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SAFETY LEADERSHIP AS A MEANS FOR SAFE AND SUSTAINABLE SHIPPING

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CONTENTS

Abstract

The objective of this study is to document the means by which safety leadership can facilitate the establishment of conditions conducive to safer and more sustainable shipping. This study comprises a comprehensive review of literature, structured into four distinct chapters, that centers on the concept of safety leadership. The focus is on its application in the maritime sector, the methodology employed in the research, and the correlation between safety leadership in shipping and sustainability.

Στόχος αυτής της μελέτης είναι να τεκμηριώσει τα μέσα με τα οποία η ασφαλής ηγεσία μπορεί να διευκολύνει τη δημιουργία συνθηκών που ευνοούν την ασφαλέστερη και πιο βιώσιμη ναυτιλία. Αυτή η μελέτη περιλαμβάνει μια ολοκληρωμένη ανασκόπηση της βιβλιογραφίας, δομημένη σε τέσσερα ξεχωριστά κεφάλαια, που επικεντρώνεται στην έννοια της ασφαλούς ηγεσίας. Το επίκεντρο είναι η εφαρμογή στον ναυτιλιακό τομέα, η μεθοδολογία που χρησιμοποιήθηκε στην έρευνα και η συσχέτιση μεταξύ της ασφαλούς ηγεσίας στη ναυτιλία και της βιωσιμότητας.

Introduction

The assurance of safety in ship operations is contingent upon a multitude of factors. The study conducted by Kim, Nazir et al. (2016) has identified a range of causal factors associated with maritime accidents. In numerous instances, technical failures or machinery malfunctions have minimal impact on safety management and accident prevention. Instead, human, organizational, and managerial issues play a significant role in enabling the system to gradually move towards a heightened state of risk. The reliability of technical systems on modern vessels has been enhanced by the ongoing progress in ship design and navigation technologies. This has resulted in a decrease in the likelihood of technical malfunctions, thereby shifting the focus towards the impact of human and organizational factors in the occurrence of accidents. After a sequence of noteworthy marine mishaps in the late 1980s and early 1990s, it became apparent that the enforcement of safety management protocols was crucial. The advancement of safety requires a joint endeavor and a communal enterprise, mandating the combined involvement of all individuals to achieve positive results. Safety leaders utilize engagement and participation as a strategy for incentivizing individuals. Furthermore, their contribution to upholding a just and impartial society is imperative in promoting a genuinely cooperative safety coalition.

Aim

The aim of this paper is to record how the conditions for a safer and more sustainable shipping can be created through safety leadership.

Structure

The present study is organized into four distinct chapters, which revolve around the notion of safety leadership, its implementation within the maritime industry, the research methodology employed, and the interrelation between safety leadership in shipping and sustainability.

CHAPTER 1- SAFETY LEADERSHIP

1.1.INTRODUCTION

Although the shipping industry boasts a relatively commendable safety record, it is important to note that maritime incidents possess a significant potential for catastrophic outcomes. According to Perrow's (1999) assertion, vessels transporting LNG possess the capacity to cause catastrophic destruction to an entire urban area. He contends that despite this risk, the industry remains highly incentivized by profit, leading to ships and their personnel being subjected to extreme pressures to adhere to strict timelines. The initial significant oil spill incident occurred in 1967 within the English Channel, and it entailed the Torrey Canyon tanker. This occurrence serves as a prime example of an atmosphere characterized by elevated pressure and exigent time constraints. In order to arrive at Milford Haven in a timely manner to coincide with the high tide, the captain opted for a more direct route through the Scilly Isles, resulting in a time savings of 6 hours. In the event of missing this particular time frame, the vessel in question would be compelled to remain stationary at anchor for a duration of five days prior to gaining access to the bay. In order to prevent a possible grounding, the vessel's oil was transferred to alternate tanks, resulting in a two-inch elevation of the ship. During transit through the Scilly Isles, the vessel encountered a fishing boat and was unable to execute a timely maneuver, resulting in the ship running aground. This unfortunate incident led to the spillage of approximately 100,000 tons of oil, which contaminated a total area of approximately 300 km along the southwestern coastline of England and the northwestern coastline of France (Hetherington et al, 2006).

According to Perrow's (1999) analysis, the shipping system's propensity for errors can be attributed to various factors, including the social organization of the personnel onboard, economic pressures, the industry's structural characteristics, and challenges related to insurance and international regulation. The present analysis scrutinizes the contemporary state of safety within the maritime sector and the human factors that could potentially contribute to the causal sequence in shipping mishaps. The maritime industry is known to entail a unique set of demands, including but not limited to

fatigue, stress, work pressure, communication, environmental factors, and prolonged periods of absence from home. These factors have the potential to be significant contributors to the challenges faced by individuals working in this industry. As per McNamara et al. (2000), the shipping industry presents a unique combination of workplace hazards that is not commonly observed in other industries. However, it seems that there has been a dearth of research on human factors within the maritime sector (Hetherington et al, 2006).

The contemporary shipping industry encounters novel challenges in the current era. As per Grech and Horberry's (2002) findings, it can be observed that a typical cargo vessel from 25 years ago would have had a workforce comprising of approximately 40 to 50 individuals. Contemporary technological advancements have resulted in a reduction in the number of personnel required to operate certain vessels, with some Very Large Crude Carriers (VLCCs) now being manned by as few as 22 seafarers. Technological advancements have two distinct facets. The frequency and severity of shipping incidents have been reduced due to advancements in ship design and navigation aids. The decrease in technological failures has brought to light the significant role of human error in causing accidents (Hetherington et al, 2006).

The shipping industry is a worldwide enterprise that is subject to regulations from multiple nations and adheres to global protocols. Furthermore, ship owners have the option to select flag states and labor markets from which to source their crew. The existence of interdependencies renders the shipping industry a highly intricate enterprise. Numerous stakeholders, including crew members, shipping companies, unions, industrial organizations, and national and international regulatory bodies, consistently engage in proactive and reactive measures within the realm of safety to address both internal and external shifts. Despite the existence of regulations and established protocols for optimal safety practices, severe accidents and incidents continue to occur with notable frequency (Engen, 2011).

The International Maritime Organization (IMO) is responsible for the development of international safety regulations, which take the form of conventions, protocols, and resolutions. At various hierarchical tiers, safety concerns are tackled through regulations imposed by regional, flag state, and port state authorities (Kuo, 2007). These regulations are subsequently translated into safety management systems

consisting of protocols and benchmarks, which are adopted by shipping companies. The regulation of safety activities in companies is governed by the International Safety Management (ISM) Code, which was comprehensively enforced on the first day of July in the year 2002, as stated by the International Maritime Organization (2010). Despite the existence of established protocols and guidelines aimed at mitigating risk and regulating the conduct of seafarers, there appears to be an upward trend in the occurrence of accidents attributable to human error (Soma, 2008) (Engen, 2011).

1.2.BRIEF HISTORY AND OVERVIEW OF SAFETY LEADERSHIP IN SHIPPING

The industry of merchant shipping has been widely regarded as a highly interconnected and significant sector in the modern era, given that over 80% of global trade is conducted through sea transportation. The significance of the aforementioned entity lies in its ability to facilitate intercontinental connectivity, foster international commerce, and provide for the needs of the contemporary global community and economy (Kim, 2020). As a result, it has become an essential component of both the world and individuals' daily routines. Merchant shipping, being at the forefront of globalization and being regarded as one of the most significant industries, has been widely acknowledged as a high-risk industry by the International Maritime Organization (IMO, 2020). The ocean presents inherent dangers and obstacles to individuals who navigate its waters. The safety level of ship operations has been gradually enhanced over time through various regulatory responses, advanced ship designs, and formal safety measures on vessels. However, the occurrence of catastrophic events in recent years, including Sanchi, Sewol, and Costa Concordia, has served as a reminder of the criticality of safety in the maritime industry (Kim, 2020). The incidents and mishaps have resulted in substantial monetary damages and ecological ramifications, as well as incalculable effects on people, households, and communities. The assurance of safety in ship operations is contingent upon numerous factors. The examination of maritime accidents has uncovered a sequence of underlying factors that contribute to their occurrence (Kim, Nazir et al., 2016). The literature suggests that while technical failures and machinery malfunctions may play a limited role in accidents, the primary factors contributing to safety management and

accident prevention are human, organizational, and managerial issues. These issues can lead to a gradual increase in risk within the system, as evidenced by a study conducted by Kim, Nazir et al. (2016). The reliability of technical systems on modern vessels has been enhanced by the progressive development of ship design and navigation technologies. This has resulted in a decreased likelihood of technical failures, thereby shifting the focus towards the role of human and organizational factors in accident causation. This phenomenon has been observed and studied by various scholars. The aftermath investigation of an accident often uncovers a range of cultural issues and dysfunctional interactions or coordination within systems, which contribute to the occurrence of errors (Leveson, 2011). Several systemic errors, including deficient supervision and safety monitoring, insufficient communication and teamwork, and inadequate safety management and coordination, are frequently attributed to ineffective leadership in establishing a robust safety culture and systemic safety solutions. According to Leveson's (2011) assertion, safety is initiated through the leadership and commitment of management towards safety. In the absence of this, the endeavors of other members within the organization are highly likely to be unsuccessful. According to the author, culture is shaped by leadership and subsequently influences the actions and conduct of individuals within an organization. The level of dedication demonstrated by leadership towards safety, as evidenced by their safety concern, budget allocation, priority-setting, and other related factors, has been identified as a significant distinguishing factor between companies with high and low accident rates (Kjellén, 1982). This commitment has a positive and direct impact on the development of safety values and the planning and implementation of the Safety Management System (SMS). The significance of communication is paramount in relation to safety culture, safety climate (Mullen and Kelloway, 2009), and the safety compliance and participation behaviors of subordinates (Kim and Gausdal, 2017). Accordingto O'Dea and Flin (2003), in order to enhance and maintain the motivation of subordinates towards safety, leaders must possess specific communication, motivational, and management competencies that may vary from those needed to accomplish overall task-oriented objectives. According to Oltedal and McArthur's (2011) findings, there exists a positive correlation between the reporting frequency and the perception of leadership skills of the manager as perceived by the respondents in the maritime industry. The absence of appropriate leadership may decrease the likelihood of successful and enduring SMS implementation (Kim, 2020).

1.3.WHAT IS SAFETY LEADERSHIP?

Leadership can be defined as the capacity of an individual or a collective to exert influence and provide direction to their followers or constituents within the context of an organization, society, or team. Leadership is frequently associated with an individual's position, level of experience, or placement within a hierarchical structure. Nevertheless, this attribute is attainable by anyone, including individuals who do not hold leadership positions. The ability in question is a skill that is amenable to development and enhancement through practice and experience (Barney, 2023).

Leadership is a ubiquitous and essential element in various domains of society, such as commerce, politics, spirituality, and communal and societal groups. Leaders are commonly perceived as individuals who possess the ability to make prudent and occasionally challenging judgments. Effective leaders are capable of formulating a well-defined vision, setting realistic objectives, and equipping their subordinates with the requisite resources and expertise to attain those objectives. A proficient leader is characterized by possessing self-assurance, adept communication and managerial abilities, imaginative and inventive thinking, persistence, a disposition to undertake risks, adaptability to change, composure, and responsiveness during critical situations (Barney, 2023).

Within the realm of business, those who demonstrate leadership qualities have the potential to rise to executive management or C-level roles, including but not limited to the positions of chief executive officer (CEO), chief information officer (CIO), and president. The significance of leadership in shaping the trajectory and accomplishments of a business is paramount. Effective leadership is crucial for organizations to convey their mission, vision, and objectives, foster team cohesion, and ultimately attain their goals. The aforementioned abilities hold particular significance during periods of emergency. The process of making difficult decisions is frequently necessary for the achievement and advancement of a business. The success of businesses is frequently contingent upon the presence of leaders who possess advanced competencies and emotional intelligence, which enable them to effectively navigate challenging situations and devise solutions. The attainment of a high level of trust and success frequently results in the creation of favorable and efficient work settings that foster collaboration, employee welfare, and robust work cultures that appeal to highly skilled personnel (Barney, 2023).

Effective leadership plays a crucial role in enhancing an organization's competitiveness as it fosters transformative processes and promotes innovative practices. Effective leaders demonstrate vigilance towards evolving trends within their respective industries, foster internal ideation, and attract creative minds to their organizations (Barney, 2023).

A safety leader is an individual who not only demonstrates personal safety behaviors, but also motivates and encourages others to follow suit. These individuals adhere strictly to safety protocols and proactively communicate constructive feedback when observing opportunities for others to improve their safety practices (Eagle's Flight, 2023).

Safety leaders exhibit these behaviors:

- Comprehending and adhering to safety protocols.
- Reporting safety concerns as they occur is of utmost importance.
- Taking proactive measures to prevent safety issues.
- Implementation of novel procedures to enhance safety measures.
- Promoting the importance of prioritizing safety measures among individuals.

It is not a requirement for safety leaders to hold managerial or supervisory positions. Individuals who possess a favorable social impact on their colleagues and demonstrate a keen interest in enhancing safety measures throughout the organization are eligible for consideration. It is noteworthy that a safety leader ought to adopt a cultural influencer role as opposed to a hall monitor role. Effective safety leaders are those who facilitate the enhancement of their colleagues' safety practices without their awareness of the process. The individuals comprising the team possess a reputation for being sought-after sources of advice regarding optimal methodologies, owing to their demonstrated ability to provide accurate and practical guidance (Eagle's Flight, 2023).

According to Wu (2005), safety leadership pertains to the dynamic interplay between leaders and followers, wherein leaders utilize their influence to attain safety objectives within the context of organizational and individual factors. Research has demonstrated that effective safety leadership plays a crucial role in mitigating human failures that arise from noncompliance, fatigue, and poor communication.

Furthermore, it is considered a necessary condition for enhancing safety performance by inspiring team members to work more productively, take ownership, and assume responsibility for safety. This has been supported by various studies, including those conducted by Clarke (2013) and O'Dea and Flin (2001). Additionally, effective safety leadership has been found to reduce accident and injury rates, as evidenced by studies conducted by Mullen and Kevin Kelloway (2009) (Ta et al., 2022).

The influence of safety leadership extends to various dimensions of safety performance, encompassing an organizational gauge of safety results that encompasses workplace mishaps, injuries, and fatalities. Additionally, it pertains to the conduct or demeanor that individuals display in nearly all occupations to foster the well-being and security of employees, customers, the general public, and the ecosystem. Griffin and Neal (2000) have devised a safety performance model that is grounded in the theories of job performance. The model comprises safety compliance and safety participation. The concept of safety compliance pertains to the actions of employees that have a direct impact on the safety of the workplace. This includes the adherence to safety protocols and the execution of tasks in a secure manner. On the other hand, safety participation pertains to the conduct of employees in fostering a safety-oriented environment. This includes assisting colleagues, advocating for the safety program within the workplace, displaying initiative, and investing effort in enhancing safety in the workplace. It is noteworthy to mention that there has been a lack of agreement regarding the elements that comprise safety performance. The insufficiency of a suitable metric for this notion poses a hindrance in the assessment of the efficacy of safety initiatives (Ta et al., 2022).

The investigation of the impact of leadership on safety in high-risk industrial settings has yielded valuable insights into the potential for enhancing safety performance through the development and evaluation of leadership. According to Grote (2012), high-risk industries are those that involve significant risk to both individuals and the environment. These industries may be characterized by the potential for major accidents, such as in aviation, nuclear power generation, or chemical production, or smaller scale incidents and occupational accidents, such as those that occur in medicine or timber harvesting. In such settings, both people and the environment may be at considerable risk.

1.4.THE HISTORY OF SAFETY LEADERSHIP

The profession of seafaring is characterized by its distinctiveness, as it entails extended durations of separation from one's kin and toiling in a rigorous milieu. In addition to the practice of social distancing from loved ones, as well as the experience of residing and laboring aboard a vessel with a limited cohort, seafarers are subject to a range of occupational risks throughout their routine duties. In order to effectively manage the various challenges encountered at sea, it is imperative that seafarers possess adequate preparation, education, and training (Hasanspahic, 2021). Collaborative work is a common practice in shipboard operations, necessitating seafarers to possess adequate proficiency in the official language of the vessel to facilitate effective communication among team members. A merchant cargo ship is typically composed of various departments, including the deck, engine, and galley departments. The seafarers are categorized into teams within the aforementioned departments to carry out their routine tasks. For optimal efficacy and safety, it is customary for each team to have a designated leader, typically the officer with the highest rank among the team members. The prevailing assumption is that the leader of a team is the individual possessing the highest level of experience and competence among its members. The individual designated as the master assumes the role of the highest-ranking officer responsible for overseeing all shipboard teams. Given that ensuring the safety of individuals is of paramount importance, it is imperative that all shipboard teams operate in a cohesive and collaborative manner to execute all duties in a safe and efficient manner. A proficient leader of a team should facilitate secure and efficient work execution, while a skilled shipboard leader should oversee the performance of all teams on a vessel and assume accountability for their conduct and well-being (Hasanspahic, 2021).

Despite the expectation that crewmembers possess adequate training and education, and that their leaders prioritize safety as the foremost concern, incidents involving human factors as a primary contributing factor continue to occur. Insufficient leadership is significantly associated with substandard human relations and teamwork, and is identified as a contributing factor to human error in maritime operations. Therefore, additional investigation is warranted to explore this subject matter. In order to comprehensively tackle the matter at hand, it is imperative to provide a clear

definition of the concepts of "leadership" and "safety leadership". As per the International Maritime Organization (IMO), leadership is characterized as a procedure wherein a group of individuals, under the influence of an individual, endeavors to attain a shared objective. According to Wu et al. (2007), safety leadership can be described as the dynamic process of communication and influence between leaders and followers, aimed at achieving safety objectives within an organization, while taking into account both organizational and individual factors. The attainment of effective leadership and the successful implementation of a safety-oriented culture aboard a ship are contingent upon the support of subordinates. Safety leadership is widely recognized as an integral component of effective leadership, with a specific emphasis on minimizing risks and preventing accidents, namely the safety-related facets of leadership.

Due to the significant role of safety leadership in high-risk industries, scholars have identified its attributes and strategies for attaining it. Given the hazardous nature of the seafaring occupation and the hierarchical structure of professional relationships aboard a vessel, the implementation of safety leadership is imperative in order to mitigate the risk of accidents and enhance safety measures. Numerous academic inquiries have been conducted in the field of safety leadership within the shipping industry.

During a crisis situation, such as the need to abandon ship, it is crucial that seafarers who are responsible for emergency duties possess the ability to communicate proficiently and collaborate effectively as a team to ensure the safe execution of their tasks. The experience, engagement, and comprehensive comprehension of their responsibilities by seafarers are pivotal elements in facilitating appropriate decision-making during a crisis. The achievement of a superior safety standard aboard a vessel necessitates the implementation of efficient teamwork. Resilience serves as a fundamental component for achieving success during times of crisis, and is regarded as a pivotal attribute for ensuring safety. Sustainability is an additional facet of safety leadership, as effective leadership has been shown to result in reduced accidents, prevention of marine pollution and injuries, and favorable economic outcomes (Hasanspahic, 2021).

Apart from ensuring safety and environmental conservation, proficient safety management practices have a favorable impact on the financial performance of a company's operations. The promotion of safety behavior and attitudes among employees has a positive impact on their well-being, reducing the likelihood of injuries and associated downtime, while concurrently enhancing productivity. The enhancement of productivity and the safeguarding of human lives and the environment are mutually reinforcing. Thus, firms that uphold elevated safety protocols typically exhibit proficient management practices (Wu et al., 2007).

1.5.THE CONTENT OF THE SAFETY LEADERSHIP

Safety leadership can be defined as the dynamic process of engagement and collaboration between leaders and their followers, with the aim of effectively attaining the safety objectives of the organization. The impact of leaders' behaviors and their interactions with subordinates on safety performance has been consistently acknowledged in various hazardous industrial contexts. These factors are considered crucial predictors of safety records. The majority of scholarly research on safety leadership has primarily focused on examining and discerning the specific type of leadership style that is most effective in formal safety roles. This investigation is typically conducted within the framework of established leadership theories, such as transformational and transactional leadership theory, Leader-Member Exchange (LMI) theory, authentic leadership theory, and situational leadership theory. Each of these theories offers distinct perspectives on the intricate and ongoing phenomenon of leadership, highlighting diverse approaches to exerting influence over followers. The theories of transformational and transactional leadership have garnered significant attention, as noted by Clarke (2013). Transformational leadership is characterized by a focus on building and nurturing relationships, while transactional leadership places a greater emphasis on accomplishing tasks. According to Kim et al. (2020), scholarly investigations on transformational leadership conceptualize leadership as the capacity of leaders to exert influence over their followers by means of inspiration, engagement, and empathy, with the ultimate goal of achieving performance outcomes that surpass initial expectations. Transactional leaders prioritize the establishment and maintenance of consistent routines, the reduction of deviations, and the enhancement of reliability and predictability among their followers in order to achieve the desired level of performance. Multiple studies have demonstrated that the optimal approach

for ensuring safety involves the simultaneous utilization of transformational and transactional leadership styles (Clarke, 2013). The findings of this leadership research align with safety theories that emphasize the need to effectively manage safety in complex socio-technical systems. It is argued that achieving performance reliability alone is insufficient; it is also crucial to enhance the system's ability to adapt and thrive in diverse conditions and unforeseen disruptions in order to ensure sustainable safety performance. A limited number of empirical studies have been conducted to examine safety leadership in the shipping industry. In one such study, Kim and Gausdal (2017) made an effort to consolidate the behaviors and actions exhibited by effective leaders in shipping organizations. The study posited that the attainment, preservation, and perpetuation of safety performance in maritime operations necessitates the implementation of effective safety leadership across all levels of the organization. In their study, Kim and Gausdal (2017) conducted an analysis to identify eleven essential behaviors that contribute to effective safety performance in ship operations. These behaviors encompass various levels of management within the organization. At the lower-level, managers are encouraged to engage in effective communication, demonstrate care and support, and actively involve employees in safety-related matters. Middle-level managers are advised to empower their subordinates, monitor safety performance, provide relevant information, and coordinate efforts to ensure safety. Finally, top managers are expected to exhibit enabling behaviors, prioritize safety concerns, inspire employees, and facilitate the implementation of safety measures. The impact of organizational leadership on safety has a significant influence on the learning outcomes derived from minor, moderate, and major near-misses. These near-misses serve as valuable inputs for organizations to update their safety management practices and implement corrective actions. Oltedal and McArthur (2011) have observed a correlation between the participants' perception of their manager's leadership abilities and the frequency of incident reporting in the context of merchant shipping. The extant body of literature examining the influence of leadership on safety outcomes has yielded several significant implications. Firstly, it is suggested that the differences in safety practices among individuals and teams can be attributed to the styles and behaviors of managerial leadership, and are susceptible to being influenced. Additionally, it is imperative for leaders to demonstrate proficiency in both task-oriented and relationship-oriented leadership styles in order to exert a significant impact on safety behaviors and outcomes.

Moreover, it is crucial to emphasize the significant necessity for the evaluation and enhancement of safety leadership, as it allows for the acknowledgment of the existing performance level and the identification of areas that require further development (Kim et al., 2020).

1.6.THE PROVISIONS OF SAFETY LEADERSHIPLEADERSHIP STYLES

According to Oladipo et al. (2013), the efficacy of organizations is significantly impacted by the leadership styles and interventions implemented by their leaders. Consequently, it is imperative to comprehend the correlation between various leadership styles and the level of safety performance. Numerous studies have been conducted to establish a positive correlation between leadership and safety performance, as evidenced by Christian et al. (2009) and Clarke (2013) (Ta et al., 2022). However, no definitive conclusion has been reached regarding the most effective leadership style. The lack of clarity in defining leadership styles and the inconsistency in measuring safety performance may impede the progress of comprehending the impact of safety leadership on safety performance. In academic research, it is common to analyze the effects of a restricted set of leadership styles, such as transformational leadership, transactional leadership, and leader-member exchange (LMX), as noted by Christian et al. (2009) and Clarke (2013). Despite the evident depiction of the correlation between leadership styles and safety performance, several studies have neglected to specify the contextual framework within which this relationship exists. It is imperative to consider the context, as leadership exhibits variations in diverse situations (Ta et al., 2022).

The term "leadership support" has become a commonly used phrase in the discourse surrounding safety. The significance of leadership support and the act of leading by example are frequently emphasized. The prominence of discussions surrounding support can be attributed to its significance. However, it is frequently inadequately defined. The provision of leadership support is frequently perceived as a mere dissemination of a sequence of communications emphasizing the significance of safety. Establishing leadership buy-in necessitates a comparable level of examination and strategizing as the execution of behavior-based safety (BBS) initiatives. The significance of leadership participation and support necessitates a considerable investment of time in the planning and establishment of accountability for crucial leadership practices (McSween, 2023).

The subsequent five practices offer a structure for delineating the concept of "leadership support" in the context of Values-Based Safety®. It is imperative for leadership to exhibit these practices in a conspicuous manner to all individuals involved in the execution of Values-Based Safety®. The practices' defining behaviors can aid in promoting safety and facilitating the implementation of your novel safety enhancement endeavor.

The first practice of safety leadership involves the establishment of alignment. It is imperative for leaders to establish three distinct forms of alignment:

- Best practices for ensuring personal safety.
- Behaviors exhibited by leaders that foster and reinforce safety.
- Systems and processes.

Alignment refers to the degree to which the conduct and deeds of leaders in an organization are harmonious and reflect the significance of safety within the organization. The concept of alignment encompasses not only verbal communication, but also one's actions and decisions. The actions exhibited by leaders serve as a demonstration of the significance placed on safety. Observing safety protocols such as donning suitable personal protective equipment during field visits or facility operations, refraining from using mobile devices while driving, and utilizing designated crosswalks at intersections to navigate busy thoroughfares are among the recommended safety measures.

The behavior of safety leaders is crucial in ensuring that the leadership practices implemented across all levels of an organization are congruent with the goal of establishing and maintaining safety systems and practices. The establishment of such alignment necessitates the assurance of leadership behavior accountability across all organizational levels in order to facilitate safety improvement support. Initially, it is imperative to establish a clear definition of the terms "participation" and "support" within every tier of the institution. The framework utilized in this article presents a commendable model for one's preliminary planning endeavors. Ideally, an integrated set of agendas can be developed to facilitate continuous review and planning of leadership support, which can be disseminated throughout all levels of the organization. The objective is to guarantee that the leadership methodologies

implemented across all tiers of the enterprise are harmonized to bolster the organization's endeavors towards enhancing safety (McSween, 2023).

The alignment and integration of management systems is frequently a notable concern, and a domain where numerous organizations exhibit deficiencies. The absence of integration or alignment with management systems frequently results in incongruous demands within the organization. As a consequence, the workforce is subjected to conflicting demands. An instance frequently encountered in our professional setting pertains to personnel who express a desire to perform Behavior-Based Safety (BBS) observations, but are unable to depart from their assigned workstations. Fundamentally, the current system generates obstacles to engagement that necessitate the intervention of leadership in order for BBS initiatives to achieve success.

An additional instance pertains to the challenge of convening the safety committee on a consistent basis for the purpose of scrutinizing the observation data and formulating strategies for improvement. In corporate settings, meetings are typically led by an appointed chair or co-chair. However, it is often incumbent upon management to proactively manage logistical matters and facilitate the convening of employees for such meetings. The concept of alignment encompasses not only the establishment of appraisal and recognition systems, but also the imperative for leaders to ensure that individuals who prioritize safety are celebrated within the organization, while those who prioritize production targets at the expense of safety protocols are not (McSween, 2023).

It is recommended to convene regular meetings with direct reports on a weekly basis to facilitate coordination and collaboration across different hierarchical levels. Proficient leaders allocate a substantial portion of their time to conveying their organization's principles and aspirations. The utilization of various instances is employed to customize the messages for personnel, colleagues, representatives of the community, and other relevant stakeholders. The communicators employ diverse forms of media to disseminate their messages to a wide-ranging audience with high frequency, while prioritizing the aspect of safety in their messages. Leaders are cognizant of the significance of adhering to a consistent message that articulates the

overarching goal, the leader's unwavering dedication, and the specific steps that others must take (Pilbeam et al., 2016).

Communication entails engaging in dialogue with individuals for purposes beyond the mere coordination of implementation efforts. The targeted demographic encompasses individuals who possess the ability to facilitate the execution of behavior-based safety protocols, as well as those who have the potential to impede its implementation. Communicating the significance of safety as a value and encouraging its dissemination among individuals poses a distinct communication challenge in comparison to facilitating comprehension of short-term action plans (McSween, 2023).

The establishment of participation and support necessitates the fulfillment of various requirements. It is important to acknowledge that the behavior-based safety process will undergo both an implementation phase and a maintenance or sustaining phase. It is probable that the practices of leadership support will undergo modifications as one transitions from one context to another. Leaders must first present persuasive data regarding the necessity of change and guarantee that a suitable group of individuals is involved in organizing and directing the change endeavor. It is imperative for leaders to engage in training activities and assess the progress of training implementation. Subsequently, it is imperative to redirect focus towards the endeavors of the safety committee and the involvement of all members within your establishment (McSween, 2023).

The ultimate objective is to integrate behavior-based safety as a fundamental aspect of business operations. Upon completion of the implementation phase, it is incumbent upon the leader to conduct a thorough review of the implementation process and ensure that the Steering Committee is executing their plans with utmost integrity. It is recommended to employ a range of formal and informal mechanisms to monitor the progress throughout the phases of implementation and maintenance. The formal review process may encompass periodic updates through staff meetings, focus groups, and surveys. An informal monitoring approach could involve engaging in conversations with participants during their routine activities and soliciting feedback from employees regarding the efficacy of the new process (Pilbeam et al., 2016).

The continuous evaluation and analysis of the novel procedure is a crucial leadership practice for maintaining the behavior-based safety campaign, or any other endeavor aimed at bringing about change. Frequently, following the successful implementation of a novel safety protocol resulting in a decline in workplace injuries, the organization tends to shift its focus towards other matters. The act of monitoring plays a crucial role in maintaining the behavior-based safety initiative (Pilbeam et al., 2016).

At last, the concept of shaping and reinforcing behavior is a crucial aspect of organizational management. Additionally, safety leadership is a critical component of ensuring the well-being of employees in the workplace.Safety Leaders play a crucial role in influencing the conduct of individuals involved in the process, as well as that of other leaders. The process of shaping and reinforcing behavior holds significant importance in the behavior-based safety approach as it facilitates the development of safe work practices and encourages participation. Shaping refers to the process of acknowledging incremental advancements while endeavoring to achieve even greater progress (McSween, 2023).

The objective of molding the conduct of one's leadership team is to facilitate their effectiveness in molding the conduct of both Steering Committee members and employees. The identification and prioritization of safety-related behaviors that yield significant impact, such as the formulation of efficient processes, recognition of areas requiring improvement, encouragement of participation, and creation and execution of action plans to tackle the "monthly safe-behavior focus." Ultimately, it is imperative to identify and strengthen actions that exhibit our commitment to prioritizing safety. It is imperative to identify, acknowledge, and value individuals who advocate for safety within our institutions. Similar to the manner in which gasoline serves as a source of energy for an engine, feedback and reinforcement serve as the driving force that maintains the ongoing enhancement of safety measures (McSween, 2023).

1.7.SAFETY CULTURE IN SHIPPING

The establishment and maintenance of a robust Marine Safety Culture is widely regarded as a critical element in the realm of shipping. The provision of security to individuals and assets on board a vessel and within an organization is achieved through the implementation of appropriate management strategies, technological

advancements, and regulatory frameworks. The concept of safety culture within an organization pertains to the creation of a secure working environment for its employees, as well as the identification and mitigation of potential hazards (SHM, 2018).

The initiation of a safety culture within a company entails comprehending the fundamental aspects of safety culture, followed by the implementation of measures that can enhance it.

The incorporation of safety culture has been a fundamental aspect of the maritime sector for a considerable duration. Although some individuals may perceive the regulations established for marine safety as burdensome, they have proven to be instrumental in preserving numerous lives both at sea and on land. The occurrence of the recent fire incident near the Kandla port serves as a case in point for the consequences that ensue due to the lackadaisical approach towards safety culture and non-compliance of regulations by seafarers.

To establish a safety culture, it is necessary to adhere to a series of prescribed procedures. The process of self-regulation necessitates an entity to establish objectives pertaining to its operational efficacy. It is imperative that each member of the organization takes appropriate measures and fulfills their responsibilities with due diligence. It is also important to provide the organization with a prescribed set of guidelines and protocols to adhere to. While it is acknowledged that compliance alone may not be sufficient to avert accidents, it is beneficial for an organization to conform to regulations.In a conventional organizational culture that adheres to a punitive approach, the individual deemed responsible for an accident is held accountable. The objective is to exert influence and modify the conduct of individuals within the organization through the imposition of punitive measures, thereby facilitating the adoption of a more vigilant demeanor.Nonetheless, operationalizing these principles can be a challenging task. Individuals must undergo a process of cultivation to develop a genuine regard for safety culture, which may require a prolonged duration until the principles become ingrained. In order to enhance the implementation of safety culture, it is imperative to comprehend the fundamental constituents of an optimal safety culture (SHM, 2018).

It is important that organizational management regards safety culture as an investment rather than a hindrance. The implementation of a safety culture is deemed crucial and imperative, with its significance beginning at the upper echelons of the organizational hierarchy. The enhancement of an organization's safety culture may prove to be challenging in the absence of robust leadership.

An organization should provide its employees with appropriate and current training that can prove efficacious in the event of an unforeseen mishap. The aforementioned entails furnishing knowledge on proficiently executing safety operations, managing safety equipment and other life-preserving apparatus, safety protocols, and instruction on identifying and evading safety risks. It is imperative for the organization to mandate a comprehensive training program that ensures complete coverage (Lowe et al., 2016).

It is crucial that employees are provided with a comprehensive understanding of the potential lethality of their near misses, rather than being subjected to undue blame, subsequent to their training. It is important to conduct a thorough analysis and evaluation of an employee's error, with the aim of bringing to their attention their own responsibility in the matter. This policy facilitates employee learning from errors, thereby enhancing their caution in handling future scenarios and minimizing errors.

There is a need for the organization to implement a performance measurement system. The absence of a structured framework renders it unfeasible to monitor the accomplishments of the workforce or to derive insights from past errors. Continuous analysis and improvement of the overall organizational performance (SHM, 2018).

As an illustration, a periodic examination may be conducted to evaluate the efficacy of employees in upholding safety measures and adhering to regulations. This assessment can identify those employees who demonstrate consistent excellence in their performance. It is suggested that providing a modest incentive or reward to these employees may foster a positive inclination among their peers to emulate their behavior towards promoting wellness.

The consistent adherence to appropriate regulations and a steadfast dedication to safety can ensure the enhancement of a company's safety culture. It is imperative for employees to engage in introspection regarding potential enhancements to the marine

safety culture at the individual level. After comprehending the fundamental elements of a sound marine safety culture, the focus now shifts towards exploring methods to enhance it once it has been established(SHM, 2018).

1.8.THE INFLUENCE OF LEADERSHIP ON THE SHIPPING CULTURE

The shipping industry has a long-standing history that predates all other transportation sectors by many centuries. In the realm of goods transportation, it remains the dominant mode of transport, surpassing rail, automotive, and aviation by a considerable margin. In fact, ships are responsible for transporting 90% of the world's trade. However, a significant portion of this remains concealed from the general public due to vessels being frequently located far away from the shore, and the majority of ports relocating outside urban areas while security measures impede public entry. Analogous to the rail and aviation sectors, infrequent are significant incidents involving passengers in the maritime industry. Incidents of cargo ships colliding or running aground typically do not receive media attention unless they result in significant loss of life, environmental harm, or significant disruptions to major shipping lanes (Kirwan et al., 2021).

It can be contended that shipping accidents are increasingly becoming a topic of public interest, as evidenced by the prominent incidents of the Costa Concordia and the prolonged media coverage of the Ever Given, an ultra-large container ship that caused a blockage in the Suez Canal. However, there is a burgeoning movement within the industry to prioritize safety and cultivate a Safety Culture. It is possible that specific industries, such as the passenger ship sector, possess a heightened awareness that even minor incidents have the potential to result in significant harm to their reputation. Likewise, certain cargo sectors originate from the Chemical and Oil & Gas industries, which possess rigorous Safety Management Systems (SMS) and Safety Culture methodologies. Therefore, it is reasonable to anticipate the transfer of these procedures and customs to the pertinent shipping sector. In a broader sense, prioritizing safety measures is a prudent business strategy that centers on mitigating losses and ensuring uninterrupted business operations. In essence, safety practices are conducive to promoting business success. Given the apparent shift towards prioritizing safety, prompted by both external oversight and internal incentives, it is pertinent to inquire about the potential avenues for enhancing safety on a comprehensive scale throughout the industry. An approach that holds promise is the

advancement of Safety Culture through the adoption of a Safety Learning Culture (Kirwan et al., 2021).

Numerous scholars who have explored the notion of national culture have acknowledged and emphasized Geert Hofstede's cultural dimension model as a valuable instrument for elucidating cultural phenomena. Hofstede's model was originally introduced with four dimensions, but subsequently, two additional dimensions were jointly proposed, which must be taken into account while analyzing the national culture of a society (Hofstede, 2011). Hofstede (2011) identified six dimensions, namely Power Distance, Individualism versus Collectivism, Uncertainty Avoidance, Masculinity versus Femininity, Long-term Orientation versus Short-term Orientation, and Indulgence versus Restraint. The potential impact of national culture on communication has been recognized in the context of leadership. Theotokas and Progoulaki (2007) have observed that this pertains to the manner in which leaders engage with their subordinates and the corresponding reactions of subordinates towards their leaders. The impact of culture on a workplace is a significant consideration for the Merchant Navy, as a substantial portion of the global merchant fleet is operated by crews of diverse cultural backgrounds. According to the MARCOM project conducted in 1999, it was found that nearly 80% of the global fleet is operated by crews consisting of individuals from diverse cultural backgrounds. In recent years, the utilization of the flagging out strategy has led to a noticeable rise in the proportion of multicultural crews in the global labor seafarer market. Moreover, certain shipping enterprises have endeavored to recruit seafarers from emerging and less developed nations, as they typically receive lower remuneration in wages when compared to seafarers hailing from more established maritime countries. The practice of having a crew composed of individuals from diverse cultural backgrounds is not exclusive to the maritime sector. It is widely acknowledged that various industries, such as aviation and space travel, have a tendency to hire crews that are diverse in terms of cultural backgrounds. The scholarly literature pertaining to the composition of multicultural teams aboard the international space station has revealed certain obstacles with respect to the existence of effective leadership. Multicultural crewing has been proposed as a potential factor contributing to a number of accidents within the industry. Progoulaki and Theotokas (2016) have posited that communication challenges among a diverse crew are a significant factor contributing to incidents of

human error in the industry. Studies investigating the matter of communication among multicultural crews have concluded that this issue extends beyond the confines of the vessel and may also manifest between the ship and the onshore office (Progoulaki and Theotokas, 2016). The Cosco Busan, a container vessel, is a well-documented maritime accident that occurred when it collided with a subsection of the San Francisco-Oakland Bay Bridge, as reported by the National Transportation Safety Board in 2009. According to the National Transportation Safety Board's report in 2009, the vessel sustained damage as a result of the incident, resulting in the release of roughly 53,500 gallons of oil into the bay. The National Transportation Safety Board's report in 2009 indicated that there were negative consequences for both the regional economy and the local fauna. The accident was attributed to several factors, including the pilot's health. However, communication was identified as a significant contributing factor, according to the National Transportation Safety Board (2009). According to the National Transportation Safety Board's report in 2009, the vessel was found to have an entirely Chinese crew. However, during the time of the incident, a pilot affiliated with the San Francisco Bar Pilots Association was reported to have been present on the vessel to provide guidance while navigating through the bay. Subsequent to the collision, an inquiry into the accident was conducted, wherein a report was generated utilizing data recordings from the vessel's voyage data recorder. The report highlighted apprehensions regarding the absence of communication between the master and pilot, both upon the pilot's arrival and throughout the vessel's navigation (National Transportation Safety Board 2009). Additional inquiries were raised regarding the master's lack of apprehension towards the pilot's competency, despite the pilot's inquiry about the significance of the red triangles depicted on the electronic chart, which are commonly recognized as symbols denoting the bay's characteristics (National Transportation Safety Board, 2009). Subsequent to the incident, the master expounded in an interview that he presumed the pilot possessed knowledge of the significance of the triangles (National Transportation Safety Board 2009). According to the National Transportation Safety Board (2009), it has been proposed that in the event of the master's concern regarding the pilot's competence, a more proactive strategy in navigating the vessel should have been adopted by the master. According to the National Transportation Safety Board (2009), the report suggests that potential cultural differences between the master and the pilot may have contributed to the master's hesitancy in exerting authority over the pilot. The National

Transportation Safety Board (2009) has identified failures on the part of Fleet Management, the shipping company, which may have contributed to the incident. Specifically, it has been suggested that inadequate training of the crew with respect to the company's safety procedures was a contributing factor. Hayes (1998) provides an additional illustration of a maritime incident involving the Bright Field, a type of bulk carrier. The vessel experienced engine failure while navigating the Mississippi River in December of 1996, ultimately resulting in a collision with a river quay. The incident resulted in multiple injuries, however, there were no reported deaths as per the sources of Hayes (1998) and the National Transportation Safety Board (1998). Furthermore, as reported by the National Transportation Safety Board in 1998, a number of vessels that were docked during the incident incurred slight harm, while the pier, along with its associated hotel, retail establishments, and residential structures, sustained additional damage. The vessel known as the Bright Field was manned entirely by Chinese personnel. However, during the occurrence of the mishap, an American aviator was also present on the ship. Although the loss of power of the vessel was undoubtedly the primary cause of the accident, additional factors such as communication were identified as contributing factors, as noted by the National Transportation Safety Board in 1998. According to the National Transportation Safety Board (1998), the accident reports indicate a lack of communication between the master and the pilot regarding the intended logistics for the voyage. The report states that despite the master and pilot communicating in English, the remaining crew members engaged in communication amongst themselves in Chinese, as per the National Transportation Safety Board in 1998. Consequently, the master remained oblivious to the dialogues occurring among the crew. Another academic article has discussed the aforementioned incident and analyzed the utilization of the term "no." According to Pyne and Koester's (2005) assertion, the term "no" is considered impolite in Chinese culture. Chinese crews have a cultural practice of responding affirmatively, particularly to figures of authority such as pilots, despite being cognizant of the fact that the accurate response is negative. Issues pertaining to communication have also been noted among vessels. According to Pyne and Koester (2005), the Royal Majesty ship encountered a grounding incident on a shoal in Massachusetts in 1995. According to Pyne and Koester (2005), the Royal Majesty was in close proximity to multiple Portuguese fishing vessels during the occurrence of the incident. According to Pyne and Koester (2005), the Royal Majesty

encountered a navigational issue on board, the specifics of which remain unidentified, resulting in a deviation from its intended course. According to Pyne and Koester (2005), the crew members of the fishing boats attempted to communicate their location to the Royal Majesty via radio, but their efforts were disregarded by the crew of the Royal Majesty. According to Pyne and Koester (2005), the crew of the Royal Majesty vessel were not cognizant of the defective navigational apparatus installed on the ship, which led them to assume an erroneous location. It is noteworthy that the aforementioned communication was conducted in the English language. Nevertheless, Pyne and Koester (2005) reported that the fishing vessels made subsequent calls to the Royal Majesty in Portuguese to alert them of the imminent danger. As a result of the presence of a language barrier, it was not possible to comprehend the aforementioned calls, which ultimately resulted in the decision to ground them (Pyne and Koester 2005). The issue of communication barriers resulting from multiculturalism has been observed not only in the context of cargo-carrying vessels, as noted by Theotokas and Progoulaki(2007). During the evacuation of the Skagerak passenger ferry, communication difficulties were encountered. The crew communicated in both Danish and Norwegian while directing passengers to safety, as reported by Pyne and Koester in 2005. According to Pyne and Koester (2005), there were some French passengers on board who were unable to understand the crew's instructions due to the language barrier. It was believed by the passengers that the crew had communicated to them about the ferry's arrival, leading them to prepare instead of gathering with the other passengers at the assembly point. The rescue of all crew members and passengers from the boat notwithstanding, the incident serves as a poignant reminder of the grave consequences that may ensue when instructions are not comprehended due to linguistic disparities (Pyne& Koester, 2005). The maritime industry has witnessed that accidents are caused by power distance among crew members. The Bunga Teratai Satu, a vessel designed for cargo transportation, was reported to have made contact with the Great Barrier Reef resulting in its grounding, as documented by Pyne and Koester in 2005. According to Pyne and Koester's (2005) findings, the occurrence of the accident was attributed to a navigational error made by an able seaman. Although the able seaman possessed extensive years of experience at sea and was adept at plotting the ship's GPS position, their familiarity with charting symbols was limited, as noted by Pyne and Koester (2005). During the period preceding the occurrence, the able seaman was entrusted with the task of navigation in solitude,

while the mate engaged in a personal telephonic conversation (Pyne and Koester 2005). According to Pyne and Koester (2005), the able seaman was not cognizant of the perilous trajectory of the vessel. Regrettably, when the mate eventually returned, it was already too late to remedy the error made by the able seaman. Pyne and Koester (2005) reported that accident investigators observed a rigid hierarchy among the senior Pakistani officers and the junior officers and crew from Malaysia, Indonesia, and Myanmar in the aftermath of the accident. According to Pyne and Koester's (2005) research, it was deemed significant within the crew's national culture that the AB refrained from challenging the decisions of their superior, despite being aware of any potential issues. Navigating a vessel with a crew from diverse cultural backgrounds presents a significant obstacle in terms of leadership. Specifically, the primary challenge involves motivating and inspiring individuals who hold distinct work-related values and beliefs. Consequently, this underscores the significance of cultural awareness for leaders and managers who are navigating or supervising a team comprising individuals from diverse cultural backgrounds. The implementation of safety measures is closely linked to safety leadership and management, with leadership being identified as a crucial factor in this regard. The literature contains documented evidence of the correlations between leadership, management, and safety. According to Lu et al. (2016), leaders are acknowledged as the primary drivers responsible for establishing and shaping the safety culture that is practiced within the workplace. According to Lu et al. (2016), previous research has demonstrated that employees' perceptions of their leaders' and supervisors' dedication to safety can serve as a predictor of employees' inclination to report safety concerns in the workplace. Hence, the efficacy of a leader's leadership shall have a pivotal role in ascertaining the safety culture that is practiced. The implementation of a good safety culture in the workplace is heavily reliant on the demonstration of effective and positive leadership skills by leaders (Broadhurst, 2017).

1.9.THE ROLE OF SAFETY LEADERS IN SHIPPING.

The significance of safety in the shipping industry cannot be overstated, given that human error accounts for an estimated 70-80% of accidents in this sector, as reported by Storgard et al (2013).A significant proportion of maritime vessel accidents, ranging from 13% to 28%, are attributed to collisions. These incidents are primarily triggered by human error and technical malfunctions. As previously indicated within

this analysis, a number of incidents have been attributed to communication difficulties amongst crews of diverse cultural backgrounds. It is noteworthy that communication issues may also emerge among crew members who share the same nationality (Broadhurst, 2017).

Consequently, there has been an increasing emphasis within the industry to decrease this figure. Numerous directives and policies have been instituted to tackle safety at sea, including the STCW convention, SOLAS (Safety of Life at Sea), and the ISM (International Safety Management) code. According to Oltedal and McArthur (2011), the development of an efficient safety culture in the maritime industry is significantly influenced by management characteristics and leadership at all levels of the organization, both onshore and shipboard. These factors are considered major enablers and barriers in this context (Broadhurst, 2017). The Maritime and Coastal Agency has recognized the significance of upholding leadership attributes to ensure effective safety measures on-board. The correlation between accidents in the industry and perceived pressure from management, whether it is overt or covert, has been posited. The pressure experienced by crew members may manifest in the form of meeting company-imposed deadlines and expectations, potentially resulting in the substitution or omission of safety procedures on board to achieve established objectives. The perceived on-board pressure experienced by a company is likely to stem from commercial and financial pressures. According to Pike et al's (2015) study on safety culture in the workboat and offshore support vessel (OSV) sectors, it was discovered that in the offshore sector, a significant percentage of respondents (78%) believed that commercial pressure had an impact on safety on-board. According to Chauvin et al. (2013), it has been proposed that the Torrey Canyon, a supertanker that collided in 1967 and spilled numerous tons of oil along the coasts of Britain and France, was responsible for the aforementioned environmental damage (Broadhurst, 2017). According to Chauvin (2011), the decision made by the Captain of the Torrey Canyon to take the shortest and most perilous route to Milford Haven was motivated by the desire to arrive at the destination as quickly as possible and to benefit from a high tide coefficient that would enable him to dock. Failure to seize this opportunity would have resulted in a potential delay of five days before being able to enter the bay. The incident involving the Herald of Free Enterprise in 1987, a ro-ro ferry en route from Zeebrugge to Dover, resulted in the loss of 188 lives. The cause of this

tragedy was attributed to the company's pursuit of greater profits in a highly competitive and aggressive business environment, as stated by Chauvin (2011) and Gouliemos and Gouliemos (2005). The post-accident investigation identified multiple factors that could have potentially contributed to the accident, as noted by Gouliemos and Gouliemos (2005). According to Gouliemos and Gouliemos (2005), the objective of the organization was to accomplish the crossing in the least amount of time feasible. Also, post-accident reports indicated that there existed managerial pressure to curtail the duration of the ship's stay in port. As stated byGouliemos and Gouliemos (2005), the reason for the boat's early departure was attributed to the anticipation of potential delays upon arrival at Dover (Broadhurst, 2017). Consequently, the vessel was compelled to embark fifteen minutes ahead of schedule. Furthermore, owing to the imperative need for prompt crossing, apprehensions were raised subsequent to the mishap as the vessel purportedly navigated at an elevated velocity, engendering substantial undulations that resulted in the ingress of water onto the vessel. The incident was exacerbated by the inaction of the assistant bosun who, according to reports, was allegedly asleep during the time of departure and neglected to secure the bow doors (Gouliemos and Gouliemos 2005). Subsequent to the incident, inquiries were made regarding the level of accountability demonstrated by the onshore administration, as noted by Gouliemos and Gouliemos (2005). According to Gouliemos and Gouliemos (2005), the prioritization of quick crossings may have resulted in the neglect of safety measures. The incident in question was identified as a contributing factor in the development of the ISM code, as reported by Chauvin et al (2013). The culture of reporting that is practiced by crew members is a crucial determinant of safety. There are various factors that can impact the propensity of individuals to report incidents that occur on-board. According to Pike et al. (2015), a study conducted in 2015 that investigated safety culture in the offshore industry revealed that the reporting culture was impacted by a deficiency of trust, which included the possibility of negative consequences following reporting. The perception of a leader on-board has an impact on the reporting culture within the organization, particularly in the context of leadership. According to Oltedal and McArthur's (2011) study, a leadership approach in which the manager is viewed as a positive role model and ensures that all on-board work is conducted safely is correlated with a higher reported frequency of safe practices. According to Pike et al's safety study conducted in 2015, additional results indicated that a significant proportion of participants who

were surveyed in the OSV industry expressed that their onboard management exhibited supportive behavior towards the crew (Pike et al., 2015). Pike et al. (2015) found that a significant proportion of the participants in their survey expressed their willingness to report safety issues if they perceived the on-board management to be approachable (Broadhurst, 2017).

CHAPTER2-SAFE AND SUSTAINABLE SHIPPING

2.1.INTRODUCTION

The significance of safety leadership cannot be overstated in industries that are prone to high-risk situations, such as shipping. Inadequate safety leadership in such industries can lead to marine accidents, which can result in various negative outcomes, including injuries, fatalities, property damage, and environmental pollution. Establishing positive human relations and promoting crew satisfaction are crucial elements of proficient safety leadership, as they are deemed essential prerequisites for fostering efficient teamwork (Hasanspahić et al., 2021).

The profession of seafaring is characterized by distinct features such as extended periods of separation from one's family and laboring in a challenging maritime setting. In addition to the practice of social distancing from loved ones, seafarers are subject to a range of occupational hazards in the course of their daily duties, compounded by the fact that they live and work in close quarters with a limited group of individuals while at sea. In order to effectively manage the various challenges encountered at sea, it is imperative that seafarers possess adequate preparation, education, and training. Collaborative efforts are typically required for shipboard operations, necessitating a high level of linguistic proficiency among seafarers to facilitate effective communication. A merchant cargo ship typically comprises multiple departments, including but not limited to the deck, engine, and galley departments (Kim &Gausdal, 2020).

The seafarers are categorized into teams within the respective departments to carry out their routine tasks. For optimal efficacy and safety, it is customary for each team to designate a leader, typically the officer with the highest rank among the team members. The prevailing assumption is that the leader of a team possesses the highest level of experience and competence among its members. The individual holding the position of master assumes the role of the highest-ranking officer responsible for overseeing all shipboard teams. Given that ensuring the safety of individuals is of paramount importance, it is imperative that all teams operating on board ships function optimally and collaborate effectively to execute tasks in a secure and

efficient manner. A proficient leader of a team should facilitate secure and efficient work execution. A skilled shipboard leader should oversee the performance of all teams on the vessel and assume accountability for their actions and well-being (Hasanspahić et al., 2021).

The human factor is the primary contributor to safety concerns in shipping, as approximately 80% of marine accidents are attributed to human error. The term "human error" can be characterized as a departure from anticipated human performance, whereby the individual responsible for determining whether an error has occurred must possess a set of criteria for distinguishing between what constitutes an error and what does not. The aforementioned differentiation pertains to the scope of analysis, specifically whether the focus is solely on human behavior or on the overall functioning of the human-machine system. Stated differently, it is imperative for the seafarer to possess the requisite knowledge and skills to execute their tasks with due regard for safety and efficacy (Hasanspahić et al., 2021).

The responsibility of elucidating the aforementioned information to the seafarer lies with the team leader. According to research, deficiencies in leadership abilities, insufficient task-related data, and ineffective communication are frequently associated with the occurrence of human errors and accidents. The introduction of novel technologies in the shipping industry has necessitated human-machine interaction, thereby leading to a surge in errors of a technological nature. Smart technologies have the potential to mitigate human error and enhance human performance. The implementation of augmented reality technology has the potential to facilitate operator training in real-time, thereby reducing the incidence of human errors resulting from the improper execution of basic tasks. The dependability of humans in intricate socio-technical systems is contingent upon various factors that delineate the essential conditions for errors. The aforementioned are identified as performance-shaping factors (PSF), which can be classified into three distinct categories, namely external factors, internal factors, and stress factors. The behavior of leaders can be classified as an internal factor as it has an impact on the motivation and behavior of individuals (Hasanspahić et al., 2021).

Shipboard leadership has been identified as a potential weakness during emergency situations, and effective teamwork and resource management are crucial for

addressing this issue. There exist a multitude of instances of maritime mishaps resulting from inadequate leadership practices aboard ships. An instance of a maritime mishap is the grounding of the motor tanker Ovit, which was attributed to inadequate onboard management and substandard leadership on the part of the vessel's captain. The lack of effective leadership practices hindered the development and implementation of a safety culture on board. An additional instance pertains to the blaze that transpired on the motor vessel Celtic Carrier, whereby the inadequacy of leadership from senior officers, particularly during the course of firefighting operations, was the root cause. The inadequate leadership led to a state of confusion among the team responsible for firefighting on board the ship. The Costa Concordia cruise ship incident is a widely recognized illustration of inadequate leadership, resulting in 32 fatalities and marine pollution due to microplastics following the removal of the wreckage. Two individuals are still unaccounted for. The inadequate leadership demonstrated by the master had a negative impact on the safety culture aboard the vessel, leading to subpar performance by the bridge team and habitual noncompliance with established protocols and guidelines. An instance of significant harm to the marine ecosystem occurred in the recent past due to the grounding of the motor vessel Wakashio, leading to a substantial oil spill in the coastal region of Mauritius. Although the formal accident investigation is still ongoing, the internal post-accident investigation conducted by the company has identified complacency and lack of situational awareness as factors that contributed to the incident. Additionally, the investigation revealed that there was an insufficient safety culture on board the ship. The successful mitigation of these contributing factors could have been facilitated through the implementation of effective safety leadership on board each vessel (Hasanspahić et al., 2021).

The International Maritime Organization (IMO) has implemented obligatory proficiency criteria for leadership, human relations, and teamwork abilities at both the managerial and operational tiers, with the aim of averting substandard leadership and insufficient human relations. The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978, as amended, is responsible for regulating the competence standards required for the certification of watchkeeping officers and engineers. In accordance with the Standards of Training, Certification, and Watchkeeping (STCW) requirements, the International Maritime

Organization (IMO) has implemented model courses to assist training providers in creating leadership training programs that effectively address the subject matter. In addition to the STCW convention, certain shipping companies have implemented customized training requirements pertaining to leadership and teamwork, which are not mandatory. Senior and junior officers who lead shipboard teams participate in onshore training programs to equip themselves with the necessary skills for proficient leadership and interpersonal communication. Notwithstanding, the efficacy of these instruments is contingent upon the presence of competent leadership aboard ships. Therefore, it is incumbent upon the masters of ships to ensure that adherence to all levels of compliance is attained (Kim &Gausdal, 2020).

Despite the expectation that crewmembers possess adequate training and education, and that their leaders prioritize safety as the foremost concern, incidents involving human factors as a contributing factor continue to occur. Insufficient leadership is significantly associated with substandard human relations and teamwork, and is identified as a contributing factor to human error in the maritime industry (Senders & Moray, 2020). Therefore, additional investigation is warranted to explore this subject matter. In order to effectively tackle said matter, it is imperative to provide a comprehensive elucidation of the concepts of "leadership" and "safety leadership". As per the International Maritime Organization's (IMO) definition, leadership is characterized as a procedure wherein a specific group of individuals, under the influence of an individual, endeavors to accomplish a shared objective (Hasanspahić et al., 2021).

Apart from ensuring safety and environmental conservation, proficient safety management practices have a favorable impact on the financial performance of a company's operations. The positive impact of safety behavior and attitudes on employees is evident in the prevention of injuries and lost time due to injuries, while simultaneously enhancing productivity. The enhancement of productivity and the safeguarding of human lives and the environment are mutually reinforcing. Hence, enterprises that uphold elevated safety protocols tend to exhibit proficient management practices (Hasanspahić et al., 2021).

2.2.INTRODUCTION THE HISTORY OF SAFETY AT SEA

Since ancient times, individuals have had to negotiate and come to agreements on various matters in order to improve their quality of life. The Code of Hammurabi is considered to be among the earliest legal codes in existence and is believed to have been compiled during the initial years of the reign of Hammurabi, the Babylonian monarch who ruled from 1792 to 1750 B.C. It establishes clear and definitive regulations for the organization of society. The Code is renowned for advocating for proportional retribution (lex talionis) based on social status differentiation. The laws in question encompass a variety of topics, including but not limited to: rental agreements, the status of women, inheritance regulations, and labor standards. The process of creating a legal code, such as standards, can be regarded as a form of codification. They have been in existence since the inception of documented history. Several of them were established through official proclamations issued by the monarchy. In 1120 AD, King Henry I of England implemented a standard unit of measurement known as the ell. This unit was defined as the length of the king's arm. Throughout the course of human civilization, agreements have been established to regulate the various modes of communication utilized by individuals. In order to enhance their agility, individuals had to consolidate their efforts, such as through the implementation of railways. The advent of the railroad system provided a swift, cost-efficient, and efficacious mode of transporting commodities across vast distances. During the nineteenth century, England had a total of 70 railways that utilized varying gauges. During the 19th century, the Portland Company was involved in the construction and maintenance of locomotives and cars across a range of five to six distinct track gauges. The attainment of this feat was facilitated by the standardization of the railway gauge, which instituted a consistent measurement between two parallel rails on a railway track. During the 19th century, the initial international organizations focused on the consolidation and establishment of uniformity in transportation methods. Around the same period, there emerged a necessity to establish a global organization that would address the domain of shipping, particularly its safety-related facets. The unification of tonnage measurement was identified as a crucial undertaking, which had been a persistent issue for the shipping sector since the inception of shipbuilding. Another responsibility assumed was to oversee safety measures pertaining to maritime commerce. The profession of seafaring has historically been regarded as one of the most perilous vocations. For centuries, it was

widely believed that the immense power of the sea and the unpredictable nature of weather conditions posed significant challenges to enhancing the safety of shipping. In the 19th century, there was a shift away from the previously prevalent almost fatalistic mindset. The advent of the steam engine resulted in a reduced dependence of ships on natural elements such as wind and tide. Simultaneously, there was a surge in maritime trade and a substantial migration of individuals from one continent to another. The occurrence of catastrophic incidents resulting in the loss of numerous lives prompted calls for intervention, leading to the formulation of various global treaties and accords. A number of nations suggested the establishment of a lasting global entity to enhance the effectiveness of maritime safety promotion. However, it was not until the formation of the United Nations that these aspirations were actualized (Wieslaw, 2012).

2.3.THE ESTABLISHMENT OF THE FIRST REGULATIONS FOR THE PREVENTION OF ACCIDENTS AT SEA.

In 1948, the United Nations held a conference in Geneva with the purpose of discussing the creation of an organization that would address matters related to global shipping. On the 6th of March in 1959, the conference was concluded with the adoption of a convention that established the International Maritime Organization (IMO) as the specialized agency of the United Nations. The adoption was deemed successful. The principal objective of this organization is to establish and uphold an all-encompassing regulatory structure for the shipping industry. Its current scope of responsibility encompasses a wide range of areas, including but not limited to safety, environmental protection, legal affairs, technical collaboration, maritime security, and shipping efficiency. The International Maritime Organization (IMO) has facilitated the attainment of its goals by advocating for the implementation of over 40 conventions and protocols, as well as endorsing in excess of 700 codes and recommendations pertaining to maritime safety, pollution prevention, and other associated issues. The IMO documents encompass numerous provisions pertaining to diverse technical facets of the aforementioned subjects. A significant number of them comprise the safety regulations for ships. Prior to their application on ships, it is necessary to generate, prepare, and document them. The focus of this paper pertains to the precise origins of safety requirements for ships. The International Maritime Organization (IMO) forum is responsible for the development of ship safety

requirements, which originate from diverse sources. The nature of the International Maritime Organization's actions may vary between reactive and proactive, depending on the sources cited. Reactive actions are implemented in response to a specific observed situation, while proactive actions entail taking action in anticipation of a future situation, rather than merely reacting. The concept entails assuming command and actively initiating actions, as opposed to passively adapting to circumstances or anticipating events (Wieslaw, 2012).

2.4.DEVELOPMENT AND INTERPRETATION OF ARTICLE 10 OF ISM CODE

Given that shipping is a global enterprise, it has been widely acknowledged that the most effective approach to enhancing safety at sea is through the establishment of international standards that are adhered to by all nations involved in shipping. Beginning in the mid-19th century, several treaties of this nature were ratified. Following the tragedy of the Titanic, there was a heightened awareness of the significance and immediacy of establishing global regulations. The inaugural iteration of the International Convention for the Safety of Life at Sea (SOLAS) was ratified in 1914 (Grigorakos – Stathakis, 2002).

Alternative iterations were formulated in the years 1929 and 1948. The International Maritime Organization (IMO) was formally established in 1948 through the adoption of a convention at an international conference held in Geneva. The aforementioned organization came into effect in 1958 and convened for its inaugural meeting in the subsequent year. In 1959, the International Maritime Organization (IMO) was established to undertake the development of international regulations and legislation pertaining to marine safety and pollution prevention. Since 1969, the International Maritime Organization (IMO) has advocated for the implementation of approximately 40 conventions and protocols, in addition to adopting over 700 codes and recommendations pertaining to maritime safety, pollution prevention, and associated topics. Furthermore, the International Maritime Organization (IMO) has implemented several significant recommendations. The aforementioned guidelines have addressed various issues, including but not limited to the implementation of traffic separation schemes, the incorporation of technical manuals, the utilization of the IMO Search

and Rescue Manual and the IMO Manual on Oil Pollution, crew education, the establishment of performance standards for ship-borne equipment, and numerous additional responsibilities. Guidelines are available to facilitate the implementation of specific conventions and instruments. The International Safety Management (ISM) Code, which was adopted by the International Maritime Organization (IMO) through resolution A.741, is recognized as the International Management Code for ensuring the secure operation of ships and preventing pollution. Upon the adoption of the ISM Code, a significant number of individuals expressed skepticism towards its efficacy, deeming it to be merely a symbolic document and a catalyst for the proliferation of certificate printing enterprises. The ISM Code is primarily concerned with addressing deficiencies in safety management that have the potential to result in significant human element issues, while also aiming to enhance safety and minimize pollution resulting from maritime vessels. The introduction of the ISM Code has not resulted in the establishment of novel technological benchmarks for safety. Nevertheless, it has significantly influenced the management and operation of shipping enterprises. The implementation of this technology represents a significant advancement in safety within the shipping industry (Grigorakos – Stathakis, 2002).

As per the provisions outlined in Article 10 of the ISM code, it is recommended that the organization implement protocols within its safety management framework to detect machinery and technological infrastructures that may pose a risk of perilous circumstances in the event of an abrupt operational malfunction. The safety management system ought to incorporate targeted measures intended to enhance the dependability of said equipment or systems. It is recommended that measures be taken to incorporate the periodic testing of standby arrangements, as well as technical systems and equipment that are not in constant operation. In order to adhere to the requirements outlined in section 10.3, it is necessary for the Company to establish and execute a structured protocol that outlines the steps involved in generating a comprehensive inventory of equipment and technical systems. This inventory should identify those items whose unexpected malfunction could potentially lead to dangerous circumstances. The delineation and specification of duties pertaining to the identification of crucial equipment ought to be established and communicated within the procedural framework (Grigorakos – Stathakis, 2002).

Once critical equipment has been identified, it is imperative to implement measures to guarantee operational dependability, such as establishing safeguards or utilizing backup arrangements in the event of unforeseen operational failure. It is imperative to incorporate precise measures that entail periodic testing of standby equipment or technical systems that are not in constant operation. Additional measures to ensure safety and security could include the following:

- Periodic evaluation of alarm system operations.
- The implementation of regular maintenance procedures for vital components to prevent potential failures.
- The implementation of alternative activation of standby arrangements (Grigorakos – Stathakis, 2002).

2.5.THE BACKGROUND OF ISM CODE

The International Safety Management (ISM) Code, which pertains to the secure operation of ships and the prevention of pollution, was ratified through the adoption of IMO resolution A.741. Upon the adoption of the ISM Code, there existed a considerable amount of skepticism among individuals who regarded it as a mere "piece of paper" and a catalyst for the proliferation of certificate printing enterprises. The International Safety Management (ISM) Code is primarily concerned with addressing deficiencies in safety management that have the potential to result in significant human-related issues. Its overarching objective is to enhance safety measures and mitigate environmental pollution stemming from maritime vessels. The implementation of the ISM Code has not resulted in the establishment of a novel technological criterion for safety. However, it has significantly influenced the management and operation of shipping enterprises. The implementation of this technology represents a significant advancement in safety within the shipping industry. The genesis of the ISM code can be traced back to the prevalent notion that the optimal practices and structured management systems employed by well-organized shipping enterprises were markedly distinct from the practices of certain proprietors who had relinquished any semblance of sound operational standards. The significance of the ISM Code lies in its emphasis on the accountability of management for safety and its comprehensive delineation of the nature of this

responsibility. Historically, certain corporations conveyed the notion that the safety of vessels rested solely on the shoulders of the captain, whereas the duties of the directors were confined to the more comprehensible objective of generating profits(Grigorakos – Stathakis, 2002).

2.6.THE CONTENTS OF THE ISM CODE

The International Safety Management (ISM) Code explicitly states that the term "human element," which has traditionally been construed as pertaining solely to seafarers, encompasses individuals on land as well. In the event of an accident, the ensuing inquiry frequently reveals errors committed not only by the personnel on board but also by the entity responsible for the vessel's operation. This also indicates that the level of communication and collaboration between companies and seafarers was suboptimal. The compulsory implementation of the Code is expected to facilitate the elimination of certain errors and enhance the accountability of those who committed them, surpassing the current level of responsibility. The Code comprises of eleven regulations or mandates, which necessitate the establishment of policies and procedures by the organization for the onshore assistance of the maritime activities, thereby ensuring adherence. The regulations or prerequisites solely pertain to the procedures established by the company to guarantee sufficient guidance for addressing a maritime emergency, as well as the appropriate implementation of measures to prevent ship loss, harm to individuals aboard, and environmental pollution(Grigorakos – Stathakis, 2002).

2.7.THE NEED FOR EXISTENCE OF INTERNATIONAL REGULATIONS

The development of ship technical requirements has been marked by significant milestones, which have been characterized by the occurrence of disasters involving passenger vessels such as the Herald of Free Enterprise and Estonia. The Herald of Free Enterprise was a vessel designed for the transportation of both automobiles and passengers, utilizing a roll-on roll-off (RO-RO) system. On the evening of March 6th, 1987, a ferry departed from the port of Zeebrugge in Belgium and tragically capsized, resulting in the loss of 193 individuals who were passengers or crew members. During the incident when the ferry overturned, it was reported that the vessel was operating on the route connecting Dover and Zeebrugge. The route taken was atypical for the individual in question, and the linkspan located at Zeebrugge was not purpose-built to accommodate vessels of this particular class. The utilized linkspan was composed of a

solitary deck, thereby precluding the possibility of concurrent loading of both the lower and upper decks. The elevation of the ramp was insufficient to align with the upper deck, as a result of the occurrence of elevated spring tides during that period (Wieslaw, 2012). This was a widely recognized issue that was resolved by strategically loading the front of the ship to create a heavier bow. Under such circumstances, it is plausible that the linkspan may align with the elevation of the upper deck. Prior to releasing the moorings, it was customary for the Assistant Boatswain to shut the bow doors. Nonetheless, the Assistant Boatswain had briefly paused from their duties of tidying the car deck upon reaching the port of Zeebrugge. Upon the sounding of the harbor-stations call and the ship's release of its moorings, the individual had already retreated to their cabin and remained in a state of slumber. Typically, the First Officer would remain on the deck to ensure the closure of doors; however, in this instance, the officer had relocated to the wheelhouse to maintain adherence to the established timetable. The Captain inferred that the doors were shut, as they were not visible from the wheelhouse owing to their design and lacked any corresponding signal lights within the wheelhouse. Upon departure from Zeebrugge, the vessel attained a velocity of 18.9 knots, and approximately 90 seconds thereafter, a significant influx of water was observed in the car deck. The destabilization of the system was caused by the resultant free surface phenomenon. Within a brief time frame, the vessel commenced tilting towards the port side at an angle of 30 degrees. The vessel momentarily regained its upright position before subsequently tilting towards the left side and ultimately overturning (Hesse, 2013). The ingress of water expeditiously infiltrated the electrical systems of the vessel, resulting in the simultaneous failure of the primary and backup power sources, thereby rendering the ship devoid of illumination. In response to the aforementioned incident, the International Maritime Organization (IMO) implemented new regulations that prohibit the presence of an open (undivided) deck of comparable length on a passenger Roll-On/Roll-Off (RO-RO) vessel. Furthermore, various enhancements have been implemented in the configuration of this category of watercraft, such as the installation of gauges that exhibit the condition of the bow doors on the navigational area, the incorporation of water-resistant ramps in the bow segments located at the fore of the vessel, and the integration of "freeing flaps" that permit the drainage of water from a car deck in case of inundation (Wieslaw, 2012).

2.8.PURPOSE OF THE ISM CODE

The International Safety Management (ISM) Code has been developed with the aim of establishing a comprehensive framework of accountability for all personnel both on board vessels and on shore. The original architects of the Code had initially aimed to establish a system of responsibility through the implementation of a documentation-based safety framework. As per a commentary pertaining to the ISM Code, the objective is to adhere to the principles of "verbalize your actions", "execute what is documented", and "maintain a record of it". Thus, it is imperative for every shipping enterprise to establish a Safety Management System (SMS) that encompasses comprehensive record-keeping of all shipboard and shore-based operations. Instances of "deficiencies" and "non-conformities" are documented, and a comprehensive internal auditing mechanism is established. The DPA is responsible for reporting a significant portion of the data generated through SMS to upper management(Grigorakos – Stathakis, 2002).

Can the efficacy of this safety system, which relies on documentation, be verified? In an ideal scenario, the implementation of such a system would establish a safeguarded setting wherein all individuals are shielded. This would entail the meticulous documentation of all pertinent information, including the candid identification and resolution of any shortcomings or deviations from established standards. Consequently, all parties involved would be exempt from any apprehension or anxiety stemming from the documentation itself. If the Code operates as intended, all individuals will be held responsible, and the ability to deny unrecorded and unfavorable information will become obsolete. From a legal perspective, this system has the potential to pose challenges for even the most scrupulous and transparent shipping enterprises. Evidently, records pertaining to past deficiencies and deviations, despite their subsequent rectification, afford the adversary a chance to cast aspersions on the ship proprietor. The absence of ISM Code documentation could potentially impede the identification of pre-existing shortcomings. Deniability can be perceived as a means of disavowing culpability for a negative occurrence, particularly in terms of ensuring safety. The capacity to refute an unproven fact presented by the opposing party can be a crucial aspect of a strong defense in a legal proceeding. Moreover, while legal proceedings encompass the application of law, typically it is the factual evidence that ultimately determines the outcome of a case. Proficient legal

practitioners have the ability to obscure or manipulate the evidence in a manner that portrays the opposing party unfavorably(Grigorakos – Stathakis, 2002).

This phenomenon takes place within the documents and oral testimony that are presented during the trial. The ISM Code is expected to play a significant role in the context of litigation as it is believed that the production of fewer documents by a party would limit the opportunities for a skilled cross-examiner to challenge a witness effectively. If all the information recorded in an SMS was accurate, truthful, and meticulously composed, and if every staff member, from the least experienced crew member to the captain, was an impeccable witness whose account would precisely match the records generated in accordance with the SMS, then conceivably, there would be no hazards concealed within the SMS documentation. Nevertheless, it is inevitable that there will be discrepancies within the records. Certain documents may lack sufficient information, while others may contain an excessive amount of detail. Given the inherent characteristics of human nature, it is likely that outcomes will be manipulated or presented in a more favorable light than their actual state. While some individuals may exhibit complete sincerity, their portrayal of the situation may be pessimistic. The documentation related to the International Safety Management Code (ISM) is comprehensive and can potentially provide ample material for a proficient cross-examiner to cast doubt on the integrity of even the most upright ship's officer. Credibility questions may arise as a result of inconsistencies and inadequacies that are identified by a diligent attorney during the discovery process. The presence of multiple inconsistencies, which may be deemed unavoidable, has the potential to undermine an entire legal case(Grigorakos – Stathakis, 2002).

2.9.OBJECTIVES OF THE ISM CODE

The International Safety Management Code (ISM Code) is a globally recognized management code that ensures the safe operation of ships and the prevention of pollution. It was adopted by the International Maritime Organization (IMO) assembly. The International Safety Management (ISM) Code was ratified in November of 1993 and subsequently implemented in July of 1998. This provision is included within the framework of SOLAS Chapter IX, which pertains to the management of ships for the purpose of ensuring their safe operation. The most recent revised iteration became effective as of January 1st, 2015 (EduMaritime, 2023).

The primary aims of the International Safety Management (ISM) Code are to guarantee maritime safety, avert human casualties and fatalities, and mitigate harm to the environment, marine ecology, and assets. The primary objective of the ISM Code is to foster and promote the cultivation of a safety culture within the maritime sector. It is possible for companies or vessels to adhere to the Code on a voluntary basis (EduMaritime, 2023).

2.10.THE BODIES INVOLVED IN THE ADOPTION, MAINTENANCE AND IMPLEMENTATION OF THE ISM CODE

In order to obtain ISM certification, an entity is required to exhibit compliance with the purpose and operational criteria of the ISM code. It is recommended that all companies establish, execute, and uphold a Safety Management System (SMS) manual that outlines the company's management system for ensuring the secure operation of vessels and preventing pollution.

The functional requirement encompasses the delineation of personnel responsibilities and the requisite procedures for achieving the objectives of the ISM Code. It is imperative for the management to conduct periodic evaluations of the system and implement necessary modifications to ensure adherence to all pertinent laws and regulations (EduMaritime, 2023).

2.11.THE WORK OF IMO (INTERNATIONAL MARITIME ORGANIZATIONS) CREATOR OF ISM

The introduction of the International Safety Management (ISM) Code is widely regarded as the most significant outcome resulting from the capsizing of the Herald of Free Enterprise. The mandatory implementation of the Code was acknowledged by the IMO Assembly due to its potential positive influence on safety and pollution prevention. The ISM Code was incorporated into SOLAS 1974 as a means to effectively attain this objective, as determined by the Assembly. The year 1994

marked an amendment to SOLAS, wherein Chapter IX was introduced, titled 'Management for the Safe Operation of Ships'. The Code has been established as a compulsory requirement for vessels carrying passengers, high-speed craft, oil tankers, cargo ships, and mobile offshore drilling units weighing 500 gross tonnage or more. The ISM Code has been designed with the primary objective of setting forth the fundamental criteria for ensuring safety management and operation of ships, as well as for preventing pollution, by establishing the minimum standards. The Code aims to achieve several objectives, including but not limited to ensuring maritime safety, mitigating the risk of human injury, preventing harm to the environment, and minimizing damage to property. The Code offers a general structure for vessel owners and operators to adhere to current regulations and codes, enhance safety measures, and establish preventive measures against all discernible hazards. It does not generate particular operational rules and regulations (Hesse, 2013). The Estonia was a vessel designed to transport both automobiles and passengers, which was constructed in the year 1980. On the 28th of September 1994, a vessel sank in the Baltic Sea, resulting in the loss of 852 lives. This event stands out as one of the most fatal maritime disasters of the latter part of the 20th century. As per the conclusive disaster report, adverse weather conditions were observed, characterized by a wind of magnitude 7-8 on the Beaufort scale and a noteworthy wave height ranging from 3 to 4 meters. This stands in contrast to the maximum recorded significant wave height in the Baltic Sea, which was 7.7 meters. As per the official report, the precise velocity of the Estonia vessel during the accident remains uncertain. However, it is noteworthy that the ship had consistent voyage durations, with an average speed of 16-17 knots. This observation may suggest that the vessel did not decelerate in response to unfavorable weather conditions. During nighttime, the bow visor became detached, causing the vessel to experience a significant starboard inclination. This mechanism permits the bow to move in an upward and downward direction, thereby facilitating entry to the cargo ramp and storage deck located in close proximity to the water level. The vessel experienced a sudden shift of approximately 30 to 40 degrees towards the starboard side, resulting in hazardous conditions for movement within the ship. According to the official report, the accident was attributed to the malfunctioning of the locks on the bow visor, which succumbed to the pressure exerted by the waves. The detachment of the visor from the vessel resulted in consequential impairment to the ramp that provided coverage to the aperture leading to the automobile deck situated

posterior to the visor. The ingress of water into the car deck resulted in the destabilization of the vessel, thereby initiating a catastrophic sequence of events. The introduction of new SOLAS regulations pertaining to RO-RO passenger ships was a direct result of the aforementioned disaster. The primary modifications pertain to ship stability, which aims to guarantee that vessels that have sustained damage possess adequate buoyancy to remain afloat. Additionally, the installation of public address systems, comprehensive documentation of passenger particulars, and the establishment of a designated helicopter pick-up or landing zone are also crucial alterations. Furthermore, the incident in Estonia demonstrated that the utilization of solely lifeboats and life rafts was insufficient in terms of preserving human lives. Consequently, a novel regulation was implemented. According to the regulation, it is mandatory for all RO-RO passenger vessels to possess a fast rescue boat. Instances of oil spills resulting from accidents typically involve vessels such as the Torrey Canyon, Amoco Cadiz, Exxon Valdez, Erika, and Prestige. The Torrey Canyon, a vessel with a cargo capacity of 120,000 tons of crude oil, experienced a shipwreck that resulted in an environmental catastrophe. During that period, the tanker had the distinction of being the most colossal vessel to have ever been wrecked. The Torrey Canyon vessel collided with Pollard Rock on Seven Stones reef, situated between the Cornish mainland and the Scilly Isles, on 18 March 1967, as a result of a navigational error. According to the inquiry, the ship's captain was found culpable for opting for a shorter route in order to expedite the journey to Milford Haven. The calamity brought about several alterations in global regulations, such as the implementation of stringent liability on ship owners without the requirement of proving negligence, as well as the establishment of the International Convention for the Prevention of Pollution from Ships in 1973. These modifications were evident in the Civil Liability Convention (CLC) of 1969. On March 16, 1978, the Amoco Cadiz, a VLCC, grounded on Portsall Rocks, located 3.1 nautical miles off the coast of Brittany, France. The vessel subsequently fractured into three parts and sank, resulting in the most significant oil spill of its kind up to that point in history. The vessel experienced a loss of helm response due to the impact of a substantial wave on its rudder. Consequently, the aforementioned issue arose as a result of the fracture of the thread studs located in the steering gear, leading to a depletion of the hydraulic fluid. The primary factor contributing to the occurrence of this calamity was the failure of the steering mechanism, which was a singular system. The calamity resulted in several

modifications to global regulations, such as the implementation of duplicate steering mechanisms (Joseph &Dalaklis, 2021). The incident that occurred on March 24, 1989 involved the grounding of the Exxon Valdez oil tanker on the Bligh Reef, which resulted in a rupture of the vessel's hull. According to the National Transportation Safety Board's report, several factors contributed to the incident involving the Exxon Valdez. These factors include the third mate's inadequate handling of the vessel, which may have been influenced by fatigue and a heavy workload. Additionally, the master's failure to maintain proper navigation watch may have been due to alcohol impairment. The report also highlights the Exxon Shipping Company's lack of oversight in ensuring that the master was properly supervised and that the crew was adequately rested. Finally, the report notes the failure of the U.S. in addressing the risks associated with transporting oil in Prince William Sound. The Coast Guard is tasked with providing an efficient vessel traffic system, however, there exists a deficiency in the provision of adequate pilot and escort services. The Exxon Valdez incident resulted in significant modifications to the International Maritime Organization's regulatory framework. These revisions included the implementation of mandates such as the requirement for double hulls-bottoms for tankers or an alternative, as well as global implications on tanker design, operation, and economics (Joseph &Dalaklis, 2021). The vessel known as Erika was a single-hulled ship that had reached 24 years of age and was reportedly in a state of poor maintenance. On December 12th, 1999, the aforementioned vessel encountered difficulties amidst inclement weather conditions approximately 40 nautical miles from the coastline of Bretagne. The vessel experienced a catastrophic structural failure, resulting in its division into two distinct sections, ultimately leading to its descent to the ocean floor. Out of the total quantity of 30,000 tons of heavy furnace oil that was being transported, approximately 14,000 tons were accidentally discharged into the surrounding marine environment. According to the report by Classification Society, the Erika tanker was deemed to be in satisfactory condition and was found to have met the standard requirements for vessels that are over 20 years old, which necessitate the issuance of certificates of good condition on a regular basis. The inadequate inspection procedures conducted by the Classification Society were the cause of the issue. The Erika catastrophe brought about several modifications in the regulations of the International Maritime Organization (IMO), such as the discontinuation of single hull vessels, more rigorous inspections conducted by both class and port state control,

the creation of the European Maritime Safety Agency (EMSA), enhanced information and monitoring systems, and the implementation of a liability and compensation framework. On November 13, 2002, amidst inclement weather, the Prestige, a 26-year-old tanker, sustained a 50-meter rupture on the starboard side of its hull. The vessel descended to a depth of 3600 meters while carrying a substantial amount of oil, resulting in the discharge of over 5,000 tonnes of oil. To date, the aforementioned spill has impacted over 1000 kilometers of coastline to varying extents, spanning from North Portugal to South West France. A fracture was observed in the side shell of Prestige. The external wave forces have caused an enlargement of the hull fracture, resulting in the formation of additional cracks. The occurrence of ballast tank flooding and significant listing was attributed to a structural failure (Joseph &Dalaklis, 2021). The Prestige catastrophe resulted in several modifications to the regulations of the International Maritime Organization (IMO), such as the hastened phase-out of single hull vessels, the prohibition of heavy fuel oil transportation by single hull vessels, and the prohibition of single hull vessels within the 200 mile zone. The adoption of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships in 2009 was a consequence of the reactive actions taken by the International Maritime Organization (IMO). The primary objective of the Convention is to mitigate potential hazards to human health, safety, and the environment during the recycling of ships that have reached the end of their operational lifespan. The Hong Kong Convention aims to comprehensively tackle the various concerns pertaining to ship recycling, encompassing the presence of potentially harmful environmental substances such as heavy metals, asbestos, hydrocarbons, ozone depleting substances, among others, in ships that are sold for scrapping. The aforementioned statement also attends to apprehensions that have been expressed regarding the labor and ecological circumstances prevalent in numerous global ship recycling sites. The transportation of goods via shipping accounts for more than 80% of global commodity movement. The utilization of ballast water is a crucial aspect of ensuring secure ship operation, equilibrium, and steadiness. The presence of marine life in ballast can lead to significant environmental issues. The issue is further exacerbated due to the fact that a majority of marine species exhibit life cycle stages at a microscopic level. The introduction of non-native species is regarded as the second most significant menace to biodiversity, following the destruction of habitats. Numerous non-indigenous species possess the ability to inflict substantial ecological,

economic, or human health repercussions. The implementation of ballast exchange in the deep ocean is a highly effective strategy for mitigating the potential introduction of aquatic species via ballast water. Consequently, the International Convention for the Control and Management of Ships' Ballast Water and Sediments was ratified at the International Maritime Organization (IMO) in 2004. According to the Convention, it will be mandatory for all vessels to establish and execute a comprehensive plan for managing ballast water and sediments (Joseph &Dalaklis, 2021). Vessels will be mandated to maintain a Ballast Water Record Book and adhere to prescribed ballast water management protocols. In addition, the aforementioned guidelines provide general suggestions for recently constructed edifices, such as reducing the utilization of ballast water, devising efficient flushing mechanisms, limiting the absorption of sediments, simplifying the elimination of sediments, arranging for the transportation of ballast water to onshore facilities, and allocating space for the prospective installation of ballast water treatment systems. In recent times, there have been several occurrences of mishaps during customary lifeboat exercises, notwithstanding the implementation of revised training protocols and novel configurations of hooks, boats, and davits. One of the challenges is the multitude of hook and lifeboat designs currently in use, which is believed to exceed 70 (Wieslaw, 2012). It is imperative that crew members possess the necessary knowledge and skills to operate the equipment installed on their vessel. The issue has been acknowledged by the shipping industry, and in an effort to tackle it, fresh regulations have been implemented. The International Maritime Organization (IMO) has recently implemented several revisions to the Safety of Life at Sea (SOLAS) regulations in reaction to incidents involving lifeboats. Several notable modifications have been implemented, such as the allowance for lifeboats to be lowered without crew, albeit with operating crew members present during launch. Additionally, lifeboats, excluding free-fall models, may be relocated from their stowed position without crew on board, subject to weekly drills. Furthermore, monthly drills permit lifeboats, excluding free-fall models, to be turned out from their stowed position, weather permitting, without any crew members present(Wieslaw, 2012). Additionally, within a machinery space, there exist numerous potential sources of ignition, with the most prevalent being hot surfaces such as exhaust pipes and steam pipes. In response to such circumstances, the International Maritime Organization (IMO) implemented a regulation to the Convention for the Safety of Life at Sea (SOLAS) of 1974. This regulation mandates

that all external high-pressure fuel delivery lines connecting the high-pressure fuel pumps and fuel injectors must be safeguarded with a jacketed piping system that is capable of containing fuel in the event of a high-pressure line failure. The jacketed piping system comprises a jacketed pipe, a mechanism for the gathering of leakage, and an alarm device. Each of the engines is engineered by a manufacturer or factory that has obtained certification from either the International Organization for Standardization (ISO) or a classification society. The sector of large passenger vessels has experienced a significant surge in trade in the recent years, with forecasts indicating a further substantial growth in the forthcoming years. The surge in commercial activity has been accompanied by a corresponding increase in vessel dimensions and subsequent public visibility. The Oasis of the Seas vessel comprises 16 decks for passengers and has the capacity to accommodate 5,400 passengers alongside a crew of 2,800 (Wieslaw, 2012). The operation of large passenger ships poses numerous challenges for ship-owners and harbors that receive them. These challenges include ensuring fire safety measures, such as establishing adequate escape routes and fire protection systems for the sizable atriums that are typical of cruise ships, as well as providing appropriate life-saving appliances and arrangements. Additionally, ship-owners and harbors must take responsibility for Search and Rescue (SAR) operations at sea, particularly in small country regions. Finally, the significant amount of waste generated during voyages is another pressing concern. The notion of a vessel serving as its own optimal lifeboat is a potential remedy for fire safety concerns. This approach entails individuals remaining aboard the ship during an emergency situation while the vessel navigates to a designated port. In July 2010, a comprehensive set of amendments to the International Maritime Organization (IMO) regulations pertaining to new passenger ships became effective. The revisions encompass a variety of aspects, such as substitute blueprints and configurations, secure zones, and indispensable mechanisms that must be upheld during a vessel's journey to a harbor following an accident. This will necessitate the duplication of both the propulsion and other vital systems. Additionally, there will be on-board safety hubs that will serve as the central location for managing, operating, and overseeing safety systems. Fixed fire detection and alarm systems, fire prevention measures, and a designated timeframe for a systematic evacuation and abandonment process will also be included (Wieslaw, 2012).

2.12.IMO'S AIMS AND PURPOSE

The International Maritime Organization (IMO) is a specialized agency of the United Nations that serves as the global authority for establishing standards related to the safety, security, and environmental performance of international shipping. The primary function of this framework is to establish a regulatory structure for the shipping sector that is impartial and efficient, with global acceptance and implementation (IMO, 2023).

To clarify, the purpose of this measure is to establish an equitable environment where ship operators are unable to resolve their financial difficulties by resorting to unsafe practices and disregarding safety, security, and environmental standards. This methodology also fosters ingenuity and effectiveness.

The shipping industry is a global enterprise that requires international consensus, adoption, and implementation of regulations and standards in order to function efficiently. In my opinion, the forum serves as the platform for the aforementioned process. International shipping is responsible for the transportation of over 80% of global trade to various communities and individuals across the globe. The transportation of goods through shipping is considered to be the most efficient and cost-effective method for international trade. This mode of transportation is known for its reliability and affordability, making it an ideal choice for global commerce. Furthermore, it plays a significant role in promoting prosperity among nations and their citizens (IMO, 2023).

The provision of a secure, efficient, and safe international shipping industry is reliant upon the regulatory framework that has been developed and sustained by the International Maritime Organization (IMO). The transportation of goods is a crucial element in any strategy aimed at promoting long-term, environmentally-friendly economic development. The International Maritime Organization (IMO) facilitates collaboration among its Member States, civil society, and the shipping industry to promote sustainable growth and contribute to a green economy. This concerted effort aims to maintain and enhance the industry's positive impact on the environment. The

International Maritime Organization (IMO) has identified the advancement of sustainable maritime development and sustainable shipping as a primary focus for the organization in the upcoming years (IMO, 2023).

IMO is actively engaged in pursuing the Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development as a member of the United Nations family. Undoubtedly, the attainment of the majority of the components of the 2030 Agenda hinges on the establishment of a sustainable transportation sector that bolsters international trade and streamlines the global economy. The Technical Cooperation Committee of the International Maritime Organization has officially sanctioned the integration of connections between the Organization's technical aid efforts and the Sustainable Development Goals. The International Maritime Organization (IMO) places significant emphasis on the achievement of Sustainable Development Goal 14, which pertains to the oceans. However, it is noteworthy that various facets of the IMO's undertakings can be correlated with each of the distinct Sustainable Development Goals (IMO, 2023).

The International Maritime Organization (IMO) has expressed its commitment to establishing a green and sustainable global maritime transportation system by focusing on various aspects such as energy efficiency, new technology and innovation, maritime education and training, maritime security, and maritime traffic management. To achieve this goal, IMO aims to develop and implement global standards that cover these and other relevant issues. Such standards will serve as the institutional framework necessary to support IMO's efforts towards a sustainable maritime transportation system (IMO, 2023).

2.13.WHAT IS MEANT BY SUSTAINABLE SHIPPING

Sustainable shipping refers to the implementation of sustainable practices within the shipping industry. The objective of sustainable practices is to mitigate adverse environmental effects, such as the consumption of fuel and the emission of carbon dioxide. Sustainable shipping practices are capable of reducing the utilization of fossil fuels and other energy sources that release carbon dioxide into the atmosphere, such as natural gas or propane. This is achieved through the adoption of sustainable modes of transportation, including walking, cycling, carpooling, and public transit (Sam, 2021).

Additionally, the reduction of packaging sizes to minimize weight and CO emissions associated with freight handling, such as through airships, and the development of technologies to prevent greenhouse gas emissions are also effective strategies for achieving sustainability in shipping. The implementation of sustainable practices in a strategic manner can potentially result in a ripple effect on sustainability issues. For instance, the adoption of sustainable methods by a single company may serve as a catalyst for other organizations to follow suit, ultimately resulting in a widespread adoption of sustainable measures and a positive impact on the environment. In recent years, there has been a noticeable expansion of the sustainable shipping sector, as an increasing number of enterprises have begun to allocate resources towards environmentally-friendly practices, spanning from the shipment of small parcels to the transportation of shipping containers (Sam, 2021).

2.14.HOW CAN SHIPPING BEING SUSTAINABLE

The concept of sustainable shipping pertains to the adoption of shipping practices that prioritize the reduction of environmental impact associated with the transportation of goods. Several sustainable shipping practices have been identified, which include:

- The implementation of more efficient packaging methods with the aim of reducing waste.
- Packaging that can be recycled or composted.
- The practice of consolidating shipments in order to provide customers with a less frequent delivery schedule.
- Reducing the duration of transit, commonly referred to as decreasing time in transit (TNT), as a means of mitigating carbon emissions.
- The utilization of electric vehicles for final mile delivery.
- Compensating for carbon emissions generated by transportation.
- Reducing their dependence on air transportation.
- Reducing the duration of transit time, commonly referred to as TNT.
- Compensating for carbon emissions generated by their transportation operations.

(Ware2go, 2021)

The attainment of sustainability ought to be regarded as the paramount objective of the human race. Nevertheless, the current situation remains unpromising. In recent

years, the concept of sustainability in the shipping industry has garnered increasing interest, with a focus on green or sustainable shipping. This approach is akin to the prominent sustainability frameworks of sustainable development and green development. Nevertheless, the notions of green or sustainable shipping, along with those pertaining to green or sustainable development, persist in their lack of clarity (Wu et al. 2020).

CHAPTER 3:METHODOLOGY

The current study employs an overview of the literature methodology. This study relies on a comprehensive analysis of secondary sources to address the research inquiries pertaining to safety leadership in the shipping industry and its correlation with sustainability.

To ascertain the sources utilized in the study, a systematic search was conducted across databases containing scholarly articles using relevant keywords. Subsequently, specific studies were chosen based on their credibility and pertinence to the research inquiries.

For this research, 66 articles were used which were drawn from various platforms such as google scholar and scopus, where a search was made based on key words such assustainable shipping, safety leadership, IMO, sustainability in shipping, safety management. From 1650 articles found, 66 articles were chosen which were the most relevant and the mostvalid and 1584 were rejected.

Following the selection of the aforementioned studies, a comprehensive analysis was conducted with the objective of deriving conclusive findings. Similar to any academic inquiry, this study possesses certain constraints.

A significant constraint pertains to the utilization of secondary evidence rather than empirical data in the study. However, articles that are scientifically valid were chosen to ensure the validity and reliability of the data used.

CHAPTER4 :HOW SAFETY LEADERSHIPIS CONNECTED WITH SAFE AND SUSTAINABLE SHIPPING ?

4.1.THE RELATIONSHIP BETWEEN SAFETY LEADERSHIP AND SAFETY IN SHIPPING

The refinement of safety leadership theory in diverse high-risk industries has undergone significant theoretical development. The extant literature reveals a dearth of research on the identification of safety leadership behaviors in the shipping sector. Consequently, it is imperative to draw upon the findings of studies conducted in other high-risk industries as a foundation for constructing a model tailored to the shipping industry (Kim &Gausdal, 2017).

The shipping industry faces a multitude of safety challenges, including extreme weather conditions, hazardous cargoes, piracy and terrorism, navigation difficulties, equipment malfunctions, and human factors such as fatigue, mental exhaustion, and poor decision-making. These factors contribute to the industry's inherent risks and potential hazards. The significance of safety culture cannot be overstated for shipping organizations seeking to mitigate the likelihood of incidents.

The importance of safety leadership cannot be overstated in industries with high levels of risk, such as the shipping industry. Inadequate leadership in this context can lead to marine accidents, which can result in a range of negative outcomes, including injuries, fatalities, property damage, and environmental pollution. Establishing positive human relations and fostering crew satisfaction are crucial components of proficient safety leadership, as they are deemed essential prerequisites for optimal teamwork. It is imperative for ship officers to establish efficient teamwork and implement sufficient safety leadership, which can have a positive impact on safety culture, enhance overall safety, and improve the protection of the marine environment. The concept of safety leadership on board ships encompasses a range of attributes, such as upholding safe work practices, conducting safety education, and fostering crew member motivation. Hence, it is imperative for all the concerned parties in the shipping sector that the officers serving on board ships possess the ability to recognize such traits, adjust to them, and implement them suitably (Hasanspahic et al., 2021).

4.2.THE RELATIONSHIP BETWEEN SAFETY LEADERSHIP AND SUSTAINBALE SHIPPING

Sustainability initiatives, encompassing practices such as recycling, renewable energy adoption, community investment, and ethical sourcing, have emerged as a crucial component of numerous corporate strategies. The prioritization of safety has presented a complex situation for leaders in this field. From one perspective, the concept of sustainability aligns with the objective of safety, which is to safeguard individuals, goods, and financial gains. Conversely, it is not uncommon for the safety communication to be overshadowed by an ambiguous and unfocused sustainability initiative, which may lead to a misallocation of attention and resources at the executive level.

Similar to numerous emerging fields, sustainability encounters certain challenges during its development. A prominent issue is the lack of clarity regarding the precise definition of sustainability, with numerous leaders reporting that they have been presented with a multitude of definitions by various sustainability experts. The integration of sustainability into business strategy can be challenging for organizations that lack a comprehensive comprehension of its meaning. Sustainability presents a prospect for leaders to leverage their proficiency in enhancing the operational framework of an organization, as opposed to being a peril to safety, health, and the environment. Currently, there exist a minimum of three approaches through which safety leaders can make a valuable contribution towards sustainability (Dunkan&Henderek, 2013).

The principle of "doing no harm" necessitates that the individuals in closest proximity to the business are prioritized. For an organization to legitimately assert its sustainability, it must ensure that there are no occurrences of life-altering injuries, fatalities, or environmental incidents. The concept of "Leaving no footprint" enables leaders to effectively tackle product life cycle concerns and the processes involved in the production and distribution of goods. The core principle of adding value to an organization extends beyond the provision of essential products and services, and is encapsulated by the notion of "doing some good". Safety leaders have the ability to endorse these principles by imparting their expertise in implementing positive organizational transformation.

Similar to safety, sustainability does not pertain to a specific function or department solely responsible for sustainability (or safety). The concept pertains to operating a business in a manner that aligns with established guiding principles. Total Quality Management and process safety are exemplary instances of this phenomenon. Each of them underwent a process of evolution that led to their integration into management systems, thereby ceasing to exist as independent functions. Incorporating sustainability into the routine operations of an organization is imperative. The expertise of safety leaders can be highly valuable in the integration and maintenance of principles within engineering, systems, processes, and culture.

In order for sustainability to transcend mere marketing rhetoric, it is imperative that its core initiatives are approached with a comprehensive understanding of an organization's holistic impact. Individuals who are considered safety leaders possess significant knowledge and skills pertaining to this particular field. In the last four decades, experts in the fields of environmental, health, and safety have formulated frameworks that have expanded our comprehension of various aspects such as the origin of injuries and cultural influences. Consequently, these models have revolutionized the approaches, undertakings, and outcomes in this domain. Similar to the importance of safety, a proficient sustainability framework enables the organization to consider the long-term impacts of a product beyond its immediate effects (Dunkan&Henderek, 2013).

4.3.SAFETY LEADERSHIP IN SHIPPINGINDUSTRIES

The significance of safety in shipping has been widely acknowledged owing to the considerable likelihood of incurring adverse human, financial, legal, and reputational outcomes (Kim and Gausdal, 2017). Contemporary commercial shipping has benefited significantly from the technical expertise, ship-handling knowledge, management, and leadership skills of professional mariners. These individuals serve as critical on-scene decision-makers, problem-solvers, and safety and security managers, contributing to the enhanced safety, security, and efficiency of commercial vessels(Kim, 2020). The ramifications of leadership shortcomings, as evidenced by numerous catastrophic incidents throughout history, including the Green Lily, Costa Concordia, Bow Mariner, and Sewol ferry disasters, have demonstrated the possibility of significant repercussions. According to various studies, it has been determined that the leading cause of maritime accidents is attributed to human errors. According to

Kim and Gausdal (2017), there is a high level of expectation for operators to exhibit effective decision-making, command, and leadership skills. In situations that are deemed critical, failure to demonstrate these qualities can result in significant disappointment. The conventional safety strategy has prioritized enhancing dependability by minimizing the likelihood of errors in human operators and other constituents of the system(Kim, 2020). According to Leveson (2011), the presence of Maritime Safety Leadership does not guarantee the safety of the entire operation. There has been a rise in system interaction accidents in comparison to component failures. The significance of safe and efficient operations has led to an increasing recognition of the interdependencies and interactions among various actors, including human operators, technical systems, and other system components. The enhancement of safety approaches has been proposed by multiple researchers who have broadened their attention to encompass the entire system. The choices made by human operators are subject to the impact of various factors such as the contextual setting, technological design, dynamic work processes, and social, organizational, and cultural surroundings. In order to enhance safety measures and mitigate the likelihood of human errors in the future, it is imperative to not only manage and eradicate individual errors to ensure dependability, but also to implement structural modifications, eliminate potential hazards through design, and establish a secure working environment. This approach is essential for achieving tangible improvements (Kim, Nazir et al., 2016). The successful implementation of these endeavors will require robust leadership and unwavering organizational dedication (Kim, 2020).

4.4.THE IMPORTANCE OF SAFETY LEADERSHIP & SAFETY SHIPPING TO SHIPPING COMPANIES

Bhattacharya (2015) conducted a study to assess safety culture across different types of vessels and observed that shipping companies frequently exhibit a deficiency in fostering an environment that is free from assigning blame. The establishment of an environment that fosters the reporting of incidents and promotes transparent communication is deemed necessary. The implementation of a reporting system that ensures no negative repercussions will instill a sense of confidence among the crew. Inadequacy of this element may impede individuals from engaging in communication and result in decreased motivation. According to Bhattacharya (2015), there is a possibility of adverse effects on safety conditions. Shea (2005) also endeavored to

attain a more profound comprehension of safety culture in the maritime sector. The research revealed that individuals tend to exhibit avoidance conduct when it comes to openly reporting incidents. Moreover, it was disclosed that crew members held a perception of a negative reward system. This provides evidence that there is still room for improvement in the safety culture to effectively support the implementation of SMS. Deviations aboard can be attributed to various factors, such as inadequate communication and disparities in situational comprehension among crew members. Furthermore, the incorporation of SMS was noted to result in an excessive amount of administrative documentation. According to Bernatik et al. (2017), such an occurrence has the potential to result in bureaucratic processes and a sense of disempowerment among the crew. Consequently, individuals may perceive a culture that they strive to evade in which errors are reported, as it is linked to the production of time-intensive investigation reports and documentation from higher authorities. The conventional approach to safety management is typified by the Safety-I viewpoint. In recent years, there has been a challenge to the interpretation of safety management and safety culture. According to Provan, Woods, Dekker, and Rae (2020), there was a paradigm shift in safety thinking. Conventional methodologies, such as Safety-I, strive to prevent hazards through responsive measures that concentrate on the origin of human error. To avert potential harm, individuals endeavor to comprehend the underlying causes and mechanisms that led to the occurrence of adverse events (Platenkamp, 2021).

The TITANIC was introduced into a fiercely competitive transatlantic passenger market, and the proprietor aimed to astonish the global community by ensuring that the vessel arrived in New York on its inaugural journey two days earlier than anticipated. Consequently, notwithstanding the detection of icebergs, the ship sustained unprecedented velocities, thereby rendering it considerably arduous to avert the impact. What was the rationale behind the decision of an experienced master to permit such high velocities despite the potential hazards involved? The answer is contingent upon whether the master possessed the ability to refuse in reality (Gard, 2011).

Even in contemporary times, numerous ship captains acknowledge encountering commercial influence, whether overt or covert, to engage in activities that could potentially jeopardize the vessel's safety. In a market characterized by intense

competition, the efficient and timely delivery of goods is imperative. However, there may arise circumstances where acceding to delivery requests may jeopardize the safety of the vessel. Studies have indicated that the comprehension and handling of such conflicts are contingent on the organizational culture rather than any safety protocols or guidelines implemented.

Conflicts may arise among senior management personnel due to the perception that resources must be allocated in a "either/or" manner towards conflicting objectives, namely production goals, which involve the delivery of services, and protection goals, which involve considerations of safe operation. This is commonly referred to as the "two P's dilemma".The efficacy of rules and systems in promoting safe behavior may be limited.

While it is true that both domestic and international regulations have contributed to enhancing the safety of shipping, relying solely on failsafe technology and adherence to manuals cannot ensure the complete elimination of errors. The presence of human error is a ubiquitous factor in almost all incidents. A study of one hundred maritime incidents revealed that in almost ninety-six percent of instances, the occurrence could have been prevented if the individuals involved had acted appropriately. Merely 4% of the occurrences were attributed to factors that were outside the realm of human influence. These findings are corroborated by various other studies that have yielded comparable outcomes.

Historically, the emphasis on mitigating human error has centered on the creation of regulatory frameworks and operational structures. Nevertheless, it has been increasingly evident in recent times that this particular approach has restricted efficacy. Subsequent inquiries into a number of significant accidents have determined that the root cause of these events was a deficient safety culture. The aforementioned phrase is employed to depict the phenomenon wherein organizations have gradually reduced their focus on safety protocols, leading to the emergence of hazardous practices. Stated differently, the issue at hand pertains not to the errors committed by singular individuals, but rather to a cumulative occurrence of errors that gradually integrate into the overall work methodologies. The organizational culture failed to acknowledge the potential risks associated with said practices.

The significance of a suitable safety culture is widely recognized, however, it is frequently inadequately attended to in routine managerial operations. An illustrative instance can elucidate this phenomenon: a maritime craft comes into contact with a dock and subsequent inquiries reveal that appropriate protocols were not adhered to. A common approach to address such a circumstance is to implement revised or supplementary protocols, or to enroll the implicated officers in a training program. Under certain circumstances, such alterations may disrupt the established norms, yet they often signify a deficient safety culture. If the shipowners had conducted a more comprehensive investigation, they could have discovered that protocols were not adhered to due to time constraints in keeping with the voyage itinerary. In instances where this circumstance arises, the implementation of novel protocols or the enrollment of higher-ranking personnel in training programs is improbable to eliminate hazardous behaviors. Instead, it may reinforce the notion that expediting procedures is necessary to accomplish tasks. The outcome is a proclivity towards addressing the manifestations rather than the fundamental etiology, culminating in the preservation of status quo in work methodologies (Gard, 2011).

Frequently, it is asserted that deviations from established procedures occur due to unfavorable attitudes among members of the crew. Typically, such attitudes stem directly from the organizational culture. The concept of safety culture pertains to an organization's emphasis on safety and the established behavioral standards that govern safety practices (Gard, 2011).

The manner in which individuals comprehend and establish connections with contradictory objectives serves as a noteworthy illustration of how culture exerts an impact on operational methodologies. Conflicting objectives are frequently perceived as a form of pressure or expectation that is implicitly present within the organization. This may result in practices such as exceeding the permissible cargo limit, operating at a speed deemed unsafe, or disregarding established procedures. The aforementioned behavior cannot be attributed to an individual's negative attitude, but rather serves as an indication of a deficient safety culture within the organization as a whole. The safety culture dictates the collective behavior of the entire organization with regards to matters pertaining to safety. In certain scenarios, it is possible that the organization's stated commitment to prioritizing safety may not be fully manifested in its prevailing culture and operational procedures (Wagenaar&Groeneweg, 1987).

Superficially, one may observe several apparent facets of the culture, such as the inscription "safety first" emblazoned on the vessel's hull or the presence of a safety manager as a distinct entity, which provide scant insight into the organization's authentic safety methodology. Conversely, it is the inconspicuous components, namely attitudes and values, that hold significance for operational methodologies. The distinction between the middle and lower levels lies in the fact that the middle level represents the articulated position, while the lower level pertains to the tacit presupposition. In the event that an individual is incentivized for maintaining the continuity of a task despite deviating from established protocols, it is likely that this action will serve as a model for comparable circumstances in the future.

The implementation of safe practices is contingent upon the manner in which it is executed.What is the reason for the disparity between the ideal course of action and the current state of affairs? One possible explanation for this phenomenon could be attributed to a potential deficiency in the organization's overall approach to managing situations that require a delicate balance between profitability and safety in their operations. In order to prevent the compromise of safety considerations during commercial decision-making, it is imperative that the entire organization proactively manages such conflicts. Nevertheless, in the shipping industry, the responsibility of making such decisions is often delegated to the captain who is present on the vessel.

A conventional maritime enterprise is typically bifurcated into two distinct domains, namely ship management and commercial management. The management of a ship encompasses two main areas of responsibility: ship management, which pertains to ensuring the safe operation of the vessel, and commercial management, which pertains to the arrangement of commercial contracts. The phenomenon of conflicting goals not being adequately addressed by certain shipowners may be attributed to the organizational division within the industry. Moreover, as per the ISM Code, it is imperative that the safety manager functions as an autonomous entity to guarantee the prioritization of safety. In actuality, the safety manager is frequently encumbered with administrative duties and focuses on guaranteeing compliance with formal mandates, rather than prioritizing safety implementation. Conversely, the commercial managers maintain regular communication with the vessel to issue directives pertaining to upcoming voyages and itinerary strategizing. Hence, the resolution of the potential conflict that may arise between the commercial aspect and safety lies in the hands of

the onboard master. In maritime practice, the master is conventionally vested with the ultimate accountability for ensuring safety on the vessel and is granted official power to scrutinize all determinations that may potentially jeopardize the security of the ship, as deemed necessary by the master. Several experts acknowledge that certain business executives exert significant commercial influence on them, making it challenging to decline in specific circumstances (Wagenaar&Groeneweg, 1987).

Typically, individuals in commercial management positions do not perceive themselves as accountable for ensuring the secure operation of the vessel. Consequently, they may persist in exerting influence on the ship's captain, relying on the captain to decline when the level of risk is deemed excessive. Nonetheless, individuals succumb to pressure on occasion, particularly from their supervisors. Challenges emerge when these discrepancies are inadequately resolved, creating an opportunity for a hazardous custom to evolve. This observation indicates that the safety culture, or the prevailing attitudes and behaviors regarding safety, has a significant impact on the adoption and implementation of safe working practices (Wagenaar&Groeneweg, 1987).

Initiating an evaluation of safety culture and assessing an organization's approach to prioritizing safety could serve as an effective initial step towards enhancing safety measures. It is imperative to recognize the perpetual existence of divergent objectives. Stated differently, the complete eradication of opposing objectives is unattainable; therefore, one should prioritize the implementation of strategies to effectively handle them. Entities that possess a highly developed safety culture exhibit a comprehensive understanding of the aforementioned concerns. The recognition of safety as a fundamental component of the comprehensive business objectives is widely accepted.

To effectively handle divergent objectives, it is imperative to engage in a process of "open dialogue". The role of managers is crucial as their commitment is essential to influence organizational culture and working practices. In fact, without their genuine dedication, it may be challenging, if not unfeasible, to bring about any significant changes in these areas. It is imperative for managers to possess an awareness of their impact and exhibit mindfulness in determining which behaviors to incentivize or reprimand. It is not justifiable to incentivize a hazardous conduct solely on the basis of successful outcomes and financial gains, while penalizing it in the event of

unfavorable results. It is imperative for managers to prioritize safety and lead by example (Gard, 2011).

Shipowners who have tackled the matter of conflicting objectives underscore the importance of recognizing that such conflicts necessitate resolution on land rather than by the captain on board, in order to achieve success. Establishing a shared understanding is imperative when engaging in communication with the vessel. It is imperative that the decisions made by the master are upheld and not contested.

The implementation of these measures is expected to foster a safety culture that is conducive to positive outcomes, whereby all members of the organization are motivated to assume accountability for the overall safety and proactively identify potential hazards. The endeavor of cultivating a safety culture is an ongoing process that may require a considerable duration before tangible outcomes become apparent. It is imperative to acknowledge that human error may transpire even within the most exemplary establishments. Organizations that exhibit a strong safety culture distinguish themselves from those that do not by recognizing the potential for human error and proactively seeking to enhance working conditions (Gard, 2011).

Following a series of significant marine incidents during the late 1980s and early 1990s, it became evident that the implementation of safety management regulations was imperative. The International Safety Management (ISM) Code, which was implemented in 1994, established a comprehensive structure for the development of Safety Management Systems (SMS) that are tailored to the unique needs of individual companies. The ISM Code places significant emphasis on safety leadership and promotes the notion of joint responsibility for safety management between ship and shore management. This is exemplified by the issuance of both the Document of Compliance (DOC) for the organization and the Safety Management Certificate (SMC) for the ship. The prevailing perspective posits that safety ought to be a shared responsibility among all members of the organization. Safety leaders can be found across all tiers of a shipping organization, ranging from top-level executives and board members to superintendents, masters, officers, and other crew members. There is a common assumption that safety leaders and managers are interchangeable roles. The assertion that only certain individuals within an organization can assume the role

of a safety leader is unfounded. Any member of an organization has the potential to exhibit safety leadership (Ostrowicki, 2020).

The cultivation of a safety culture is significantly influenced by both leadership and management. The conventional perception of management is that of a structured, vertical framework that establishes safety objectives, tactics, and operations. Conversely, leadership is predicated on interpersonal abilities that enable the management of group and individual conduct (Lowe et al., 2016).

It is imperative to acknowledge the distinction between these two positions and the respective contributions they make towards attaining safety performance. Within the context of an organization's structure, managers wield formal influence over their subordinates, while leaders exert social influence over their colleagues by serving as role models. The simultaneous embodiment of managerial and leadership roles is feasible, provided that the individual is cognizant of executing both functions proficiently. The appointment of a designated ship safety officer is mandated by certain flag states, who entrust them with the formal responsibility of overseeing safety management on board a vessel. This role exemplifies a hybrid position that necessitates the individual to function as both a safety manager and a safety leader. It is noteworthy that the UK Flag, for instance, mandates the appointment of a suitably-trained safety officer on all seagoing ships that employ five or more seafarers (Ostrowicki, 2020).

Diverse approaches can be employed to furnish proficient leadership. Leaders who hold a positional role exercise their authority to direct individuals towards specific actions. Inspirational leaders place emphasis on communicating the significance of a task to individuals, as opposed to relying solely on directives to elicit action. Inspirational leaders prioritize the "why" by allowing individuals to independently discern what is most beneficial and appropriate for them. The individuals in question exhibit a sincere commitment to safety, which is evident in their daily conduct, verbal communication, vocal inflection, and nonverbal cues. Individuals are extended an invitation to participate and engage in the realization of a well-defined and persuasive safety objective.Proficient safety leaders consistently question the existing state of affairs and inquire about fundamental aspects when a safety concern remains unresolved. They facilitate the implementation of preventive and corrective measures

and ensure that individuals are apprised of the remedies. This aids in the reduction of risks that were not methodically anticipated and addressed beforehand (Ostrowicki, 2020).

The promotion of safety entails a collaborative effort and a communal undertaking, necessitating the collective participation of all individuals to attain favorable outcomes. Safety leaders employ engagement and participation as a means of motivating individuals. In addition, they contribute to the preservation of a fair and equitable culture, which is crucial for fostering a truly collaborative safety alliance (Ostrowicki, 2020).

4.5.THERESULTSOFSAFETYLEADERSHIP

The maritime industry entails crew members being subjected to prolonged exposure to hazardous situations. This particular industry is deemed to be of utmost importance in terms of safety. Furthermore, it has been observed that the rates of injury and mortality in the maritime industry are comparatively higher than those in land-based industries. The aforementioned highlights the significance of ensuring secure procedures and appropriate surroundings on board vessels. The International Maritime Organization (IMO) mandates that shipping companies bear the responsibility of implementing Safety Management Systems (SMS) to guarantee the provision of secure working environments for all personnel. The International Chamber of Shipping (ICS) introduced the International Safety Management Code (IMS code) in order to provide benchmarks and guidance for SMS in 2013. In recent years, a degree of maritime safety has been achieved. Instances of significant shipping accidents have decreased. Furthermore, it has been noted that SMS have had a significant positive impact on the culture of maritime safety (Teperi, Lappalainen, Puro, &Perttula, 2018). The concept of safety culture is a component of the broader organizational culture. According to Guldenmund (2000), the concept pertains to the compilation of convictions, principles, and mindsets that all personnel uphold concerning hazards and safety concerns. Establishing a positive safety culture serves as a fundamental

basis for fostering mutual trust among entities within an organization. There exists a collective sentiment regarding the significance and efficacy of safety and its associated protocols. The manifestation of a favorable safety culture can be observed across all echelons of the enterprise. The shared objective of enhancing safety is facilitated and propelled through interconnectivity among individuals. The fundamental concept behind SMS was to foster a culture of transparent incident reporting and cultivate a "just culture" within the maritime sector. The notion of just culture is intricately linked to systems thinking and predicated on the principle of collective responsibility in intricate scenarios. This entails acknowledging the prevalence of mistakes. Errors are perceived as the outcome of the collective entity, and staff members experience equitable treatment in relation to such occurrences within the organization.

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CHAPTER5 :CONCLUSIONS

Theoretical advancements have been made in the refinement of safety leadership theory across various high-risk industries. The current body of literature indicates a scarcity of studies pertaining to the recognition of safety leadership actions within the maritime industry. Industries that are associated with high levels of risk, such as the shipping industry, place significant emphasis on safety leadership due to its paramount significance. Insufficient leadership within this particular setting has the potential to cause maritime mishaps, which may yield a variety of adverse consequences such as harm to individuals, loss of life, destruction of property, and ecological contamination.

The cultivation of favorable human interactions and the promotion of crew contentment are fundamental aspects of effective safety leadership, as they are considered indispensable conditions for achieving optimal teamwork. The establishment of effective teamwork and the implementation of adequate safety leadership are crucial for ship officers. These measures can yield favorable outcomes such as the promotion of safety culture, the enhancement of overall safety, and the improvement of marine environmental protection. The notion of safety leadership within the maritime industry encompasses a variety of characteristics, including the promotion of safe work practices, the provision of safety education, and the cultivation of crew member motivation.

Therefore, it is essential for all stakeholders in the maritime industry that the officers working on vessels have the competence to identify such characteristics, adapt to them, and apply them appropriately. Like many nascent disciplines, sustainability faces certain obstacles in its evolution. An issue of significance pertains to the absence of lucidity concerning the exact delineation of sustainability, as several leaders have reported being confronted with a plethora of definitions from diverse sustainability experts. Organizations that do not possess a comprehensive understanding of the meaning of sustainability may encounter difficulties in incorporating it into their business strategy. The concept of sustainability offers an opportunity for leaders to utilize their expertise in improving the operational structure of an organization, rather than posing a threat to the well-being of individuals and the natural world.

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