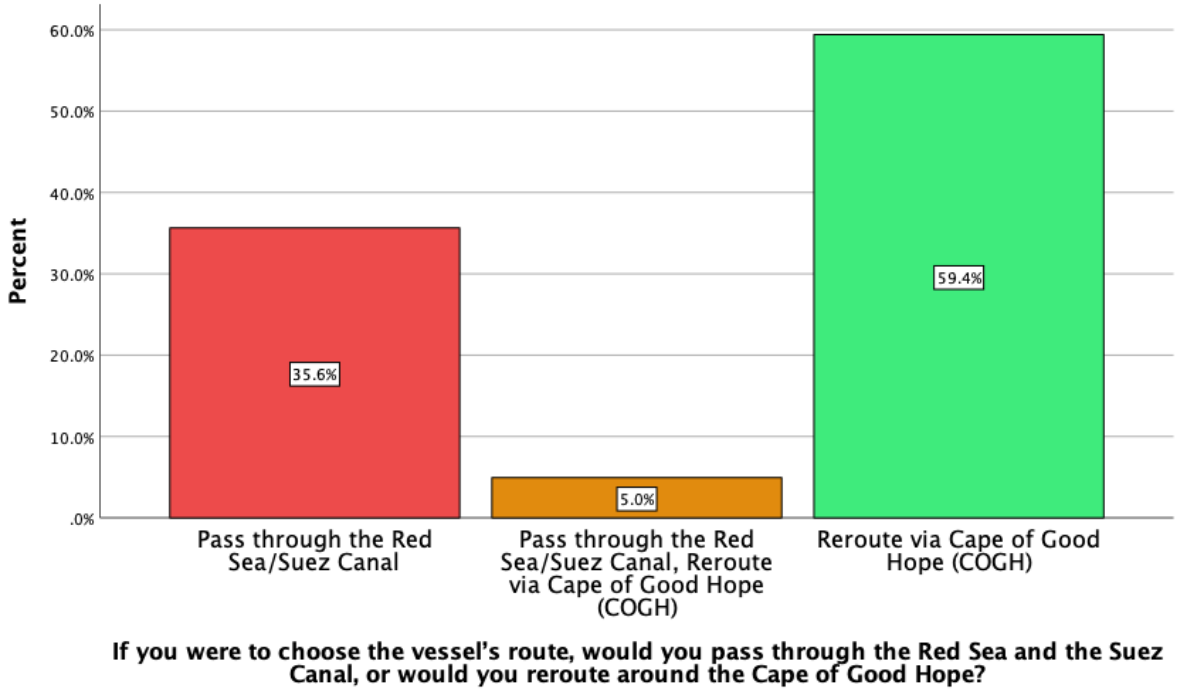

Figure 25

According to the frequency data collected, **59.4%** of respondents opted to reroute via the **Cape of Good Hope (COGH)** as a safer alternative to the Red Sea and Suez Canal route. A further **35.6%** chose to navigate exclusively through the **Red Sea/Suez Canal,** while **5.0%** remained **amenable to either option**, contingent upon situational factors.

The predominant inclination of respondents towards rerouting around the COGH highlights a

tendency to prioritize safety over considerations of time efficiency and fuel costs. Nevertheless, the notable proportion of respondents preferring to transit the Red Sea/Suez Canal suggests that, for some companies, cost-effectiveness and operational efficiency take precedence over security concerns. This dichotomy reflects the shipping industry's necessity to balance profitability with risk mitigation, wherein routing decisions are shaped by vessel-specific parameters, company policies, and current security risk assessments.

4.2.2.2. Justifications for Route Choice

As articulated in Chapter 3: Methodology, the Final Question of route choice was structured to be supported by an open-ended justification, facilitating the collection of invaluable insights from shipping professionals. Furthermore, the specific responses obtained will serve as the essence, elucidating whether a counter position among their perspectives concerning detailed vessel-specific, company-wide, and geopolitical as well as environmental factors is congruent with a prompt and potentially subjective response.

4.2.2.3. Frequency Distribution of Route Choice Suggested Factors

Cost Considerations (e.g., fuel, time, insurance): 22 out of 101 responses, representing **21.8%** of the total.

Safety and Security: 27 out of 101 responses, totaling **26.7%**.

Affiliations: 4 out of 101 responses, or **4.0%**.

Geopolitical Risk (e.g., current conflicts): 17 out of 101 responses, representing **16.8%**.

Environmental Factors (e.g., monsoon season, weather conditions): 3 out of 101 responses, or **3.0%**.

Other Essential Factors: 28 out of 101 responses, making up **27.7%**.

4.2.2.4. Analysis of Findings

a. Cost Considerations

With 21.8% of respondents identifying cost considerations as a significant factor, it is evident that expenses associated with fuel, transit time, and insurance play a critical role in the route

decision-making process. The pronounced emphasis on cost highlights the industry's endeavor to reconcile operational efficiency with financial sustainability, prioritizing cost-effective routes provided that security risks are assessed as manageable.

b. Safety and Security

Safety and security accounted for 26.7% of responses, emerging as the most frequently cited factor influencing route selection. The significant prioritization of safety underscores a collective industry commitment to safeguard crew, vessel, and cargo. The data indicates that in situations where security risks are elevated, particularly in areas susceptible to piracy, companies are more inclined to modify routes or implement supplementary security measures.

c. Affiliations

The 4.0% of respondents indicated that affiliations significantly influenced route choices, particularly in instances where the vessel's or company's affiliations could draw unwanted attention within specific geopolitical contexts. Although this factor is less pronounced, it highlights a discerning approach to routing, wherein political affiliations may elevate security risks, leading companies to eschew regions characterized by increased scrutiny or hostility towards particular affiliations.

d. Geopolitical Risk (e.g., current conflicts)

Geopolitical risk emerged as a significant factor, accounting for 16.8% of the responses. This encompasses conflicts involving actors such as the Houthis or other regional tensions. Geopolitical risk affects routing decisions by potentially amplifying the risks of piracy or military conflict. Thus, the elevated level of influence indicated that companies regularly reassess their route selections in light of evolving regional dynamics, placing a higher priority on safety rather than direct cost considerations.

e. Environmental Factors (e.g., monsoon season, weather conditions)

Only 3.0% of respondents indicated that environmental factors influence their route selection,

particularly due to weather-related risks that may complicate navigation or security. Although this consideration is relatively minor, environmental factors remain essential in route planning. Seasonal conditions, such as the monsoon season, impact piracy activity and navigational safety, rendering weather patterns a supplementary yet significant factor in specific high-risk areas.

f. Other Essential Factors

Unsurprisingly, 27.7% of respondents indicated various factors that influenced their routing decisions, including company policies and specific operational mandates. This high percentage implies that companies usually depend on internal policies, risk management strategies, and client considerations on a primary basis when planning their vessels' routes. This adaptability is vital for their "well-being" and, in fact, underscores a multifaceted approach to risk management that incorporates company-specific priorities along with cost and security parameters.

In conclusion, this thorough analysis of factors and sub-factors offers an extensive perspective on the essential considerations affecting shipping companies' routing decisions. In other words, the significance attributed to each factor reflects the intricate equilibrium that shipping companies uphold regarding operational expenses, safety, and geopolitical factors.

4.2.2.5. Indicative Justification of Route Choice

Particularly, one of the most pertinent justification responses states, ***"It actually depends on the vessel's location, charter status, as well as trading exclusions."*** This statement is noteworthy as it adeptly encapsulates the complex reality of route decision-making for vessels operating in high-risk or geopolitically sensitive regions. The response offers an accurate and thorough overview of the factors that influence route selection in several respects:

1. **Location-Specific Factors**:

    a. **Current Position and Route Viability**: The position of the vessel in relation to high-risk areas, such as the Red Sea or Cape of Good Hope, is crucial for decision-making. Its proximity to areas vulnerable to piracy, active military operations, or significant geopolitical tensions significantly affects the threat level and the necessity for rerouting.

    b. **Environmental Conditions**: Weather and seasonal elements, such as monsoon periods, significantly influence route choices by considering location-based environmental hazards, which affect both safety and operational efficiency.

2. **Charter Status and Operational Demands**:

    a. Charterer Influence on Strategy: Charterers often prioritize economic efficiency, advocating for expedited or more cost-effective routes; unless security risks are assessed to be excessively high. While the data derived from the subject question from the survey (Annex B) indicates that charterer input has a moderate influence, mainly their objectives are in harmony with – or even exceed– corporate policies that emphasize cost control and fuel efficiency.

    b. Risk-Sharing Between Parties: The charter status establishes a balance between the interests of the same and operational constraints, requiring both parties to evaluate security costs in relation to potential profit losses that may arise from rerouting.

3. **Trading Exclusions and Affiliation Risks**:

    a. Political and Trade Restrictions: Certain regions present distinct risks attributable to political affiliations, trade exclusions, or embargoes. This aspect directly correlates with data indicating that geopolitical affiliations and tensions significantly influence corporate decisions- as companies strive to identify pathways that circumvent regions where their affiliations could elevate security threats.

    b. Port Limitations and Bans: Certain vessels may be subject to exclusions from particular ports or trade zones based on their recent trading history, port calls, or cargo affiliations. This circumstance may require rerouting to circumvent ports or regions that would restrict operational flexibility.

Overall, this response undoubtedly perfectly encapsulates the multi-layered decision-making process of route selection, and it is definitely no coincidence that it has been provided by an Operations Manager. As highlighted throughout the data, it reflects the balance among financial incentives, operational safety, and geopolitical considerations. In conclusion, considering location, charterer requirements, and trading exclusions effectively aligns with the complexity of real-world factors that companies must assess when navigating high-risk waters.

4.2.2.6 Research Questions Integration

a. **Impact of Piracy on International Trade**:

The significant preference for rerouting around the COGH (59.4%) reflects piracy's tangible ramifications of piracy on commercial shipping routes. By eschewing high-risk areas, companies endeavor to avert delays, cargo losses, and possible safety incidents, which can adversely influence the continuity of trade. The decision to forgo passage through the Red Sea, notwithstanding the associated higher costs, highlights the industry's strategic pivot towards mitigating piracy-related threats to global trade.

b. **Exacerbation by Geopolitical Tensions**:

Geopolitical factors amplify the risks associated with the Red Sea route, rendering the COGH route more favorable for the majority of respondents. The noted impact of affiliations, geopolitical tensions, and active conflicts (such as Houthi activities in the Gulf of Aden) on routing decisions highlights the elevated risk landscape. This trend indicates that geopolitical instability in the region substantially affects operational choices, compelling companies to prioritize security over speed.

c. **Risk Management Strategy**:

The variety of responses highlights strategic flexibility as a fundamental element of maritime risk management. Organizations must balance cost-effectiveness with security protocols, adjusting routes in accordance with contemporary threat assessments. The significant level of

risk aversion demonstrated by the preference for the COGH route indicates that, for numerous companies, security concerns take precedence. However, the 35.6% opting for the Red Sea route underscores a dual approach, wherein financial considerations influence routing decisions when the perceived security risks are deemed manageable.

Ultimately, the final routing decision question highlights a distinct division between cost-driven and safety-focused strategies in high-risk transit. While some opt for cost-effective passages through the Red Sea, the majority favor rerouting around the Cape of Good Hope to mitigate piracy and geopolitical threats. This strategic divergence mirrors broader risk management practices within the shipping industry, where firms adjust their operational strategies based on the balance between economic objectives and security priorities. By conducting situational risk assessments, companies manage trade continuity alongside proactive risk mitigation, adapting their choices to the unique requirements of each voyage.

4.2.3 Summary of Risk Factors: An Analysis of Risk Parameters and Their Levels of Significance

Risk Factors	Mean	Significance
Crew's experience	3.88	Low
Degree of weather influence (monsoon)	4.25	Medium
Expertise of Management Company	4.76	
Character of decision maker	4.84	
Weather conditions	4.97	
Previous piracy incidents	5.11	High
Ballast/ Laden condition	5.15	
Proximity to military operations	5.32	
Geopolitical affiliations	5.53	
Vessel type	5.53	
Geopolitical tensions in forming company strategy	5.65	
Freeboard	5.70	
Speed	5.88	
Geopolitical tensions & Maritime terrorism (hiring PMSCs)	5.94	

Table 16

The aforementioned table serves as a comprehensive summary of all identified risk factors and has been constructed based on the variance mean curve of the factor histogram analyzed previously. This sophisticated analysis of risk parameters categorizes essential factors according to their influence on route decision-making within the shipping industry, classified into three levels of significance: Low, Medium, and High. Therefore, these categories elucidate the relative weight attributed to various risk factors in route planning, particularly in regions characterized by heightened security and geopolitical risks.

A. Low Significance

Crew's Experience (3.88): The crew's experience is regarded as having a negligible impact on route decision-making, presumably owing to the standardization of protocols throughout the industry. While experienced crew members hold significant value, decisions regarding routes in high-risk areas are predominantly influenced by external threats and logistical factors that extend beyond individual expertise.

B. Medium Significance

Degree of Weather Influence (Monsoon) (4.25): Seasonal weather conditions, such as monsoons, exert a moderate influence on route planning. While adverse weather may affect operational risk, these factors are generally manageable and do not typically require significant alterations to established routes.

Expertise of Management Company (4.76) and **Character of Decision Maker (4.84)**: The expertise of the management company, in conjunction with the discernment exercised by the decision-maker, is of moderate significance. This suggests that, while organizational competence is crucial, it is subordinate to more tangible external and environmental risks.

Weather Conditions (4.97): Analogous to the influence of monsoons, general weather patterns impact operations to a degree; however, they can be effectively managed through meticulous navigational planning.

C. High Significance

Previous Piracy Incidents (5.11): Past piracy incidents of piracy significantly impact decision-making processes, as they furnish concrete risk data, thereby prompting companies to prefer safer routes such as the Cape of Good Hope over piracy-prone regions.

Ballast/Laden Condition (5.15): The physical condition of the vessel, whether it is laden with cargo or operating in a ballast state, significantly impacts its susceptibility to piracy and influences the decision to evade certain high-risk areas.

Proximity to Military Operations (5.32): Proximity to military operations may either

enhance security due to the presence of naval forces or elevate risks, particularly in regions characterized by political volatility.

Geopolitical Affiliations (5.53) and **Vessel Type (5.53)**: Political affiliations and specifications of vessels considerably influence routing decisions, as they dictate the vessel's visibility and vulnerability in specific regions.

Geopolitical Tensions in Forming Company Strategy (5.65): Long-term geopolitical strategies significantly influence route decisions, as organizations may modify their routes to circumvent regions affected by conflicts or diplomatic tensions.

Freeboard (5.70) and **Speed (5.88)**: These vessel-specific characteristics are deemed as the most crucial for piracy risk mitigation, as a higher freeboard and greater speed can importantly deter or prevent piracy attempts.

Geopolitical Tensions & Maritime Terrorism (Hiring PMSCs) (5.94): The highest-rated factor reflects the significance of external security threats, such as terrorism. The extended engagement of Private Maritime Security Companies (PMSCs) in response to increased geopolitical risks emphasizes the critical importance of these factors in decision-making related to shipping routes and the commitment of shipping companies to protect their assets.

Ultimately, this analysis demonstrates that **high-significance** factors are predominantly associated with security risks, vessel characteristics, and geopolitical issues, whereas factors of **medium** and **low significance** pertain to organizational and environmental aspects. This structured methodology underscores a preference for prioritizing immediate security and vessel-specific elements over more manageable or internal variables.

It is evident that the risk assessment matrix could serve an instrumental role in assisting companies in organizing and quantifying these risks, thereby enabling them to make more informed and systematic decisions when choosing routes through high-risk zones. This matrix-oriented approach guarantees that key considerations are consistently addressed, thereby enhancing both safety and operational efficiency.

4.3 Analysis of Findings in Relation to Literature

4.3.1 Evolution of High-Risk Areas (HRA) and the Role of PMSCs

Historically, the designation of High-Risk Areas (HRA) within maritime security directly responded to the alarming rise in piracy, particularly off the Somali coast during the early 2000s. Prior to 2015, a considerable portion of the literature and academic papers issued insisted that the engagement of Private Maritime Security Companies (PMSCs) would escalate violence, potentially exacerbating piracy incidents or armed confrontations as security guards were carrying weapons onboard merchant vessels. However, in a surprising divergence from these expectations, the PMSCs' role has been proven instrumental in mitigating piracy. In fact, their presence and tactical deterrence have contributed to a marked decline in piracy occurrences, to such a degree that imperiled its Industry, as it led to effectively extinguishing piracy in previously designated HRA zones. The abolishment of the HRA in conjunction with the recent geopolitical tensions, in fact, fostered a transformation in the responsibilities of PMSCs, which are now increasingly assigned to counter maritime terrorism rather than traditional piracy alone.

In recent years, the boundaries of the HRA have been redefined, with new areas of concern arising due to political instability and strategic shifts in maritime routes. This ever-evolving landscape of threats dictated the necessity to update security strategies that encapsulate the dynamic nature of maritime risks, as described in both theoretical frameworks and real-world applications examined in Chapter 4.2. Thus, the following analysis will attempt to align the findings of the survey with Chapter 2 (literature review), emphasizing the congruences and divergences between theoretical expectations and practical implementations within the field equally.

4.3.2 Alignment with Best Practices in Maritime Security

The theoretical framework surrounding best practices in maritime security, specifically with regard to Best Management Practices (BMP) frameworks discussed in the literature, underscores a comprehensive security strategy. This approach integrates the physical vessel hardening, crew training, and the establishment of citadels or designated safe muster points. These strategies are designed to safeguard vessels against piracy and other threats by effectively delaying or deterring potential attackers, allowing sufficient time for external assistance or evasive maneuvers.

The findings presented in Chapter 4.2 reveal varying levels of compliance with these practices. While numerous vessels fully implement hardening measures and citadel installations, certain vessels are devoid of these critical security structures, rendering them susceptible to threats. Citadels, as noted in the literature, serve as last-resort sanctuaries for crew members during an attack, providing them the opportunity to request assistance and evade direct confrontation. However, resource constraints and cost considerations frequently restrict the extent of hardening and citadel existence, revealing a disparity between best practices and their practical application.

Moreover, the establishment and effectiveness of best practices are also influenced by geopolitical affiliations. Countries with strong governmental support and strategic alliances tend to have better resources and security frameworks in place. Conversely, shipping companies from regions with limited state support may struggle to implement comprehensive security measures, relying more heavily on risk-based strategies that prioritize immediate threats.

Consequently, despite best practices suggesting comprehensive security measures, the level of their implementation frequently necessitates appointing strategies based on current geopolitical tensions, vessel types, and route-specific risks. For instance, vessels operating in regions characterized by intensified geopolitical tensions or disputed waters hardening and citadel measures are of top priority, reflecting adaptive, situation-based security posture rather than uniform compliance with theoretical frameworks.

4.3.3 Resource Allocation vs. Theoretical Expectations

According to Chapter 2, the appropriate allocation of resources for training, equipment, and security protocols is essential for the effectiveness of maritime security. Ideally, resources should be distributed to guarantee comprehensive protection against piracy and other maritime threats.

In Chapter 4.2, the data indicates a notable inconsistency in resource allocation, as certain vessels are adequately equipped with hardening materials, whereas others lack even basic protective measures. This inconsistency illustrates the realities imposed by budgetary constraints and the significant impact of decision-makers' risk perceptions on the distribution of resources. The findings underscore the manner in which limitations in resources affect the theoretical expectation of uniform security practices across vessels, ultimately resulting in selective implementation based on immediate needs and financial feasibility.

The allocation of resources is often impacted by decision-makers' perspectives and attitudes toward risk. Some individuals prioritize thorough preparedness, while others, swayed by operational necessities or cost-reduction pressures, may allocate fewer resources to security measures. This human element in the decision-making process introduces variance that diverges from the consistent and thorough approach advocated by theoretical frameworks.

As a matter of fact, in real-life scenarios, decision-makers evaluate risks by considering current geopolitical and piracy trends, often reallocating resources in response to emerging threats. This dynamic, pragmatic approach contrasts with the literature's expectation of steady, consistent investment in security measures. In high-risk maritime routes, vessels may allocate additional resources to security measures, whereas less critical areas may garner minimal investment.

4.3.4 Theoretical Expectations of Security Training vs. Practical Limitations

Chapter 2 underscores the importance of continuous and comprehensive crew training as a cornerstone of maritime security. Ideally, crew members should receive extensive training in threat recognition, evasive maneuvers, and securing refuge within citadels or hardened areas.

The findings indicate varied levels of training among vessels. Certain crews exhibit extensive training, adhering to best practices, while others undergo limited or ad-hoc training. This disparity primarily arises from budgetary constraints, the company's or charterers' maritime security strategy, crew turnover, and time limitations that hinder continuous or exhaustive training.

Training levels are also impacted by geopolitical and operational factors. For instance, vessels operating within or near conflict zones may prioritize rigorous training protocols, whereas those situated in low-risk areas may adopt a more relaxed training approach. Furthermore, the increase in maritime terrorism and geopolitical tensions has led certain vessels to implement more extensive training practices, transitioning from basic piracy defense to counter-terrorism preparedness.

In practice, organizations frequently engage in targeted, periodic training sessions instead of ongoing education. Real-world limitations compel the prioritization of essential skills over in-depth theoretical knowledge. Training is predominantly reactive, intensifying in response to specific incidents or escalating regional threats, rather than remaining in a staedy state as proposed by theoretical frameworks.

4.3.5 Real-World Implications for Risk Management

The literature review underscores the significance of proactive risk management, incorporating formalized assessments and strategic planning aimed at mitigating piracy and other associated threats. Theoretical frameworks posit that consistent and structured risk assessments are imperative for the enhancement of maritime security.

The findings of Chapter 4.2 indicate a combination of both proactive and reactive risk management strategies. For instance, vessels that are equipped with citadels and other defensive measures correspond with the theoretical emphasis on proactive planning. Conversely, limited resources and varying perceptions of threats result in certain vessels resorting to ad-hoc or minimally structured methods, often evaluating risks solely in high-threat regions rather than consistently throughout all voyage routes.

The recent trend observed is an almost universal transition towards utilizing the Cape of Good Hope as a favored route, particularly in light of ongoing geopolitical tensions and the associated threat of piracy in high-risk regions. This alteration in routing underscores a strategic reaction to the perceived risks in the Suez Canal and Gulf of Aden, signifying a reorientation of operational priorities in accordance with current threat assessments rather than relying on traditional risk management frameworks.

Risk management in real-world contexts is significantly influenced by the shifting dynamics of geopolitical landscapes and the emergence of new threats. Although theoretical models may advocate for comprehensive risk assessments, vessel operators frequently implement swift modifications to their routes, such as rerouting around the Cape of Good Hope, based on the latest threat intelligence. This capacity for adaptability underscores the distinction between theoretical risk assessment models and the dynamic strategies that are employed in real-world operations.

In a nutshell, the analysis of the findings presented in Chapter 4.2 illustrates a combination of alignment and divergence from the theoretical expectations delineated in Chapter 2. Although best practices underscore the importance of exhaustive and consistent security measures, real-

world constraints—encompassing budgetary limitations, geopolitical pressures, and the attitudes of decision-makers—result in the selective implementation of security strategies. Vessels navigate the theoretical ideals of maritime security through pragmatic adjustments, including the prioritization of specific routes and the enactment of reactive measures in response to prevailing threats.

Last but not least, the evolving role of Private Maritime Security Companies (PMSCs) and the shift in HRA definitions further illustrate how practical applications adjust to the dynamic nature of maritime risks, thereby substantiating the necessity for flexible, situation-based strategies rather than strict compliance with theoretical frameworks.

4.4 Recommendations for Shipping Companies

To formulate actionable recommendations for shipping companies regarding the enhancement of risk management strategies, the optimization of vessel-specific security measures, and the adjustment of routes in response to geopolitical risk correlation diagrams, data obtained from the questionnaire will be utilized (correlation diagrams).

i. Vessel Hardening and Citadel Preparedness Against Piracy

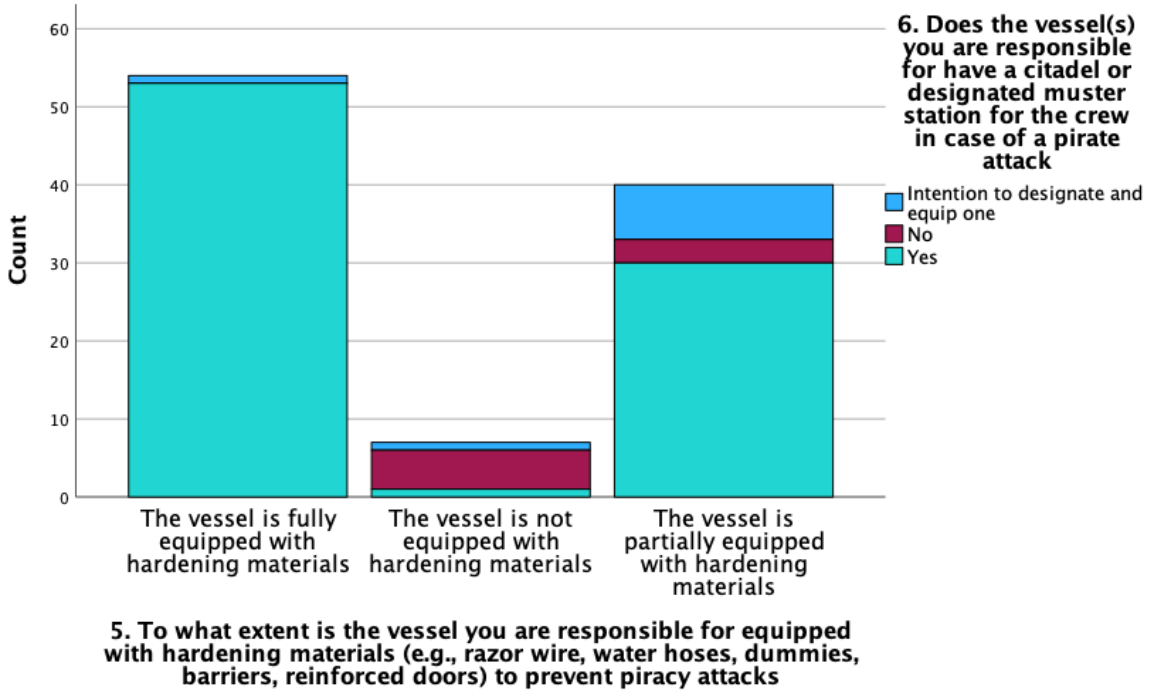

Figure 26

The chart illustrates a positive correlation between the extent of hardening materials utilized on a vessel and the probability of having a citadel installed. Vessels that are fully equipped are the most likely to possess a citadel or muster station for the protection of the crew, whereas those with minimal or no hardening materials demonstrate less consistent security measures. This observed pattern may indicate an operational strategy whereby vessels with comprehensive physical defenses (hardening materials) are prioritized for the implementation of complete anti-piracy security measures, including secure crew stations.

For vessels operating in high-risk regions, the integration of physical hardening measures with designated safe areas, such as citadels and muster stations, creates a multi-faceted defense against acts of piracy. The absence of such measures in vessels that are either partially or not hardened may indicate opportunities for enhancement in risk management strategies.

Companies may leverage this information to identify vessels that are inadequately equipped regarding security measures and potentially prioritize these for upgrades, particularly if they are engaged in operations within or near areas susceptible to piracy.

Consequently, the chart emphasizes the significance of robust security measures on vessels, including both hardening materials and the presence of citadels. Vessels lacking adequate hardening materials demonstrate a lack of consistency in having citadels, which may indicate deficiencies in their overall anti-piracy preparedness. This data could guide decision-making regarding the allocation of resources to enhance security measures on inadequately protected vessels.

ii. Citadel and Hardening Measures vs. Crew Training and Experience

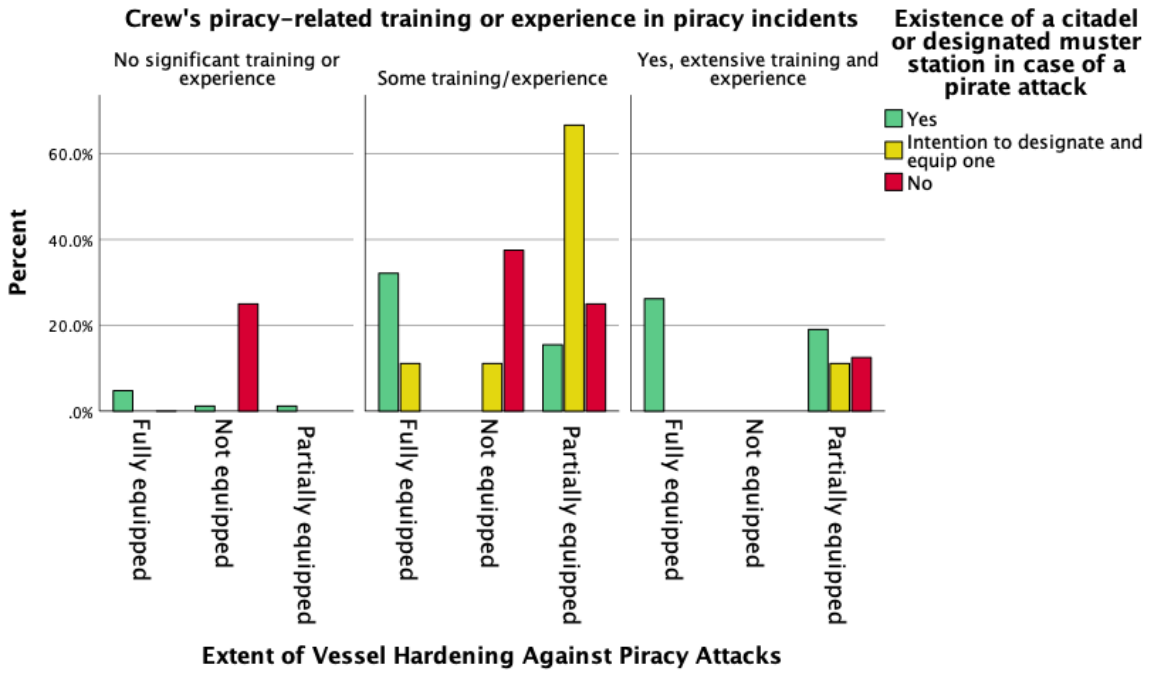

Figure 27

The graphs provide a comparative analysis of the relationship between citadel availability, vessel hardening measures, and the crew's training and experience related to piracy.

1. **Vessel Hardening and Crew Training**

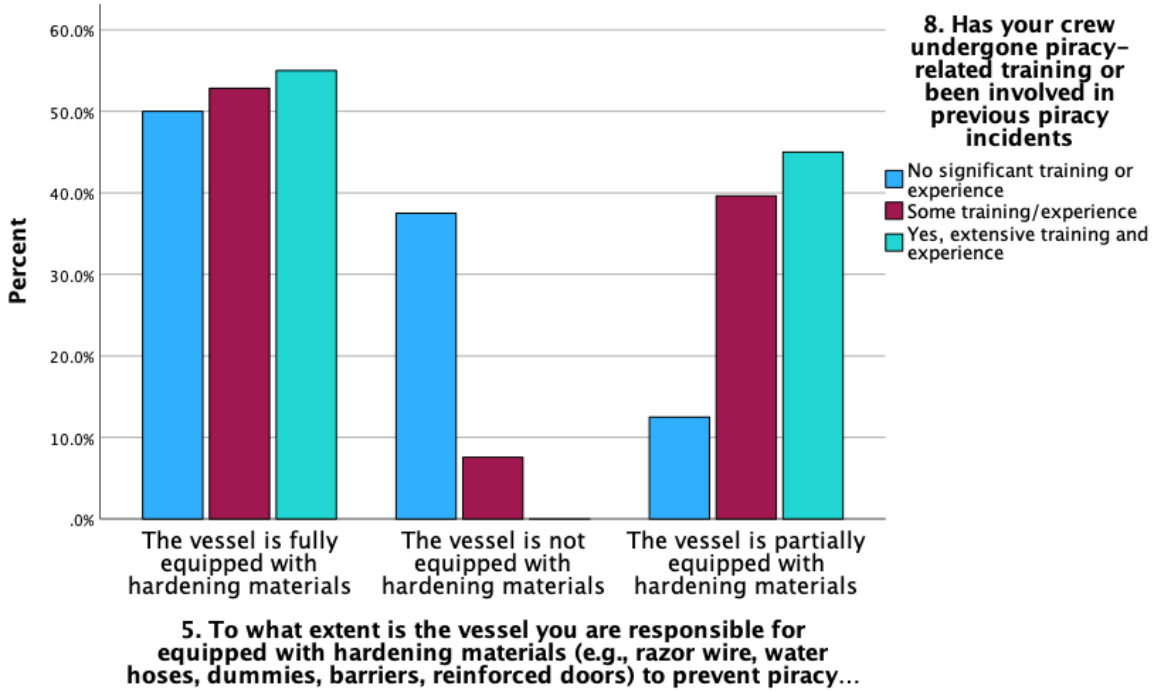

Figure 28

The first graph demonstrates that vessels that are fully equipped with hardening materials are predominantly manned by crews possessing extensive training and experience. This suggests that companies that highly fortify their vessels are the ones equally prioritizing the recruitment of well-trained personnel. Furthermore, partially equipped vessels exhibit a substantial proportion of trained crews; however, there is a notable increase in the number of personnel with only limited training and experience. This observation suggests that these vessels may represent a compromise between risk tolerance and resource allocation. Conversely, vessels lacking hardening materials, although infrequently encountered, generally exhibit a deficiency in significant crew training. This finding may imply a lower prioritization of these vessels concerning piracy risk.

2. Citadel Availability and Crew Training

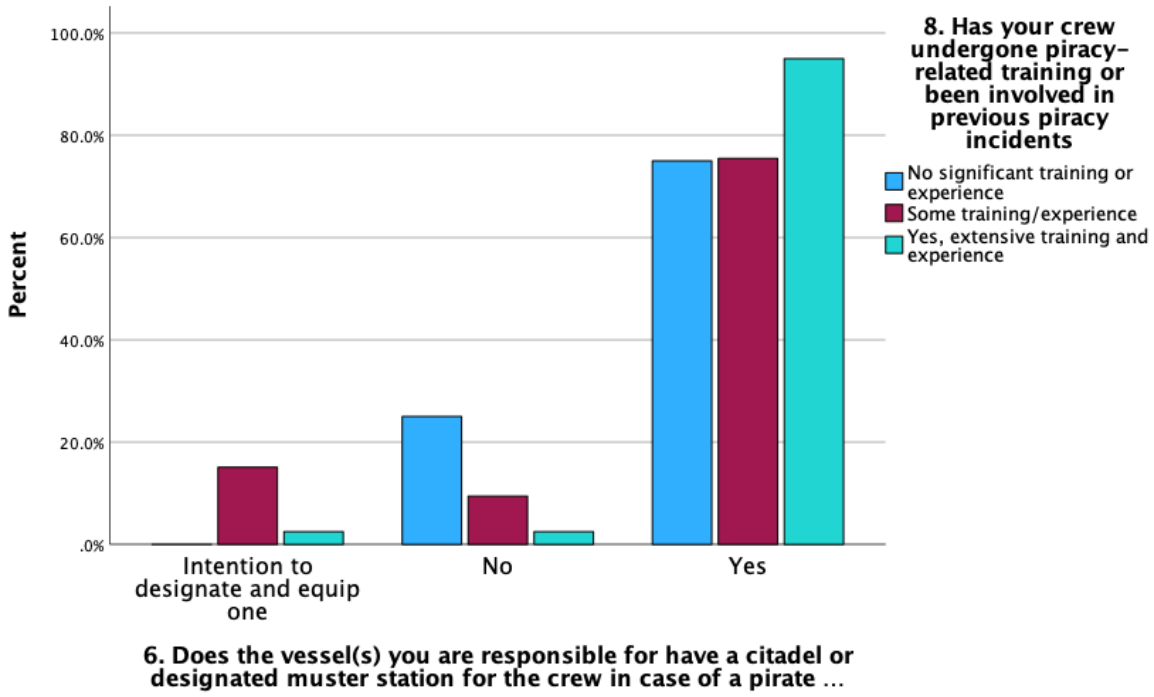

Figure 29

The second graph illustrates that vessels equipped with a citadel demonstrate a significantly high percentage of crews who possess extensive or, at the very least, some training in piracy response. This observation suggests that vessels with higher security measures are manned by crews adequately prepared to confront potential threats. Conversely, vessels lacking a citadel predominantly consist of crews that possess only minimal training or no training whatsoever. This may imply that such vessels operate in areas assessed to be of lower risk or that companies allocate security resources in accordance with perceived necessity. A limited number of vessels indicate an intention to install a citadel, likely in response to recent risk evaluations or as a proactive measure for future contingencies.

Taking the aforementioned data into account, these findings underscore the necessity of integrating vessel security infrastructure (e.g., citadels and hardening materials) with crew training. Companies must ensure that vessels operating in high-risk areas possess not only adequate fortifications but are also manned by adequately trained personnel. This strategy fortifies defenses against piracy and improves crew preparedness, particularly on vessels most likely to encounter security threats. Therefore, although the risk factor associated with

crew experience was classified as low, its conjunction with high significance measures translates into significant recommendations for shipping companies.

4.5 Significance and Implications

4.5.1 Broader Significance of Findings for the Global Shipping Industry, Trade Security, and Policy-Making

The findings derived from this research underscore critical insights regarding the interaction between piracy, geopolitical tensions, and the strategies utilized by the shipping industry to navigate high-risk regions.

i. Impact on the Global Shipping Industry

The continual prioritization of safety and security, even at the expense of longer routes such as the Cape of Good Hope, signifies a paradigm shift within the industry. Shipping companies are increasingly adopting risk-averse strategies that emphasize the safety of assets and personnel over operational efficiency. The function of Private Maritime Security Companies (PMSCs) has transformed from merely addressing piracy to encompassing the mitigation of broader geopolitical threats, including maritime terrorism and regional conflicts, thereby underscoring their escalating significance in sustaining uninterrupted trade flows.

ii. Trade Security

The findings validate that robust risk management strategies, encompassing vessel hardening, crew training, and rerouting decisions, have been instrumental in safeguarding trade security amidst escalating threats. These measures play a crucial role in sustaining global supply chain resilience, particularly as high-risk regions such as the Red Sea and the Indian Ocean persist in functioning as vital maritime trade arteries.

iii. Policy-Making:

The research underscores the imperative for the revision of international frameworks to address the complex and dynamic maritime security environment effectively. Policymaking must account for the dual threats of piracy and geopolitical instability, and it should offer incentives for the implementation of proactive risk management strategies, including

subsidies for vessel hardening and crew training initiatives. Furthermore, the enhancement of collaboration among governments, international organizations, and the private sector is crucial for the fortification of naval operations, the sharing of intelligence, and the establishment of secure corridors through areas characterized by high risk.

4.5.2 Effective Risk Management Strategies for Maintaining Trade Flow in High-Risk Areas

i. **Comprehensive Vessel Security**

The findings of the survey underscore the importance of equipping vessels with hardening materials and citadels as key deterrents against piracy and other security threats. The implementation of these measures, in conjunction with high-speed capabilities and enhanced freeboard designs, has the potential to significantly diminish vulnerabilities.

ii. **Proactive Training Programs**

Crew preparedness is a fundamental aspect of effective risk management. Training programs and security drills must adapt to the complexities posed by contemporary threats, including piracy and geopolitical tensions. Advanced situational awareness and the use of emerging technologies, such as real-time threat intelligence platforms or anti-drone systems, must be prioritized.

iii. **Dynamic Route Planning and Strategic Adaptability**

The newly established standard preference for the Cape of Good Hope route, in response to the tensions in the Red Sea, emphasizes the necessity for dynamic, intelligence-driven route planning. The integration of predictive analytics and scenario planning tools can assist companies in optimizing routes while effectively balancing safety, cost, and time considerations.

iv. Collaborative Security Initiatives

The multilateral collaborations, including joint naval operations under the auspices of EUNAVFOR or ASPIDES, have demonstrated considerable efficacy in deterring maritime threats. It is imperative that these initiatives be further expanded to encompass emerging hotspots and be integrated with Private Maritime Security Company (PMSC) efforts to establish a more cohesive security framework.

In conclusion, the findings confirm that effective risk management strategies to adapt in response to the evolving threats present in high-risk areas. By integrating technological advancements, fostering international collaboration, and executing evidence-based policies, the global shipping industry can maintain trade flow in critical regions such as the Red Sea, while safeguarding its assets, personnel, and the broader global economy. These initiatives will enhance resilience and stability within an increasingly turbulent maritime environment.

Chapter 5: Conclusions

5.1 Summary of Key Findings

This thesis investigated the influence of piracy, geopolitical tensions, and risk management strategies in maritime areas characterized by high risk, with a particular emphasis on the Red Sea and the Indian Ocean. Through the utilization of questionnaire survey analysis, statistical evaluation using SPSS software, and a matrix-based approach, this study aims to elucidate both the practical and theoretical aspects of maritime security.

Thus, the primary findings indicate that:

a. Regarding **route selection**, respondents demonstrate a preference for the Cape of Good Hope (COGH) rather than the Red Sea, which is based on a systematic evaluation of risks, including geopolitical tensions, affiliations, vessel safety, and environmental factors.

b. Regarding the **Risk Perception and Management**, the prioritization of safety, security, and geopolitical considerations is in accordance with modern risk management protocols. Participants exhibit proactivity in risk mitigation, transcending mere cost considerations to emphasize the importance of resilience.

c. Regarding the **Matrix-Based Decision-Making** approach, it can be stated that this risk assessment matrix facilitated the integration of various parameters—including crew experience, geopolitical dynamics, and environmental considerations—into actionable strategies for decision-making within ever-changing operational contexts.

Ultimately, it's important to recognize that shipping companies cannot defy the trend of re-routing through Cape without incurring some risks. Typically, in shipping financial management, individuals avoid risky choices. The essential triangle of risk—Risk, Value, and Return—establishes the relationship among these elements. Risk involves several uncertainties; therefore, the greater the risk assessed, the higher the potential return.

5.2 Synthesis of Ideas

The research questions addressed the interaction between piracy, geopolitical tensions, and operational strategies. The findings substantiate that theoretical frameworks correspond with practical applications in the real world, underscoring the industry's capacity to adapt to emerging threats.

Consequently, it is possible to associate the findings with the Research Questions:

1. ***What are the impacts of piracy in the Red Sea on international trade****?*

Piracy persistently exerts influence over route decisions, significantly when exacerbated by geopolitical instability.

2. ***How do geopolitical tensions exacerbate these impacts?***

   The actions undertaken by the Houthis, Iran, and various other stakeholders intensify risks, necessitating a reevaluation of strategy.

3. ***What strategies can shipping companies employ to manage these risks?***

   The strategies may include but are not limited to dynamic resource allocation, the employment of PMSCs, and adaptive routing strategies, such as bypassing high-risk areas.

Taking all the above into account, the significance of this study lies in the integration of theoretical models, such as Adam Watson’s system evolution theory, with real-time strategies. By deriving insights through the analysis of questionnaires, this research offers a comprehensive framework for addressing risks in the maritime sector.

5.3 Limitations of the Study

Naturally, several limitations could have affected the research's results. Primarily, given that the survey data relied on subjective evaluations from respondents, this may introduce a potential for **response bias**. Secondly, another contributing factor is that access to sensitive operational details and proprietary security measures was restricted (**limited data access**). Moreover, the **daily fluctuations of the dynamic threat landscape** may significantly influence the geopolitical and risk factors under consideration; as new incidents, including escalating tensions in the Middle East, concurrently arise during the collection of survey responses and subsequent analyses. Nonetheless, this limitation was significantly reduced by incorporating a time disclaimer into the thesis analysis. In conclusion, the existing **time constraints**, coupled with the rapidly evolving security environments, have restricted the potential for longitudinal analysis.

5.4 Suggestions for Future Research

All things considered, future research could be built on this study in a plethora of aspects. First and foremost, it is imperative to investigate the function of advanced technologies, including AI-driven threat detection, blockchain-based security solutions for shipping, and the utilization of drones for surveillance and rapid response in high-risk maritime regions.

Additionally, it is imperative to investigate the effects of emerging geopolitical shifts on maritime trade and security, including the expansion of naval coalitions and the evolution of international policies. Lastly, undertaking longitudinal studies to examine the persistence of identified trends, such as the growing preference for the Cape of Good Hope (COGH) over Red Sea routes, is highly advisable.

5.5 Managerial Implications & Recommendations

5.5.1 Significance for the Global Shipping Industry

This study underscores the significance of structured and adaptive risk management strategies in ensuring operational continuity within high-risk areas. Beyond the shadow of a doubt, it is proven imperative for managers to integrate real-time intelligence with comprehensive security protocols to navigate the evolving threat landscape effectively and safely.

5.5.2 Recommendations for Industry Practices

1. **Enhancement of Risk Assessment Frameworks** by developing sophisticated risk matrices to evaluate variables, including geopolitical affiliations, environmental conditions, and vessel-specific factors.

2. **Investment in Training and Technology** by improving crew training and implementing cutting-edge technologies, such as drones, for surveillance and real-time monitoring of high-risk areas. Furthermore, blockchain solutions could be integrated to safeguard vessel and cargo data, thereby ensuring transparent and tamper-proof shipping operations.

3. **Engagement in Collaboration with External Stakeholders** by diversifying partnerships with Private Maritime Security Companies (PMSCs) and international coalitions to leverage expertise and resources, thereby aligning operational strategies with emerging threats.

4. **Implementation of Dynamic Route Planning** by perpetually reassessing routes in accordance with current threat intelligence, striking a balance between safety and operational efficiency.

5.5.3 Conclusions Regarding the Utilization of the Matrix

The matrix developed for this Master's thesis may be employed as a comprehensive decision-making tool, as it exemplifies the transition towards data-driven strategies within the maritime industry. By aligning theoretical frameworks with practical scenarios, the matrix offers actionable insights that bolster operational security and resilience in volatile maritime corridors. This thesis emphasizes the necessity for proactive measures and innovative solutions, enabling shipping companies to adapt to both current and forthcoming maritime security challenges.

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Appendices

Appendix A – Sources formatting the Matrix

		Vessel							Shipping Company						
#	References	Speed	Freeboard	Weather/ Monsoon Period	Previous experience / training	Hardening Materials	Flag State	Citadel Existence & Comms	Route	AIS Policy	Affiliations / Interests with at War Countries	Join IRTC Convoy	Incidents of the last 6 months	C/P LIMITATIONS	COST
1	EL EU OHQ EUNAVFOR «ASPIDES »				x								x		
2	Disruption of maritime trade chokepoints and the global LNG trade: An agent-based modeling approach								x	x	x		x	x	x
3	A water-borne improvised explosive device (WBIED) constructed in Yemen				x				x				x		x
4	Houthi Attacks in the Red Sea: Issues for Congress								x		x		x		
5	IRAN: Enambling Houthi Attacks Across the Middle East				x		x				x		x		
6	THE WAR IN UKRAINE AND ITS EFFECTS ON MARITIME TRADE LOGISTICS	x			x		x		x					x	x
7	ATALANTA - MARITIME PIRACY RELATED CASES REPORT GULF OF ADEN/SOMALI BASIN - 01 APRIL 2024				x								x		
8	Protecting the Free Flow of Commerce from Houthi Attacks off the Arabian Peninsula	x	x	x			x		x	x	x		x		x
9	The Red Sea Crisis: ramifications for vessel operations, shipping networks, and maritime supply chains	x							x		x				x
10	UK and international response to Houthis in the Red Sea 2024				x		x				x		x		
11	Why pirates attack: Geospatial evidence						x								
12	Piracy around the Horn of Africa						x								x
13	An Interview with Vanda Felbab-Brown				x			x		x		x		x	
14	Piracy in the greater Gulf of Aden Myths, Misconception and Remedies														
15	MARITIME SECURITY RECOMMENDATIONS FOR TIME & VOYAGE CHARTERED VESSELS TRANSITING THE INDIAN OCEAN AND ARABIAN GULF				x				x					x	

Table 17

Appendix B – Questionnaire Questions

University of Piraeus
MSc in Shipping Management

Thesis Paper: "NAVIGATING TROUBLED WATERS: UNDERSTANDING THE IMPACT OF PIRACY IN THE RED SEA ON INTERNATIONAL TRADE & SHIPPING MANAGEMENT STRATEGIES AMIDST THE GEOPOLITICAL TENSIONS"

Questionnaire for Professionals of the Shipping Industry

Welcome to this study!
Thank you for taking the time to participate in this research, which is being conducted as part of my dissertation for the MSc in Shipping Management at University of Piraeus.
The purpose of this survey is to identify the effect of piracy and geopolitical tensions in the Red Sea area on international trade and the risk management strategies employed by shipping companies.
Confidentiality: All responses will be treated as confidential. No personal identifying information will be collected, and results will be anonymized in any reports or publications. Data will be stored securely and will only be accessible by the researchers. Any personal information is collected for statistical purposes only.
Risks and Benefits: There are no inherent risks or benefits to participating in this study beyond the contribution you will be making to our research.
Participation and Withdrawal: Your participation in this survey is completely voluntary; you are free to withdraw from the study at any time without any penalty. No compensation or reimbursement for participation is provided.
The completion of the questionnaire will take no more than 10 minutes.
By proceeding, you are stating that you are at least 18, you have read the terms, and you provide your consent to participate. Please read the instructions for each question carefully, and make sure you have answered all the questions.

If you have any questions, please contact: lamprini.panagopoulou@hotmail.com

Section 1: Participant Background

"This section scans the participant's background, assisting on the proper categorization and analysis of the data collection."

1. **Age Range**:
   - Under 25
   - 25-34
   - 35-44
   - 45-54
   - 55-64
   - 65 or older
2. **Gender**:
   - Male

- Female
- Other/Prefer not to say

3. **Working Experience (in the Shipping Industry)**:
   - Less than 5 years
   - 5-10 years
   - 10-15 years
   - 15-20 years
   - More than 20 years
4. **Education Level**:
   - High School
   - Postgraduate Diploma
   - Professional Certification
   - Technical/Vocational Certification
   - Bachelor's Degree
   - Master's Degree
   - Doctorate (PhD)
   - Other (please specify):
5. **Current Position**:
   - General Director
   - COO
   - Manager
   - CSO
   - DPA
   - PMSC Owner/Employee
   - Ex-Military Official
   - Stakeholder
   - Other (please specify):
6. **Department** (if applicable):
   - Upper Management
   - Operations
   - Crew
   - Security
   - Compliance/HSQE
   - Finance
   - Legal
   - Other (please specify):

Section 2: Decision Matrix: Vessel-Specific Parameters

"This section seeks to understand vessel-specific parameters influencing piracy risks."

1. **How important is the vessel's speed in mitigating piracy risks during transit through the Red Sea?**
   (Scale: 1 = Not Important, 5 = Extremely Important)
   - 1– Not Important
   - 2– Slightly Important
   - 3– Moderately Important
   - 4– Very Important
   - 5– Extremely Important

2. **Does the freeboard height of the vessel you are responsible for significantly influence your decision-making when navigating piracy-prone areas?**
   (Scale: 1 = No Influence*, 5 = Critical Influence)*
   - 1– No Influence
   - 2– Slight Influence
   - 3– Moderate Influence
   - 4– Significant Influence
   - 5– Critical Influence
3. **What type of vessel are you primarily responsible for, and how do you believe this vessel type affects its vulnerability to piracy?**
   - Container Ship
   - Tanker
   - Bulk Carrier
   - LNG/LPG
   - Yacht
   - Passenger Ship
   - Ro/Ro
   - Fishing Vessel
   - Other (please specify):
4. **To what extent is the vessel you are responsible for equipped with hardening materials (e.g., razor wire, water hoses, dummies, barriers, reinforced doors) to prevent piracy attacks?**
   - Yes, it is fully equipped with hardening materials
   - Partially equipped with hardening materials
   - No, it is not equipped with hardening materials
5. **Does the vessel you are responsible for have a citadel or designated muster station for the crew in case of a pirate attack?**
   - Yes
   - No
   - Intention to designate and equip one
6. **How does the vessel's ballast/laden condition influence your piracy risk assessment?**
   (Scale: 1 = Not Significant, 5 = Extremely Significant)
   - 1 – Not Significant
   - 2 – Slightly Significant
   - 3 – Moderately Significant
   - 4 – Very Significant
   - 5 – Extremely Significant
7. **Has your crew undergone piracy-related training or been involved in previous piracy incidents?**
   - Yes, extensive training and experience
   - Some training/experience
   - No significant training or experience
8. **Do you believe the vessel's Flag State influences the likelihood of being targeted by pirates or non-state actors?**
   - Yes
   - No
   - Not sure
9. **To what extent does the vessel's proximity to areas with active military operations (e.g., Operation Atalanta, ASPIDES, etc.) or joining IRTC convoys**

influence your routing decision?
(Scale: 1 = No Influence, 5 = Critical Influence)
- 1 – No Influence
- 2 – Slight Influence
- 3 – Moderate Influence
- 4 – Significant Influence
- 5 – Critical Influence

10. **To what extent does the weather or monsoon period influence your decision to sail through piracy-prone regions?**
(Scale: 1 = No Impact, 5 = Critical Impact)
- 1 – No Impact
- 2 – Slight Impact
- 3 – Moderate Impact
- 4 – Significant Impact
- 5 – Critical Impact

11. **Do previous piracy incidents involving the vessel(s) you are responsible for or company influence your/ your company's risk management decisions?**
(Scale: 1 = No Influence, 5 = Critical Influence)
- 1 – No Influence
- 2 – Slight Influence
- 3 – Moderate Influence
- 4 – Significant Influence
- 5 – Critical Influence

Section 3: Decision Matrix: Company-Wide Parameters

"This section seeks to understand company-wide parameters influencing piracy risks."

1. **How influential are your crew's previous experience and familiarity with piracy risk in affecting your operational planning decisions?**
(Scale: 1 = Not Influential, 5 = Extremely Influential)
- 1 – Not Influential
- 2 – Slightly Influential
- 3 – Moderately Influential
- 4 – Very Influential
- 5 – Extremely Influential

2. **To what degree do the expertise and experience of your management company influence the vessel's operations in high-risk zones?**
(Scale: 1 = No Influence, 5 = Critical Influence)
- 1 – No Influence
- 2 – Slight Influence
- 3 – Moderate Influence
- 4 – Significant Influence
- 5 – Critical Influence

3. **How significant are geopolitical tensions, such as conflicts involving the Houthis or Iranian influence, in shaping your company's shipping routes and operational decisions?**
(Scale: 1 = Not Significant, 7 = Extremely Significant)
- 1 – Not Significant
- 2 – Slightly Significant
- 3 – Moderately Significant

- 4 – Significant
- 5 – Very Significant
- 6 – Highly Significant
- 7 – Extremely Significant

4. **How involved are your charterers in making strategic decisions about the vessel's route or security arrangements in piracy-prone areas?**
   (Scale: 1 = Not Involved, 5 = Critically Involved)
   - 1 – Not Involved
   - 2 – Slightly Involved
   - 3 – Moderately Involved
   - 4 – Very Involved
   - 5 – Critically Involved
5. **How do geopolitical affiliations affect your decision-making process?**
   (Scale: 1 = No Impact, 5 = Critical Impact)
   - 1 – No Impact
   - 2 – Slight Impact
   - 3 – Moderate Impact
   - 4 – Significant Impact
   - 5 – Critical Impact
6. **Does your company incorporate a comprehensive evaluation of risk factors, including vessel type, crew experience, and geopolitical tensions, in developing your overall risk management strategy?**
   - Yes
   - No
   - If Yes, please provide more details
7. **How often does your company reassess risk profiles and security measures in response to evolving piracy or geopolitical threats?**
   - Annually
   - Semi-Annually
   - Quarterly
   - Monthly
   - After Every Major Incident

Section 4: Geopolitical and Environmental Factors

"This section aims to explore the degree of influence of the geopolitical and environmental factors on piracy threats."

1. **How do weather conditions (e.g., monsoon periods) affect your company's decision to navigate through the Red Sea/IOR?**
   (Scale: 1 = No Influence, 5 = Critical Influence)
   - 1 – No Influence
   - 2 – Slight Influence
   - 3 – Moderate Influence
   - 4 – Significant Influence
   - 5 – Critical Influence
2. **To what extent do regional geopolitical tensions and maritime terrorism (e.g., Houthis, Iranian influence) affect your decision to hire Private Maritime Security Companies (PMSCs)?**

(Scale: 1 = No Influence, 5 = Critical Influence)

- 1 – No Influence

- 2 – Slight Influence
- 3 – Moderate Influence
- 4 – Significant Influence
- 5 – Critical Influence

3. **How often do you hire Private Maritime Security Companies (PMSCs)when passing through the HRA/ Red Sea / IOR?**
   - Always, it is company policy/charterers' requirement
   - Frequently, depending on management's/Charterers' decision
   - Occasionally, we employ them based on management's/Charterers' decision
   - Rarely, since we don't usually pass through this area
   - Never, we only cross through COGH
4. **How frequently does your company adjust shipping routes based on updates to geopolitical risk and piracy threats?**
   - Never
   - Rarely
   - Occasionally
   - Frequently
   - Always

Section 5: "Final Route Decision" Question

"This section's main purpose is to scrutinize the mentality behind the decision to pass or not through the HRA."

1. **If you were to choose the vessel's route, would you pass through the Red Sea and the Suez Canal, or would you reroute around the Cape of Good Hope?**
   - □ Pass through the Red Sea/Suez Canal
   - □ Reroute via Cape of Good Hope
2. **Why did you choose this option?**

a. Please explain your decision in terms of:
   - Cost considerations (e.g., fuel, time, insurance)
   - Safety and Security
   - Geopolitical risk (e.g., current conflicts)
   - Environmental factors (e.g., monsoon season, weather conditions)
   - Other essential factors (please specify)

(Type your response below)

Appendix C: Trade Flows

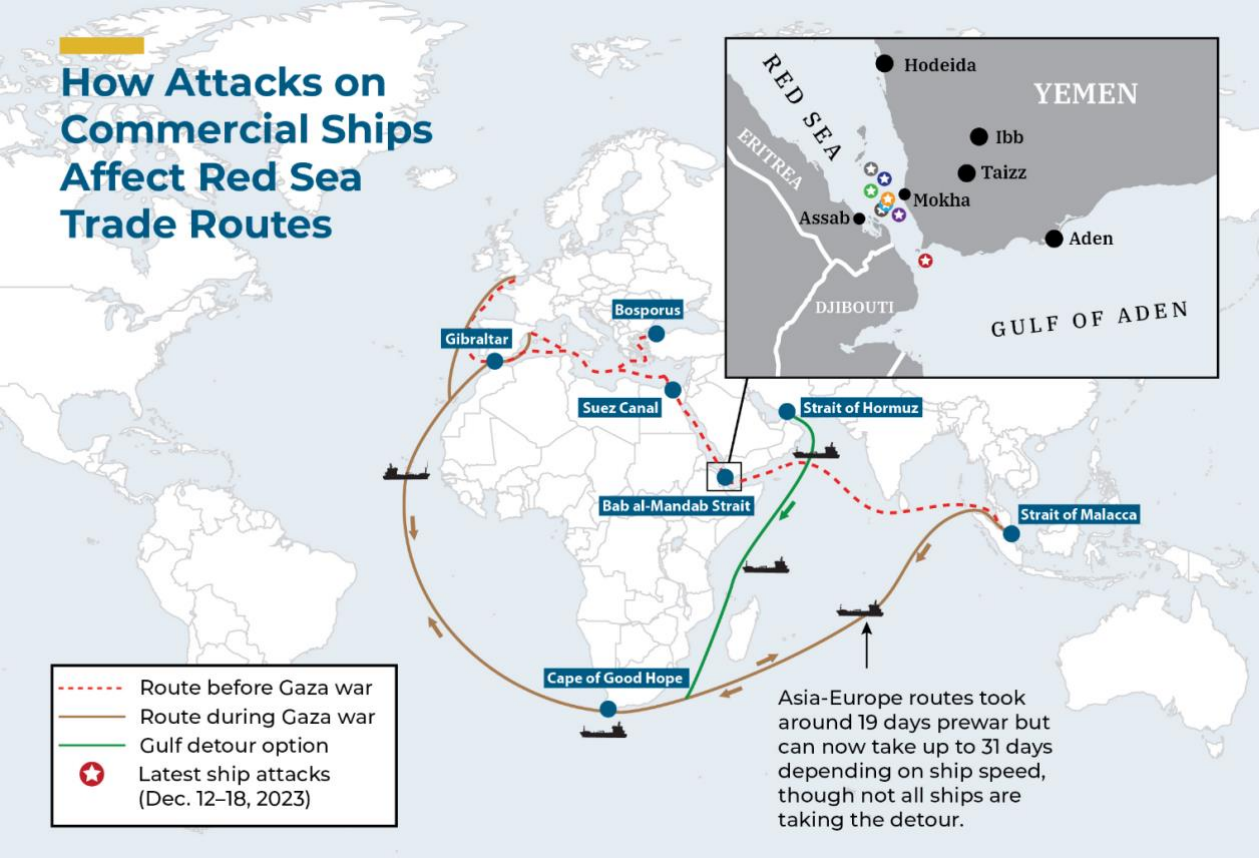

Figure 30

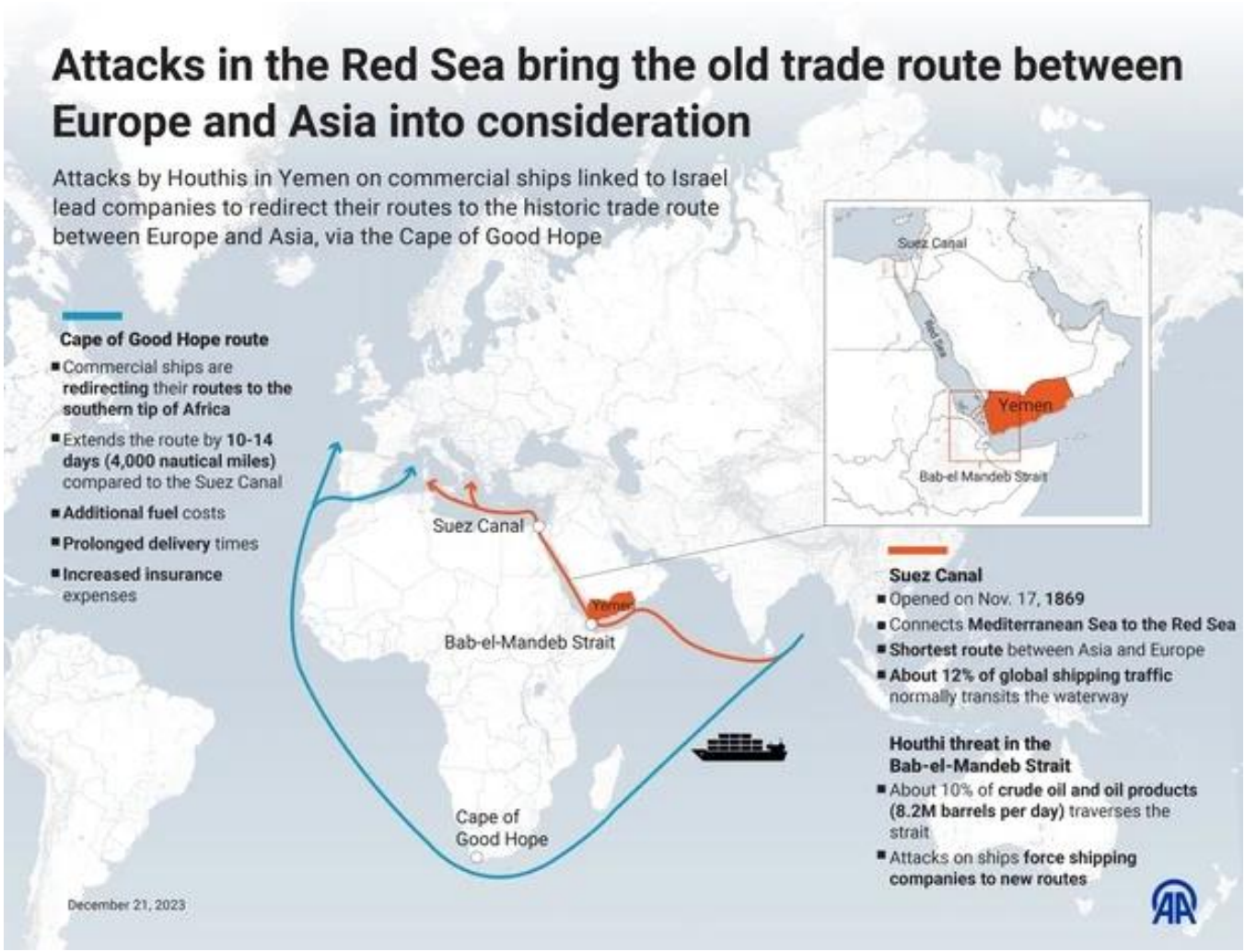
Attacks in the Red Sea bring the old trade route between Europe and Asia into consideration
Attacks by Houthis in Yemen on commercial ships linked to Israel lead companies to redirect their routes to the historic trade route between Europe and Asia, via the Cape of Good Hope
Cape of Good Hope route
Commercial ships are redirecting their routes to the southern tip of Africa
Extends the route by 10-14 days (4,000 nautical miles) compared to the Suez Canal
Additional fuel costs
Prolonged delivery times
Increased insurance expenses
Suez Canal
Yemen
Bab-el-Mandeb Strait
Cape of Good Hope
Suez Canal
Yemen
Bab-el Mandeb Strait
Suez Canal
Opened on Nov. 17, 1869
Connects Mediterranean Sea to the Red Sea
Shortest route between Asia and Europe
About 12% of global shipping traffic normally transits the waterway
Houthi threat in the Bab-el-Mandeb Strait
About 10% of crude oil and oil products (8.2M barrels per day) traverses the strait
Attacks on ships force shipping companies to new routes
December 21, 2023

Figure 31

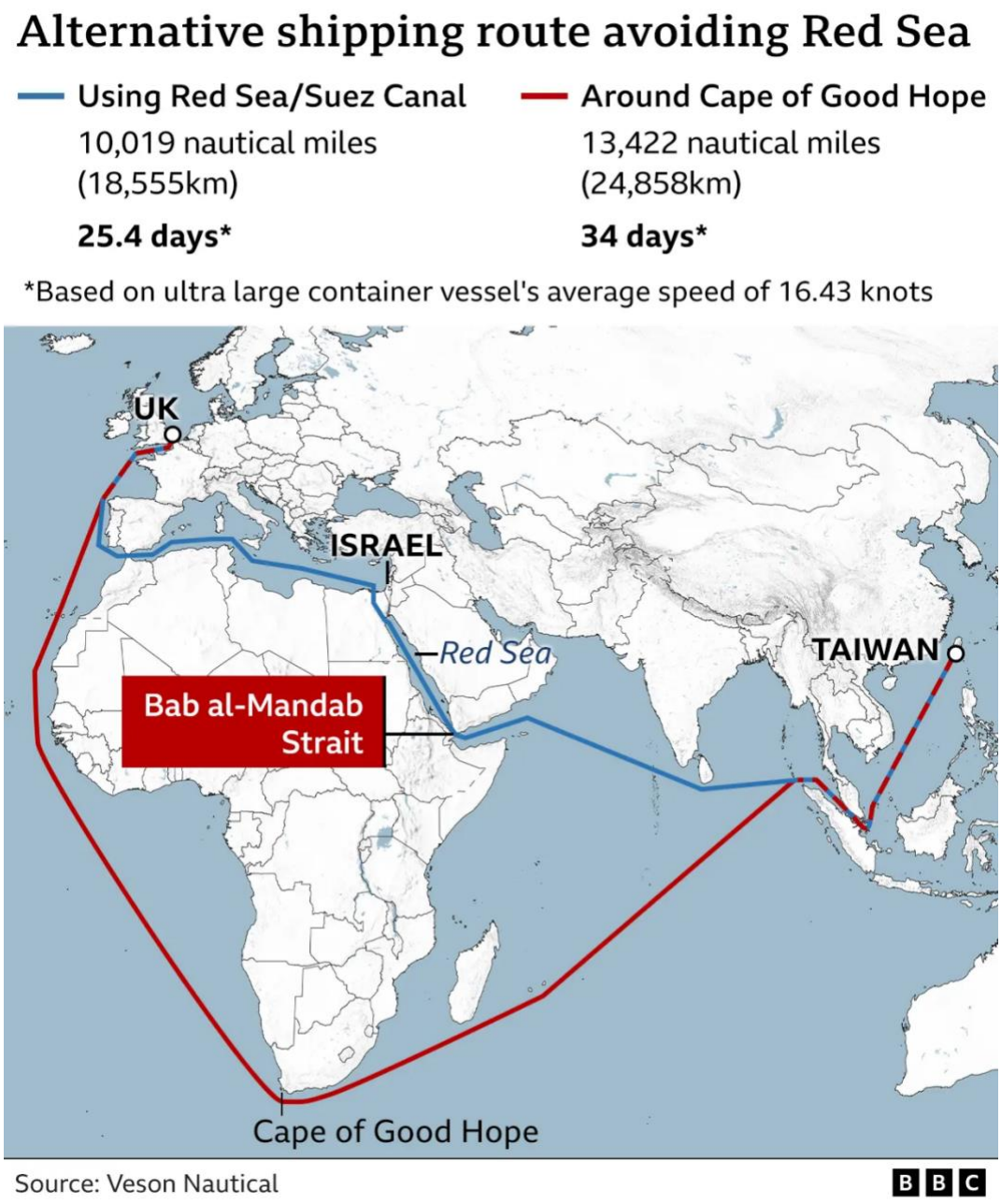
Alternative shipping route avoiding Red Sea
Using Red Sea/Suez Canal
10,019 nautical miles
(18,555km)
25.4 days*
Around Cape of Good Hope
13,422 nautical miles
(24,858km)
34 days*
*Based on ultra large container vessel's average speed of 16.43 knots
UK
ISRAEL
Red Sea
TAIWAN
Bab al-Mandab Strait
Cape of Good Hope
Source: Veson Nautical
BBC

Figure 32


Avoiding the Red Sea Means Much Longer Shipping Routes
Rotterdam
Suez Canal
Red Sea
Through Red Sea:
8.5K nautical miles (26 days)
Singapore
INDIAN OCEAN
ATLANTIC OCEAN
Avoiding Red Sea:
11.8K nautical miles (36 days)
Note: Distances and days are approximate.
Source: Reuters.
COUNCIL on FOREIGN RELATIONS

Figure 33

Appendix D: HRA maps

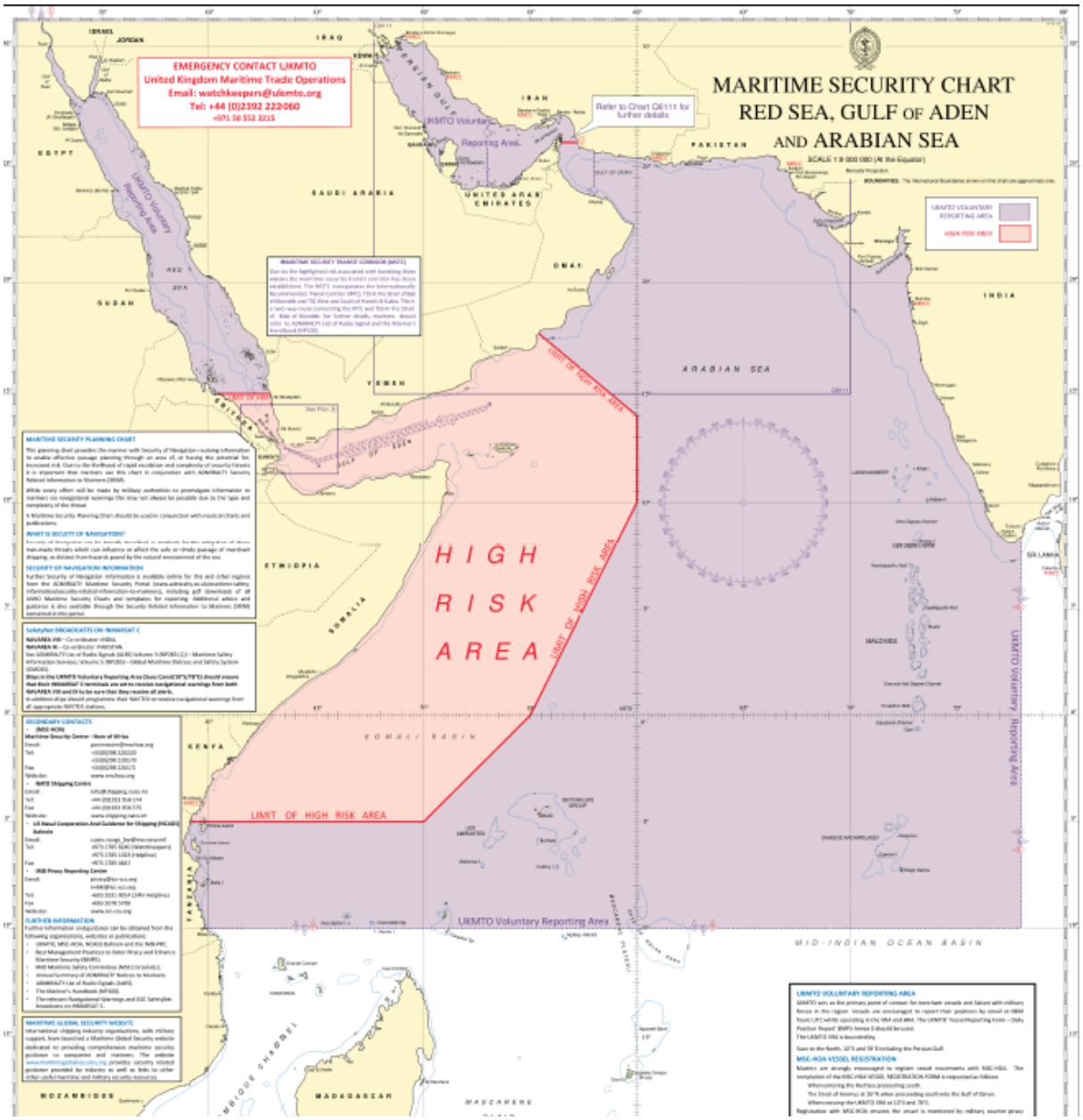

Figure 34

The Following Map determines the MSZ for the Indian Ocean, Red Sea and Arabian Gulf

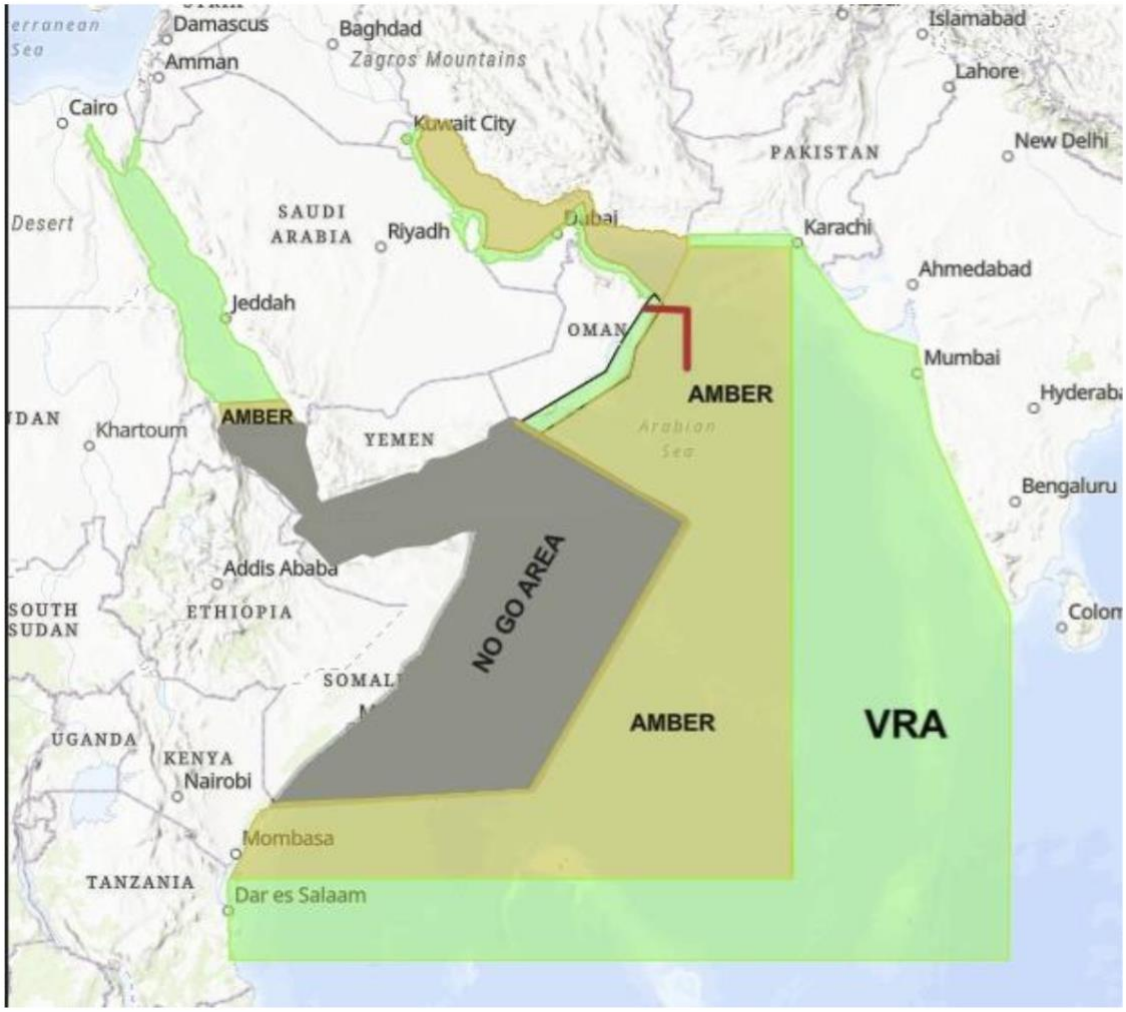

Figure 35

Appendix E: Heat Map

Figure 36

Appendix F: Attacks table

ANSAR ALLAH (THE 'HOUTHIS') ATTACKS (Nov 19, 2023, and onwards) Number of attacked vessels: 98 (Hijacked: 1+2 IRGC/ Seized: 1 / UAV attacks: 18 / Missile attacks: 68 / Sea drone (USV): 8 / RPG: 1) 37 vessels affected out of the 98 under attack									
DATE	**TYPE OF ATTACK**	**FLAG**	**TYPE OF VESSEL**	**LOCATION**	**AIS**	**REGION**	**ATTACK RESULTS**	**NOTES**	**AFFILIATION**
19/11/2023	Hijack	Bahamas	Car carrier GALAXY LEADER	14° 50′ N / 041° 55′ E	OFF	Red Sea	Hijacked	Anchored at Hodeidah port, Yemen	ISRAEL
24/11/2023	UAV	Malta	Container CMA CGM SYMI	20° 05′ N / 062° 59′ E	OFF	Oman	Minor damage	No injuries	ISRAEL
26/11/2023	Seizure	Liberia	Chemical Tanker CENTRAL PARK	12° 07′ N / 044° 16′ E	OFF	Gulf of Aden	Released by US Navy	Somali pirates	ISRAEL
03/12/2023	UAV	Bahamas	Bulk Carrier UNITY EXPLORER	13° 58′ N / 042° 18′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL
03/12/2023	Missile	Panama	Bulk Carrier AOM SOPHIE II	15° 22′ N / 041° 40′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL
03/12/2023	Missile	Panama	Container NUMBER 9	15° 16′ N / 041° 42′ E	ON	Red Sea	12/3/2023	Missile Attack	ISRAEL
10/12/2023	UAV	Singapore	Car Carrier CENTAURUS LEADER	14° 49′ N / 042° 00′ E	ON	Red Sea	NO damage	NO injuries	ISRAEL
11/12/2023	Missile	Norway	Chem/Prod. Tanker STRINDA	13° 17′ N / 043° 00′ E	ON	Bab al-Mandab	Minor damage	No injuries	ISRAEL
13/12/2023	Gunfire / Missile	Marshall Isl.	Chem/Prod. Tanker ARDMORE ENCOUNTER	14° 48′ N / 041° 56′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL
14/12/2023	Missile	Hong Kong	Container MAERSK GIBRALTAR	14° 31′ N / 042° 13′ E	ON	Red Sea	Near miss	NO damage/ NO injuries	Unverified
14/12/2023	Missile	Hong Kong	Container AL JASRAH	13° 33′ N / 042° 42′ E	ON	Red Sea	Minor damage	No injuries	UK
15/12/2023	Missile	Liberia	Container MSC PALATIUM III	14° 00′ N / 042° 25′ E	ON	Red Sea	Fire onboard	No injuries	ISRAEL
15/12/2023	Missile	Liberia	Container AL JASRAH	13° 08′ N / 042° 52′ E	ON	Bab al-Mandab	Near miss	No damage/ no injuries	UK

15/12/2023	Missile	Liberia	Container MSC ALANYA	13° 43′ N / 042° 22′ E	ON	Bab al-Mandab	Near miss	No damage/ no injuries	ISRAEL
18/12/2023	UAV	Cayman Islands	Oil/ Chemical Tanker SWAN ATLANTIC	13° 22′ N / 042° 44′ E	ON	Red Sea	Near miss	No damage/ no injuries	NO affiliation
18/12/2023	UAV	Panama	Container CLARA	12° 59′ N / 043° 07′ E	ON	Bab El-Mandeb	Near miss	No damage/ no injuries	ISRAEL
23/12/2023	UAV	Liberia	Chem/Prod. Tanker CHEM PLUTO	19° 50′ N / 066° 15′ E	ON	Arabian Sea	Fire onboard	No injuries	ISRAEL
23/12/2023	Missile/UAVs sighting	Gabon	Crude oil tanker SAI BABA	14° 35′ N / 042° 03′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL
23/12/2023	UAV	Norway	Oil/ chemical tanker BLAAMANEN	13° 18′ N / 042° 30′ E	ON	Red Sea	Near miss	No damage/ NO injuries	Unverified
26/12/2023	Missile	Liberia	Container MSC UNIT VIII	15° 11′ N / 041° 44′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL

30-31/12/2023	Missile / Gunfire	Singapore	Container MAERSK HANGZHOU	15° 11′ N / 041° 58′ E	ON	Red Sea	Near miss	No damage/ no injuries	ISRAEL
02/1/2024	Projectile (Likely UAV attack)	Malta	Container CMA CMG TAGE	12° 57′ N / 043° 11′ E	ON	Red Sea	Near miss	No damage/ no injuries	NO affiliation
11/1/2024	Hijacked by Iranian Navy	Marshall Islands	Crude oil tanker St NIKOLAS	25° 03′ N / 057° 51′ E	ON	Northern Arabian Sea			Retaliation reasons
12/1/2024	Missile	Panama	Crude oil tanker KHALISSA	12° 32′ N / 047° 10′	ON	Gulf of Aden	Nera miss	NO damage / NO injuries	ISRAEL
15/1/2024	Missile	Marshal Islands	Bulk Carrier GIBRALTAR EAGLE	12° 23′ N / 046° 49′ E	ON	Gulf of Aden	Near miss	No damage/ no injuries	US
16/1/2024	Missile	Malta	Bulk Carrier ZOGRAFIA	15° 54′ N / 041° 29′ E	ON	Red Sea	Minor damage	Dry dock to Suez for damage repair	UK
17/1/2024	Missile	Marshal Islands	Bulk Carrier GENKO PICARDY	11° 59′ N / 045° 34′ E	OFF	Gulf of Aden	Minor damage	No injuries	US

18/1/2024	UAV	Marshall Islands	Chemical/oil products tanker CHEM RANGER	12° 24′ N / 046° 47′ E	OFF	Gulf of Aden	Near miss	No damage/ no injuries	US
24/1/2024	UAV	US	Containers (02) MAERSK SHESAPEAKE &	12° 59′ N / 043° 07′ E	OFF	Bab El Mandeb	Near miss	No damage/ no injuries	US
			MAERSK DETROIT						
24/1/2024	UAV	Liberia	Bulk carrier TOMAHAWK	14° 40′ N / 042° 00′E	ON	Red Sea	Near miss	NO damage/ NO injuries	Unverified
26/1/2024	UAV	Panama	Crude oil products tanker ACHILLES	12° 10′ N / 044° 14′ E	ON	Gulf of Aden	Near miss	No damage/ no injuries	UK
26/1/2024	Missile	Marshall Islands	Crude oil products tanker MARLIN LUANDA	12° 3′ N / 045° 40′ E	OFF	Gulf of Aden	Fire onboard, extinguished by the crew	No injuries	UK
31/1/2024	Missile	Liberia	Container KOI	12° 22′ N / 043° 57′ E	OFF	Gulf of Aden	Near miss	No damage/ no injuries	UK
06/2/2024	UAV	Barbados	General Cargo MORNING TIDE	14° 41′ N / 041° 58′ E	ON	Southern Red Sea	Minor damage	No injuries	UK

06/2/2024	Missile	Marshall Islands	Bulk Carrier STAR NASIA	12° 00′ N / 045° 09′ E	OFF	Gulf of Aden	Minor damage	No injuries	US
12/2/2024	Missile	Marshall Islands	Bulk Carrier STAR IRIS	12° 41′ N / 043° 17′ E	OFF	Southern Red Sea	Minor damage	No injuries	US
15/2/2024	Missile	Barbados	Bulk Carrier LYKAVITOS	12° 31′ N / 046° 49′ E	ON	Gulf of Aden	Minor damage	No injuries	UK
16/2/2024	Missile attack (multiple)	Panama	Crude oil tanker POLLUX	12° 23′ N / 046° 49′	ON	Red Sea	Near miss	NO damage/ NO injuries	UK
18/2/2024	Missile attack	Belize	Open hatch general cargo RUBYMAR	12° 42′ N / 043° 19′ E	OFF	Strait of Bab El Mandeb	Sustained major damage/ Vessel abandoned	Sunk on Mar 02, 2024	UK
19/2/2024	UAV attack	Marshall Islands	Bulk carrier NAVIS FORTUNA	12° 10′ N / 043° 50′ E	OFF	60nm N of Djibouti	Minor damage	No injuries	US
19/2/2024	Missile attack (multiple)	Greece	Bulk carrier SEA CHAMPION	11° 2′ N / 045° 12′ E	ON	Gulf of Aden	Near miss	No damage/ no injuries	US
22/2/2024	Missile attack	Palau	General cargo ISLANDER	12° 20′ N / 045° 59′ E	ON	Gulf of Aden	Two explosions, one hit/ minor damage	One minor injury	UK

24/2/2024	Missile attack	US	Chemical/ oil products tanker TORM THOR	N/A	ON	Gulf of Aden	Near miss	NO damage/ NO injuries	US
27/2/2024	Missile attack	Panama	Oil/Chemical tanker LADY YOUMNA	N/A	ON	Red Sea	Near miss	NO damage/ NO injuries	Unverified
27/2/2024	UAV	Portugal	Ro-Ro/Container carrier AL SAMHA	N/A	ON	Red Sea	Near miss	NO damage/ NO injuries	Unverified
04/3/2024	Missile	Liberia	Container ship MSC SKY II	12° 9' N / 046° 21' E	ON	Gulf of Aden	Two explosions, one hit/ Fire onboard/ Extinguished with support from Indian Navy	One minor injury	ISRAEL
06/3/2024	Missile	Barbados	Bulk carrier TRUE CONFIDENCE	11° 59' N / 044° 32' E	ON	Gulf of Aden	Sustained major damage/ vessel abandoned/ 3 crew members dead/ 6 injured	First deadly attack	US

08/3/2024	Missile	Singapore	Bulk carrier PROPEL FORTUNE	N/A	ON	Gulf of Aden	Two explosions/ near miss	No damage / no injuries	US
11/3/2024	Missile attack	Liberia	Container ship PINOCCHIO	15° 6' N / 041° 32' E	ON	Red Sea	Two explosions/ near miss	NO damage/ NO injuries	US
13/3/2024	Hijacked by the Iranian Navy	Portugal	Container ship MSC ARIES	N/A	ON	Strait of Hormuz			UK + ISRAEL
14/3/2024	Missile sighting	Liberia	Bulk carrier FUXING V	N/A	ON	Red Sea	Two explosions away from the vessel	No damage/ no injuries	No affiliation
15/3/2024	Missile attack	Panama flagged	Crude oil tanker PACIFIC 01	N/A	ON	Red Sea	One explosion/ near miss	No damage/ no injuries	Israel
17/3/2024	Missile attack	Marshall Islands	LPG tanker MADO	12° 15' N / 046° 16 E	ON	Gulf of Aden	One explosion/ near miss	No damage/ no injuries	US

23/3/2024	Missile attack	Panama flagged	Crude oil tanker HUANG PU	13° 23′ N / 042° 52′ E	ON	Red Sea	Five explosions/ one hit	Minor damage/ fire onboard extinguished by the crew/ no injuries	UK
06/04/2024 & 07/04/2024	Missile attack	Marshall Islands	Container ship HOPE ISLAND	14° 14′ N / 042° 04′ E & 12° 09′ N / 044° 06′ E	**OFF**	Red Sea & Gulf of Aden	Two explosions/ one intercepted by warship/one on water away from the vessel	No damage/ no injuries	UK
24/4/2024	Missile attack	US	Container ship MAERSK YORKTOWN	11° 18′N / 044° 18′ E	**OFF**	Gulf of Aden	One explosion on water away from the vessel	No damage/ no injuries	US
25/4/2024	Missile attack	Liberia	Container ship MSC DARWIN VI	12° 39′N / 044° 58′ E	**OFF**	Gulf of Aden	One explosion on water away from the vessel	No damage/ no injuries	Israel

26/4/2024	Missile attack	Panama	Crude oil tanker ANDROMEDA STAR	13° 13′N / 042° 53′ E	ON	Southern Red Sea	One explosion on water away from the vessel. Second attack with 2 missiles	Minor damage/ no injuries	Past link with Israel
26/4/2024	UAV	Portugal	Container ship MSC ORION	N/A	ON	Indian Ocean 350 nm east of Somalia	Near miss	NO damage/ NO injuries	UK
29/4/2024	Missile attack	Malta	Container ship CMA CGM MANTA RAY	13°42′N / 042°27′E	ON	Southern Red Sea	Three explosions on water away from the vessel	No damage/ no injuries	Israel
29/4/2024	Missile & UAV attack	Malta	Bulk carrier CYCLADES	13°48′N / 042°45′E	**OFF**	Red Sea	Three missiles & three UAVs	Minor damage/ no injuries	Alleged by Houthis Israel port call (Eilat early April 2024)
07/5/2024	Missile attack	Panama	Container ship MSC DIEGO	11°31′N / 045°09′E	ON	Gulf of Aden	Two blasts on water in close proximity	NO damage/ No injuries	Israel

07/5/2024	Missile attack	Panama	Container ship MSC GINA	11°50'N / 045°25'E	ON	Gulf of Aden	Two blasts on water in close proximity	NO damage/ No injuries	Israel
18/5/2024	Missile attack	Panama	Crude oil tanker WIND	13° 14′ 5 N / 043° 4′ 12 E	ON	Red Sea	Fire in the steering gear	Minor damage/ NO injuries	NO links with Israel, US, UK
23/5/2024	Missile attack	Malta	Bulk carrier YANNIS	13° 43′ 30″ N / 042° 53′ 09″ E	ON	Red Sea	One blast on water close to port side	NO damage/ NO injuries	NO links with Israel, US, UK
28/5/2024	Missile attack	Marshall Islands	Bulk carrier LAAX	14° 29′ 13 N / 042° 4′ 29 E	ON	Red Sea	Three missiles/ one struck on starboard side	Minor damage/ NO injuries	NO links with Israel, US, UK
28/5/2024	Missile attack	Marshall Islands	Bulk carrier LAAX	13° 25′ N / 042° 41′ E	ON	Red Sea	Two missiles. One struck on port side	Severe damage/ NO injuries / Seaworthy	NO links with Israel, US, UK
01/6/2024	Missile attack	Malta	Crude oil tanker ABLIANI	17° 10′ 41 N / 041° 25′ 38 E	ON	Red Sea	One missile on water	NO damage/ NO injuries	Alleged by Houthis Israel port call
06/6/2024	Missile attack	Cyprus	General cargo AAL GENOA	12° 17′ 04″N / 043° 39′ 08″ E	ON	Bab el Mandeb	Two missiles on water	NO damage/ NO injuries	NO affiliation
08/6/2024	Missile attack	Liberia	Container ship MSC TAVVISHI	16° 00′ N / 047° 00′ E	**OFF**	Gulf of Aden 70nm SW of Aden	One missile on deck. Second missile intercepted by a warship	Minor damage/ NO injuries	Houthis claimed the owner had vessels that visited Israeli ports
08/6/2024	Missile attack	Antigua & Barbuda	General cargo NORDERNEY	12° 13′ 37″N / 046° 17′ 15″ E & 11° 45′ 32″N / 044° 17′ 28″ E (2 attacks on the same day)	ON	Gulf of Aden 80nm SE of Aden	One missile on deck & one missile on deck	Minor damage/ NO injuries in both attacks	Houthis claimed one vessel of the company was at Haifa, Israel on 08/06/2024
12/6/2024	Sea drone (USV) attack & second UAV attack	Liberia	Bulk carrier TUTOR	14° 19′ N / 041° 54′ E	**OFF**	Red Sea	One direct hit on the stern by a sea drone/ second hit by a UAV	**One crew member drowned**/ Serious damage/ water influx at engine compartment/ vessel not under command/ vessel sunk on June 18	Houthis claimed the company had vessels that visited Israeli ports

13/6/2024	USV attack	Malta	Bulk carrier SEAGUARDIAN	15°14°7N / 041° 34'1E	**OFF**	Red Sea	Direct hit at port side/ NO explosion	NO damage/ No injuries	NO affiliation
13/6/2024	Missile attack	Palau	General cargo VERBENA	12° 34′ 49″ N 047° 12′ 06″ E	ON	Gulf of Aden	Three (03) direct missile hits	Fire onboard/ **one crew member injured** evacuated by US Navy / vessel abandoned and drifting 30nm NE of Djibouti	NO affiliation
21/6/2024	Missile attack	Liberia	Bulk carrier TRANSWORLD NAVIGATOR	12° 40′ 00 N / 047° 10′ 00 E	ON	Gulf of Aden	Two (02) explosions on water	NO damage/ NO injuries	NO affiliation
23/6/2023	USV (sea drone) attack	Liberia	Bulk carrier TRANSWORLD NAVIGATOR	14° 54′ N / 041° 49′ E	ON	Red Sea	Direct hit on port side	Minor damage/ light crew members injuries	NO affiliation
24/6/2024	Missile attack	Liberia	Container ship SARAH V	13° 17′ N / 055° 30′ E	ON	Arabian Sea	One explosion on water on starboard side	NO damage/ NO injuries	Houthi describe MSC as "Israeli" due to MSC's cooperation with Israeli shipping companies

25/6/2024	Missile attack	St Kitts & Nevis	Bulk Carrier LILA LISBON	N/A	ON	Gulf of Aden	Near miss	NO damage/ NO injuries	Unverified
27/6/2024	USV (sea drone) attack	Panama	Bulk carrier NAUTILUS	14° 35′ N / 041° 31′ E	**OFF**	Red Sea	One explosion on water	NO damage/ NO injuries	NO affiliation
28/6/2024	Missiles (multiple)	Liberia	Oil/Chemical tanker DELONIX	N/A	**ON**	Red Sea	Near miss	NO damage/ NO injuries	US
09/7/2024	Missile attack	US	Container ship MAERSK SENTOSA	16° 28′ 00 N / 055° 44′ 00 E	**ON**	Gulf of Aden	One explosion on water	NO damage/ NO injuries	US
10/7/2024	Missile attack	Liberia	Crude oil tanker MOUNT FUJI	12° 41′ 00 N / 043° 15′ 00 E	**ON**	Red Sea	One explosion on water	NO damage/NO injuries	NO affiliation
11/7/2024	Missile attack	Liberia	Bulk carrier ROSTRUM STOIC	13° 09′ N / 043° 03′ E	**OFF**	Red Sea	Five explosions on water during day time	NO damage/ NO injuries	Unknown
15/7/2024	USV (sea drone) + missile attack	Panama	Oil/ chemical tanker BENTLEY I	14° 17′ 00 N / 041° 53′ 00 E	**OFF**	Red Sea	2 skiffs manned fired / 1 unmanned hit the vessel twice	NO damage/ NO injuries	Israel

15/7/2024	USV (sea drone)	Liberia	Crude oil tanker CHIOS LION	15° 26′ 00 N / 041° 23′ 00 E	**OFF**	Red Sea	One USV exploded at port side after struck by Armed Security Team firing	Light damage/ NO injuries	NO affiliation
19/7/2024	Missile attack	Singapore	Container ship LOBIVIA	11° 45′ 10 N / 045° 55′ 25 E	**ON**	Gulf of Aden	2 missiles, one port side and one port side aft and accommodation	Light damage/ NO injuries	US
20/7/2024	UAV+USV attack	Liberia	Container ship PUMBA	14° 03′ N / 042° 13′ E	**ON**	Red Sea	1 UAV in close proximity+1 USV exploded in close proximity	NO damage/ No injuries	Houthis claimed the company had vessels that visited Israeli ports
03/8/2024	Missile attack	Liberia	Container ship GROTON	12° 24' 48" N/ 046° 58' 4" E	**OFF**	Gulf of Aden	1 missile	A hole in the hull 4.5 m above waterline (50-60 cm diameter). NO injuries	Houthis claimed the company had vessels that visited Israeli ports
08/8/2024	RPG & missile attack	Liberia	Crude oil tanker DELTA BLUE	12° 20" N, 043° 34' E	**OFF**	Strait of Bab el Mandeb	RPG & missile on water in close proximity	NO damage/ NO injuries	Unverified
09/8/2024	USV (sea drone) & missile	Liberia	Crude oil tanker	14° 56' 53" N	**OFF**	Red Sea	One USV exploded at after struck by Armed Security Team	NO damage/ NO injuries	Unverified
			DELTA BLUE	/41° 59' 50" E			firing/ one missile on water in close proximity		
12 & 13/08/2024	Missile attacks & USV attack	Liberia	Crude oil tanker DELTA ATLANTICA	13° 59" N/042°15' E & 15° 31' N/ 041° 27' E	**OFF**	Red Sea	3 missile attacks in close proximity within 6 hours/ USV (sea drone) attack, exploded at after struck by Armed Security Team firing	NO damage/ NO injuries	Unverified
13/8/2024	Missile	Panama	Crude oil tanker ON PHOENIX	N/A	**ON**	Red Sea	Near miss	NO damage/ NO injuries	Unverified
21/8/2024	Missile attacks	Greece	Crude oil tanker SOUNION	15° 4′ 5′′ N/ 041° 33'51′′ E	**OFF**	Red Sea	4 missile attacks/ 2 struck the vessel/ serious damage	NO injuries/ Vessel abandoned on 22/08 am hours	Unverified
22/8/2024	Missile attacks	Panama	Bulk carrier SW North Wind I	11° 52′ 16′′ N/ 044° 59' 55′′ E	**OFF**	Gulf of Aden	4 missiles in close proximity	NO damage/ NO injuries	Unverified
30/8/2024	Missile attacks	Liberia	Container ship GROTON	130 nm east of Aden	**OFF**	Gulf of Aden	2 missiles in close proximity	NO damage/ NO injuries	Houthis claimed the company had vessels that visited Israeli ports

02/9/2024	Missile attacks	Panama	Shuttle tanker BLUE LAGOON I	15° 38′ N/ 041° 30′ E	**OFF**	Red Sea	2 missiles struck the vessel + one in close proximity	Light damage/ NO injuries	UK
01/10/2024	Missile & USV attack	Panama	Crude oil tanker CORDELIA MOON	15° 05′ N/ 041° 47′ E	**OFF**	Red Sea	4 missiles, 1 UAV & 1 USV hit the vessel	Severe damage/ NO injuries	UK (as Houthis claimed)
01/10/2024	Missile attack	Liberia	Bulk carrier MINOAN COURAGE	15° 36′ 6′′N/ 041° 26′ 5′′E	**OFF**	Red Sea	1 missile	Severe damage/ NO injuries	Unverified (possibly miscalculation hit close sailing with CORDELIA MOON)
09/10/2024	UAV & missile attack	Liberia	Oil/chemical tanker OLYMPIC SPIRIT	14° 08′ 30′′N/ 041° 54′ 56′′E	**OFF**	Red Sea	1 UAV hit the bridge/ 3 missiles near miss	Light damage/ NO injuries/ vessel seaworthy	Houthis claim responsibility as US listed/ Based on the available information so far, the Houthis attacked the Olympic Spirit based on inaccurate information

Figure 37

Appendix G: Table of attacks

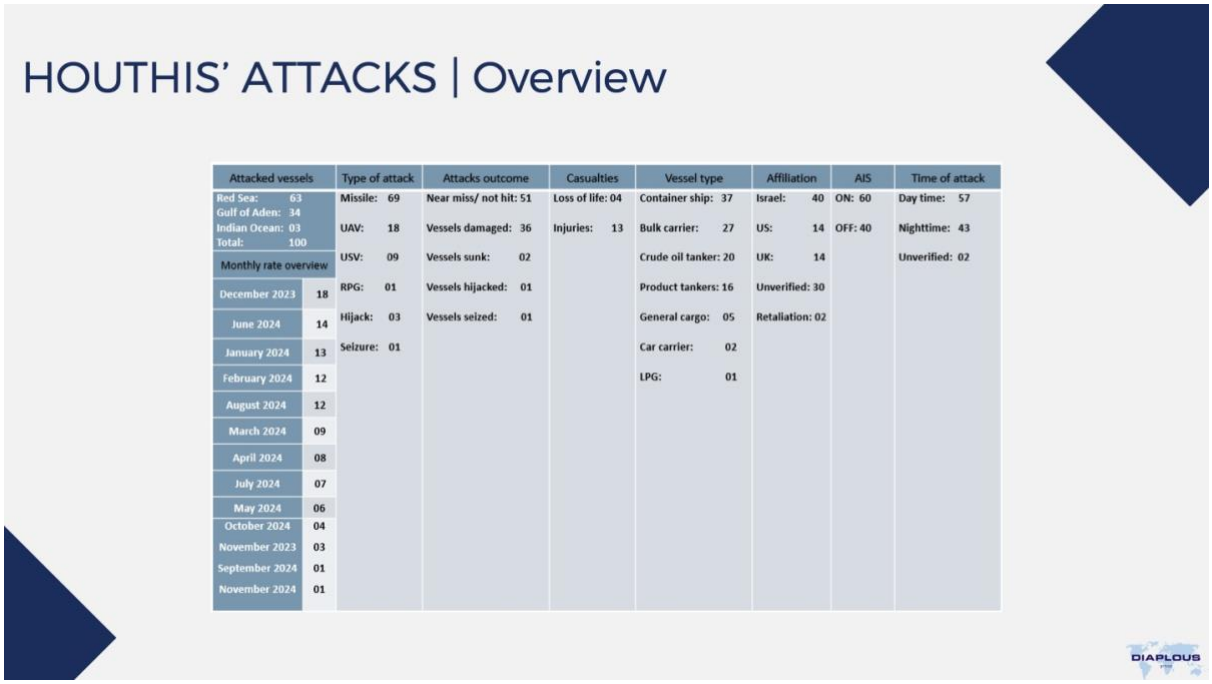

Figure 38

Appendix H: Vessel Trends

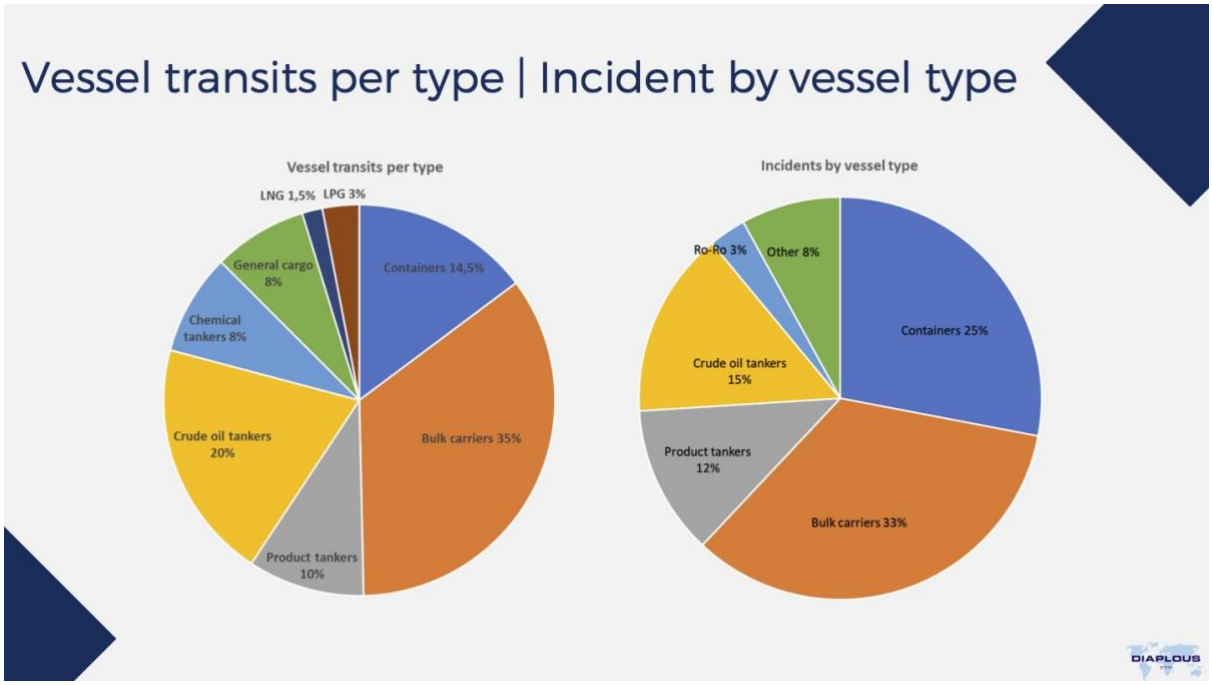

Figure 39

Appendix I: Suez Canal Trends

Month	Northbound	Southbound	Total number	Notes
November 2023	N/A	N/A	1100 (est)	*47-48 weeks*
December 2023	*979*	*935*	*1914*	
January 2024	*655*	*598*	*1253*	
February 2024	*536*	*516*	*1052*	
March 2024	*599*	*654*	*1253*	
Apr 2024	*567*	*511*	*1078*	
May 2024	600	635	1235	
June 2024	454	478	932	
July 2024	481	492	973	
August 2024	495	495	990	
September 2024	609	579	1188	
October 2024	552	563	1115	
Nov 2023 – Oct 2024 transits summary	*6854*	*71918*	*14857*	

Figure 40

Appendix J: AIS Statistics

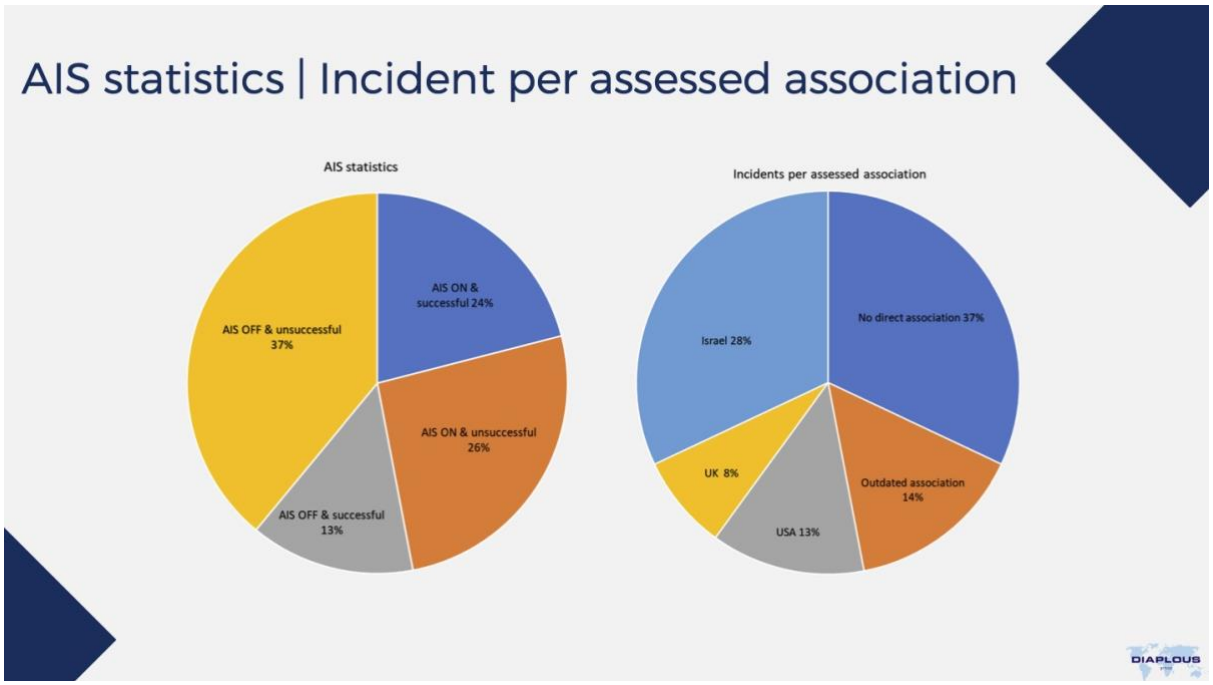

Figure 41