



CHALMERS

Navigating the Human Factor

A comprehensive study of the tanker industry

Master Thesis for the Maritime Management Program

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CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden, 2023

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PREFACE

This master thesis represents 30 out of the 120 total credits of the two-year maritime management program at Chalmers University of Technology, at the Department of Mechanics and Maritime Sciences.

A big thank you to the contributing participants of this interview-study and the people who helped with the pre-study familiarisation of the subject. And a very big thank you to the thesis supervisor Monica Lundh for your time, contribution, and unwavering support.

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SAMMANDRAG (in Swedish)

Sedan lanseringen 1993, har The Ship Inspection Report Program (SIRE) setts som en kvalitetsstämpel för tankfartyg, nödvändig för att få frakta gods för oljeindustrin. Version två av programmet, SIRE 2.0 håller på att tas fram och kommer att introducera bedömning av mänskliga faktorer. Denna uppsats har undersökt hur denna förändring kan påverka besättningen ombord och om det finns åtgärder som kan underlätta övergången. Detta görs genom semistrukturerade intervjuer och tematisk analys av svaren från landpersonal och besättningsmedlemmar inom tankindustrin, samt de två föreningarna INTERTANKO och OCIMF, den senare i egenskap av initiativtagare och administratör av programmet.

Resultaten visade att deltagarna mestadels var optimistiska till att nya systemet skulle kunna medföra ökad säkerhet. Emellertid uttryckte land- och ombordpersonal dock också oro kring den ökade arbetsbelastningen, inspektörernas förmåga att utföra inspektioner och OCIMFs motiv bakom några av de administrativa kraven. Dessa problem anses främst bero på otillräcklig kommunikation och bristfälliga kommunikationskanaler, vilket skulle kunna förbättras genom ökad transparens, något som i efterhand kanske kan minska rykten samt öka industrins stöd för det nya systemet.

Denna uppsats är skriven på engelska.

Nyckelord: Humans factors, safety, SIRE, inspections, OCIMF, tanker vessels, maritime industry, shipping

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ABSTRACT

The Ship Inspection Report Programme (SIRE) has since its launch in 1993, been seen as a voucher for safety and a ticket to trade within the tanker industry. Version two of the program is on its way and will introduce the assessment of human factors. This study has looked into how this transition might affect the onboard crew and if there are facilitators that could ease the transition. This is done through semi-structured interviews and thematic analysis of the responses from industry shore personnel, onboard crew and the two associations INTERTANKO and OCIMF, the latter being the administrator and constructor of the program. The results showed participants mostly being optimistic about the increased safety the new system could bring along. However, shore and onboard personnel also voiced concerns surrounding the added workload, the inspector's capability, and OCIMF's motives behind some of the administrative requirements. These problems were concluded to mostly derive from inadequate communication and deficient communication channels, which could be improved by increased transparency, which subsequently could decrease rumours and increase the industry support for the new system.

Keywords: Humans factors, safety, SIRE, inspections, OCIMF, tanker vessels, maritime industry, shipping

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ACRONYMS AND TERMINOLOGY

DP	Designated Person
EMSA	The European Maritime Safety Agency
HDI	Human Development Index
HR	Human Resources
ICS	International Chamber of Shipping
ISGOTT	The International Safety Guide for Oil Tankers and Terminals
MDG	Millennium Development Goals
NTS	Non-Technical skills
OCIMF	The Oil International Marine Forum
PIF	Performance Influencing Factor
QMS	Quality Management System
SDG	Sustainable Development Goals
SDI	Sustainable Development Index
SIRE 2.0	Ship Inspection Report Programme 2.0
Sjöfartsverket	Svensk Sjöfart
SMP	Safety Management Panel
SMS	Safety Management System
SOLAS	The international convention of Safety of Life at Sea
STCW	Standards of Training, Certification, and Watchkeeping
Swedish	Swedish Maritime Administration
TQM	Total Quality Management

1. INTRODUCTION

It has been widely acknowledged the disastrous impacts on the environment, the economy, and human health and safety, oil spills can cause. One example is the collision of the tanker Atlantic Empress in 1979 that ended up in a spilling 276 000 tonnes of crude oil costing the lives of 26 crew members (CEDRE, 2007). Another terrifying accident was the 1989 Exxon Valdez accident where 11 million gallons of oil were spilled (DARPR, 2020).

Since the 70s, stakeholders in the shipping and oil industry have laboriously invested in improving the safety of tanker operations, to prevent serious events from happening. Among the contributors to the improved safety is the Oil Companies International Marine Forum (OCIMF, 2022b). Founded in 1970 and being a consulting party to the International Maritime Organization (IMO) since 1971. They published their first version of the Ship Inspection Report Programme (SIRE) with the purpose to create a unified tool for vetting across the tanker industry (OCIMF, n.d.). As a result of the joint efforts within the tanker segment, the number of tanker accidents since the 1970s have significantly decreased, going from an average of roughly 78 accidents per year, to an average of six accidents (ITOPF, 2023). This is also in the light of the fact that the tanker industry has more than doubled the volume of transported oil between 1970 and 2018, the latter year reaching an all-time high, exceeding three billion metric tons.

Despite the positive development and decrease in tanker accidents, the industry has experienced a levelling of the decrease of number of accidents (ITOPF, 2023). To break this trend and further develop safety on board, OCIMF has since the beginning of 2022, been gradually launching an updated Ship Inspection Report Programme labelled SIRE 2.0. The main difference in these new ship inspections is a shift from a technical and functional focus to also include the seafarers on board. A section referred to as the Human Response Tool which serves as an aid when assessing human performance has been added to the vetting inspection. This tool is based on Performance Influencing Factors (PIFs). Another major change is how the inspections are executed as SIRE 2.0 will require more preparations of the crew and new routines for the vetting inspector when assessing the vessel which is believed to transform how inspections are conducted (Oil Companies International Marine Forum, 2022).

Among the reasons to introduce SIRE 2.0 is to address the key factors identified to be responsible for tanker accidents whereof one being human errors (Chen et al, 2019; Mignan et al., 2022). Seafaring is a high-risk profession connected to ample physical and psychological risks (Brooks & Greenberg, 2022; Abila & Acejo, 2021). Fatigue on board is a well-researched area and is considered a major problem (LeMoult, 2020; Mathieu, et.al., 2022; Rozanov, 2020; Lefkowitz & Slade, 2019). This is in connection to long workhours, shift-work and high workload (Turgo, 2022; Sampson, 2021; Bloor, et.al., 2000).

The launch of SIRE 2.0 will add more tasks for the crew to perform. The new routine and the new assessment criteria and the recent launch of this has created an uncertainty in the tanker segment on how this is going to be managed and what impact it will have. Therefore, it is of interest to investigate what implications the upcoming SIRE 2.0 will have on the seafarers that undergo the inspections.

1.1 Purpose

The main aim is to understand through a bottom-up approach how the implementation of SIRE 2.0 will affect the workload of the crew. The purpose is also to investigate what possible procedures, actions or measures that could facilitate the transition with specific focus on the human response tool for the shipping companies that are about to do so.

1.2 Research questions

1. How will SIRE 2.0 affect the crew?
2. What possible procedures, actions, or measures that could facilitate the transition?

1.3 Delimitations

This study will only include primary data from shipping companies that already are familiar with vetting. In relation to SIRE and SIRE 2.0, only the introduction of human factors and the changes in the way inspections will be conducted are taken into account. None of the content of SIRE 2.0 such as questions, instructions, regulations, or best practices that are audited during an inspection will be included.

1.4 Additional information

This thesis has been written alongside the thesis “*How demands change an Organisation*”, that studies the possible impact of SIRE 2.0 from a top-down perspective. The main purpose of that thesis is to explore how commercial, and customer driven demands can contribute to the sustainable performance of a ship management company. In addition to the main purpose a subsidiary purpose is to explore the assessment of psychosocial conditions (i.e., psychosocial practices), as part of the ship management.

2. THEORY

Safety in the shipping industry is a very complex subject affected by many different factors. This theory chapter aims to inform the reader of such factors and lay a foundation of the theoretical framework needed to understand the subjects and current changes undergoing in the tanker industry. It will then connect elements with the current development of safety and quality within the tanker industry incorporated in SIRE 2.0, to the holistic perspectives of system safety engineering and the SDGs. This will be followed by how it can be integrated and communicated to the target audiences. The chapter will be concluded by highlighting how staff onboard are part of the total system, and how the integration and assimilation may affect them.

2.1 Quality Management in Shipping

The following chapter describes the evolution of quality management, how it emerged in the shipping industry, and what changes it is currently undergoing.

2.1.1 Historical Background of Quality management

Assuring quality in products and services is not a new phenomenon, evidence has been found that such methods were used thousands of years ago (Fisher & Nair, 2009). During the Middle Ages, guilds were often formed in order to organise craftsmen and standardise quality, both for products and services. The guilds accomplished this by standardising work procedures and carrying out inspections. Something that except for the aspect of guilds, has continued through time and has remained a common practice. After the industrial revolution mass production in factories created a demand for end of line inspection, and the focus of quality control shifted from the craftsmen's performance to the end product (Fisher & Nair, 2009; Weckenmann, et.al., 2015).

Focusing on the human

The increased scale of operation as an effect of the industrial revolution necessitated changes being made on a managerial level (Uddin & Hossain, 2015). The increased size of production and operation created new problems regarding the management of “resources, productivity increase and workers skill improvement” (Uddin & Hossain, 2015, p 579). The classical management theory emerged from these new demands. The approach was more focused on trying to “predicting workers behaviour and controlling their behaviour from the manager's perspective to achieve organisational goals” (Uddin & Hossain, 2015, p 579), placing the human in less of a priority than the system itself while trying to maximise the contributed system-output using the human as a mechanical resource (Uddin & Hossain, 2015). Frederick Winslow Taylor was one of the earliest to try to maximise the output by studying human behaviour. Being an engineer and manager, he created the management theory of Taylorism, which in part focused on the human factor, incorporating it into the classical systematic approach. For example, by changing the way of hiring by advocating careful consideration to be made regarding fitting the right person to the right job and task, which previously hadn't been carefully analysed (Uddin & Hossain, 2015; Littler, 1978).

In the early 20th century, the use of statistics in management became more common, and Fisher & Nair (2009) explains that the modern statistical quality control, more similar to the methods

used today, mainly began to appear in the 1920s. The Hawthorne studies conducted between 1924-1932 challenged Frederick Taylor's theory showing even more of an emphasis on the human factors was needed. With an added focus on what might affect the workers and consequently their performance, rather than focusing mainly on how to control them (Uddin & Hossain, 2015; Lee, 2016). The findings suggested more attention should be put on the dynamics of human factor aspects, like job security, group dynamics, and improving the mental support for workers in order to improve their performed output (Uddin & Hossain, 2015; Lee, 2016), aspects which the scientific management developed from Taylorism has been accused of neglecting (Uddin & Hossain, 2015). Behavioural management theory such as the Hawthorne studies later merged with scientific management resulting in what is sometimes called *modern management* focusing both on the systematic management methods while taking the human factor into account (Uddin & Hossain, 2015).

Proactive management

In the 1960s quality management started to incorporate a more proactive approach to risks and widened the perspective to also incorporate quality assurance, trying to eliminate problems before they arose (Weckenmann et al., 2015). Later in the 20th century standards like ISO 9000 also played a big part in upholding quality through standardising documentation, measurement, and processes. Quality management became more focused on the system of the organisation, as it helped tame the more complex environment that had fostered because of increased competition demanding flexibility and reliability (Weckenmann et al., 2015). Standardised frameworks thus reduced the amount of effort required to be able to trust your partners.

One of the earliest examples of incorporating social aspects and parameter as a part of quality in management, are the 14 Points of Total Quality Management (TQM) presented by Edwards Deming in the book *Out of the Crisis* (Weckenmann et al., 2015), first published in 1986 (Deming, W. E., 2000). The book suggests ideas like eliminating fear, improving the team-dynamic, and increasing awareness of the organisation from a holistic point of view to promote a more socially sustainable work environment focused on continuous improvement. Common practices believed to hinder the achievement of those goals were, among other things, qualitative production such as work quotas and mass inspections, which should be avoided as much as possible, as it causes dissatisfaction and creates division in the social work environment (Deming, 2000). Production inspection is an expensive reactive approach because it only describes an already inherent faulty feature of a product/process and is sensitive for subjective interpretation and should therefore be avoided in situations where some level of errors can be accepted. Also, it becomes less effective if performed too frequently since the routine procedure can drain the personnel (Deming, 2000).

Perceived vs actual

Weckenmann et al., (2015) also mentions the increased importance of *perceived quality* with emphasis on the end-customer in more modern times and that the perception of quality in the production often differs a lot from the customers point-of-view. The perceived reputation of a company thus can become much more important than minor deviations in production which increases the importance of employees and the human factor in regard to quality management. Employees often represent the quality of work within an organisation and play an essential part in an organisation's processes and the implementation of them. Therefore, they need to be taken into account and valued in order to be kept satisfied so that they can contribute to the

achievement of effective quality management, taking the whole organisation into account (Weckenmann et al., 2015; Wilkinson & Brown, 2007).

2.1.2 Historical background Tanker Vetting

In the thirty years that followed the second world war, tanker vessels increased significantly in size (Huber, 2001). At the end of the war the traditional sized tanker vessels were approximately 16 500 dead weight tons (DWT), and in the 1970s the industry regularly used vessels with a capacity of several hundreds. In the 1960s the public had become increasingly concerned with oil spills, partially because of the highly publicised grounding of Torrey Canyon in 1967 (OCIMF, 2022b). The concern also spread to the courtrooms where accidents had previously mainly been imposed on the shipowner but based on evidence from accidents the courts started to hold the cargo owners partially accountable for the spills (Cefic & Responsible Care, 2020). It now became common practice for cargo owners to have to prove in a court of law that they had exercised their due diligence in examining and selecting their hired vessels, leading to the recommendation and common practice of vetting that is used today (Cefic & Responsible Care, 2020).

The *Oil companies International Marine Forum* (OCIMF) is an association that was established as a result of the increased concern for oil spills (OCIMF, 2022b). OCIMF was founded in 1970 and consists of some of the largest companies in the oil industry. Their mission is to develop and coordinate procedures and systems to promote responsible and safe handling of oil, gas and chemical products in a marine environment. In 1971 OCIMF started its collaboration with the *International Maritime Organisation* (IMO) as a consulting party and published various guidelines regarding safe practices onboard tankers leading up to the 1990s. In 1993 OCIMF published the first version of their Ship Inspection Report Programme (SIRE) with the purpose to create a unified tool for vetting across the industry (OCIMF, n.d.). In 2001 SIRE as a quality management system (QMS) became ISO 9002:1994 certified and got revised to the updated version ISO 9001:2015 in 2018 (OCIMF, n.d.). As of 2020 OCIMF consist of 110 members located in 45 countries and since the launch of SIRE, the system has been a part of over 180000 ship inspections (OCIMF, 2022c), now being widely considered as one of the global industry standard tools for vetting procedures (Grbić, et.al., 2018).

In 1978 OCIMF together with the International Chamber of Shipping (ICS) published the International Safety Guide for Oil Tankers and Terminals (ISGOTT), (ICS, 2020). The purpose of ISGOTT is to provide guidance for safe terminal and tanker operations and processes. And is designed with the aim for terminals and tankers to incorporate its procedures into their safety management systems. The latest version (6th Edition) was published in 2020. It now has some additional topics, among them, human factors, and additional tools for risk assessment. This revision is a industry collaborative effort mainly constructed by OCIMF and ICS facilitated by collaborative efforts with organisations like, INTERTANKO, the International Association of Ports and Harbors (IAPH), the Society for Gas as a Marine Fuel (SGMF) and the Society of International Gas Tanker and Terminal Operators (SIGTTO), (ICS, 2020).

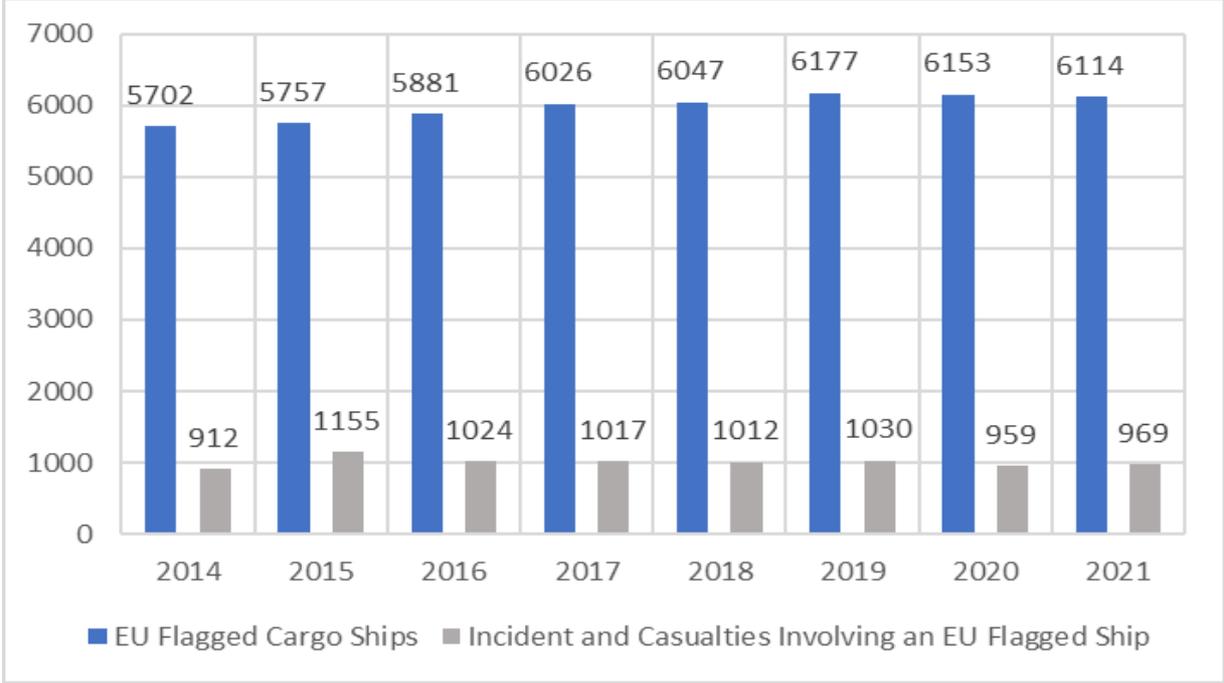
2.1.3 The evolution of tanker incidents & accidents

UNCTAD (2022) in their Maritime Review report states that it is important to note that not only tankers are responsible for oil ending up in the ocean. Other types of cargo vessels are also contributing factors. As well as natural seeps and land-based sources (ITOPF, 2023).

Annually the European Maritime Safety Agency (EMSA) releases a casualty and incident report with data from marine accidents, where EU member flagged ships have been involved EMSA (2022). The data included in the report spans from January 2014 to the end of December 2021. Figure 1 shows the number of reported incidents and casualties as well as the amount of EU flagged ships during this period. Incidents and casualties increased from 912 in 2014 to 1012 in 2018, and later dropped in 2020 to 959 and 969 in 2021. The evolution of EU flagged cargo ships during the period stayed quite consistent, being 5702 in 2014 and 6114 in 2021.

Figure 1

The number of EU flagged cargo ships compared to the number of incidents and casualties EU flagged ships has been involved in.



Note: Data based on EMSA (2022).

The International Tanker Owners Pollution Federation (ITOPF) releases a report that on a yearly basis presents the estimated product spill from “tankers, including combined carriers, FPSOs and barges.” (ITOPF, 2023, p 3). The report includes historical spill data from 1970 up to and including 2022. Relating to spills over seven tonnes, the report shows a significant decrease in the number of tanker accidents from the middle of the 1970s. The average number of accidents peaked at 78,8, and had decreased to 5,7 between 2016 and 2021. However, between 2009 and 2021 the number of accidents resulting in a spill over seven tons has more or less stayed around 6 accidents per year. Looking at the amount of oil ending up in the ocean as a result of tanker accidents, this also somewhat mimics the same trend. But with one major deviation, as a result of the incident with the tanker vessel SANCHI, that in 2018 spilled 11 3000 tonnes of oil into the ocean. As the number of accidents has decreased, the number of tankers being responsible for the majority of the oil being spilled also has also decreased. In the 1990s 73% of the spilled volume came from the 10 biggest incidents, which had increased to

91% between 2010-2021. A statistic largely affected by SANCHI, which represented 70% of the total amount of spilled product this period.

Noteworthy however, is the increase in trade volume in the tanker industry, which in metric tons more than doubled between 1970 and 2018. In 2018 the trade reached an all-time high, exceeding three billion metric tons. But since then it has lowered a bit, which may stem from the COVID-19 pandemic (ITOPF, 2023).

Chen et al. (2019) published a review exploring the history and possible future of governance relating to oil spills from tankers suggests more collaboration between maritime governments and research communities in relation to human errors. The key factors they discovered responsible for oil spills from tankers relate to “equipment failure, bad weather conditions, human errors, stranding, and collision.” (Chen et al, 2019, p 31). These results are strengthened by Mignan, et al. (2022), in their study “Dynamics of severe accidents in the oil & gas energy sector” (Mignan et al, 2022, p 1), where they concluded that the largest cause of an accidents being human error.

2.1.4 Safety Management in Shipping

The shipping industry is often regarded as one of the most dangerous to work within (further explained in section 2.5). The practice of regulating procedures and practices in a global setting, has widely been accepted as the leading method to mitigate accidents and to increase safety within the shipping industry (Pun, et.al., 2003).

The International Convention for the Safety of Life at Sea SOLAS created by the IMO (IMO, 2010) was first published in 1914 following the accident of Titanic (Celik, 2009). The purpose of SOLAS was to stipulate the requirements “for construction, equipment and operation of ships” (Celik, 2009, p 570), and have had several revisions since then. Major shipping accidents that had occurred in the 20th century have continued to play a significant role in the increase of global regulation regarding safety and management (Celik 2009). In the 1980s, IMO had recognized several accidents in shipping being “manifestly caused by human error, with management faults” (Pun, et al., 2003, p 704), and thus began to create guidelines with the aim to amend these problems, by focusing on management in regards to “the safe operation of ships and for pollution prevention” (Pun et al., 2003, p 705). Thus the International Safety Management Code (ISM Code) was introduced in 1993 (Pantouvakis & Psomas, 2016) and mandated in 1998 through SOLAS (Pun et al., 2003) aiming to increase safety in shipping related to accidents causing human and environmental damage, partially through providing guidelines and best practice for safe management across the industry. One of the stipulations of the code is that a vessel has to have a Safety Management System (IMO, 2010). The safety management system (SMS) should in compliance with the code include the following:

- “.1 a safety and environmental-protection policy;
- .2 instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with relevant international and flag state legislation;
- .3 define levels of authority and lines of communication between, and among, shore and shipboard personnel;

.4 procedures for reporting accidents and non-conformities with the provision of this code;

.5 procedures to prepare for and respond to emergency situations; and

.6 procedures for internal audits and management reviews.” (IMO, 2010, p 12).

Regarding the implementation, there are procedures meant to facilitate the process following the ISM directive, often governed by a safety management panel (SMP). The SMP is responsible for the systems compatibility with the organisation's objectives through design and should ultimately oversee the action plans for implementation and registration. The designated person (DP) should also be appointed and involved in this process of establishing the SMS (IMO, 2010; Pun., et al, 2003). The DP should, in accordance with the code, have direct access to ship personnel as well as top management to be able to effectively correct and amend faults discovered and reported. The DP is also the entity of the shipping company responsible for internal audits of the system, and for making sure sufficient support and resources are allocated so that crew can safely operate their vessels (IMO, 2010).

In line with the safe operation of ships, training and certification for the crew of a ship is required. The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) created by IMO, was first agreed upon in 1978 (IMO, 2019a) and entered into force 1984 (IMO, 2019b). Through its adoption the aim was to unify standards and quality of training for seafarers, which previously had varied due to commonly being conducted and developed by individual governments without cross validation (IMO, 2019b). Thus, the minimum requirements set out by the convention aimed to amend these problems by lowering the difference in quality of training and certification of seafarers, to improve the safety at sea. Since 1984 the STCW convention has gone through several revisions, to continuously be relevant for the industry and keep up with changing demands (IMO, 2019b). Such amendments have occurred 12 times leading up to 2018 (IMO, 2019c).

2.1.5 Improving Quality Management in the Shipping Industry

An analysis on criteria relating to the effectiveness of implementing the ISM code and SMS's on-board ship found that the ISM-code is effective in the goal of improving safety management and operation but could be made more efficient by having the shipping companies focus on some key factors mainly regarding criteria within the SMS, checklists, and procedures on an operational and organisational level. The most significant areas found were firstly, the priority of the different controls in planning and secondly, the suitability of such controls. From an organisational aspect the efficiency was most crucial in relation to the conformity to legislation and internal standards like SIRE (Uflaz et al., 2022). Some suggestions on how to improve the functions of the ISM-code are:

“• Smart systems that provide quick access to forms or procedures and also follow up by the shore department.

• Checking the compliance of checklists and procedures with ship type and operations during ship inspections

• Creating think loud culture within the team during the emergency situations to follow the actions in the checklists or procedures” (Uflaz et al., 2022, p 10).

Some of the challenges with the ship SMS and the stipulation of the operational aspects of it, mostly relate to the opposition to change, and the lack of knowledge, resources and time needed for the effective implementation and tailoring of the system (Pun et al., 2003). In the light of this Kamiński (2022) suggests a unification of practices and procedures on how to assess risk. Facilitating an increased level of understanding for the people enforcing the assessments, thus increasing the safety of the shipping industry. However, he also reinforces the validity in previous research showing that tailoring of procedures in some cases very much can be necessary to better suit specific circumstances. Kamiński emphasises that one of the most important areas for the management of safety on-board is the crew's level of understanding of the risk management approach, which demands an emphasis being put on extensive training and education by the shipping companies (Kamiński, 2022).

2.1.6 Total Quality Management in the Shipping Industry

When 87 shipping companies based in Greece, were studied regarding the implementation of Total Quality Management (TQM) in the shipping industry, evaluating its factors and their correlation to the results of quality, the following was shown:

“Results reveal a set of strategic choices focusing not only on the strict implementation of ISM rules and procedures, but also toward a continuous change in management and leadership culture aiming to achieve better results.” (Pantouvakis & Psomas, 2016, p 496).

Measuring customer satisfaction, service quality, financial performance and conformity combined with the adaptability to unexpected events within the management also showed a strong correlation to success for the shipping companies in the study. Therefore, the study concluded that TQM practices could be a useful tool in several areas of the business, especially in regard to ‘top management commitment’, ‘process management improvement’, ‘employee quality management’, ‘customer focus’ and ‘employee knowledge and education.’” (Pantouvakis & Psomas, 2016, p 512).

The importance for shipping companies to align their TQM practices with the aim of the company was also noted. Not strictly focusing on the practices and procedures that are prescribed in standards of quality management, but also tailoring them to promote the company's individual preferred outcome, as it ultimately will affect the performance of the business. Areas to focus on to enhance the climate of improvement specific to the individual company were found to be: “leadership and management of human resources, a culture of quality, learning, continuous improvement, policy and strategy and the management of tangible and intangible resources.” (Pantouvakis & Psomas, 2016, p 512). Also, emphasising the possible benefits of continuous improvement by flattening the organisation, to make the management more aware of circumstances and changes affecting the employees.

As previously mentioned, the quality management standard ISO 9001 is widely used in different industries, included in the shipping industry as it can help assist with quality improvement and provides the possibility of certification in such practices (OCIMF, n.d). Pantouvakis & Psomas (2016) explains that the revised version ISO 9001:2000 is not fully compatible with current regulation within the maritime industry as it requires additional efforts for certification in both standards. Although the ISM-code is quite similar to the management systems ISO 9001, and OHSAS 18001 (Occupational Health and Safety) functions are related in many ways. The difference mainly lies in the ISM-codes focus, especially being on the marine environment (Pun

et.al., 2003). Yet, coordinating OHSASs and the ISM code could be a good practice to strengthen the management systems on-board ships to improve occupational health and safety, specifically the OHSAS version 18001:2007 (Gül, et.al., 2020). Which could be used to improve the management system onboard in coordination with the ISM code, especially in the implementation process, where the company has the possibility to construct a more comprehensive system from the start.

2.1.7 What is SIRE 2.0?

SIRE 2.0 is a development project of OCIMF's current inspection programme SIRE (OCIMF, 2022c). OCIMF has been working on this programme since 2017 and had planned for the programme to become operational in 2022 (OCIMF, 2022c). The new programme is being developed by three different working groups focusing on different areas, (1) governance, (2) inspection and (3) technology and is led by a steering group that is ultimately responsible for delivering the updated system.

Until SIRE 2.0 is officially launched the original SIRE will continue to be used and kept updated (OCIMF, 2023). SIRE 2.0 will be rolled out to the industry in a phased approach. The aim with the new system is to “future proof the tanker inspection process” (OCIMF, 2023). The way inspections are conducted will also change on several levels. One of the significant changes is the digitalization of the inspection process, using a digital pad to record answers and observations. In addition, enabling the inspectors to reinforce their observations by taking pictures, which OCIMF states will enhance the safety of the industry (OCIMF, 2023). The inspection program will be risk-based and is meant to be easily updated to adapt to emerging risk trends or new regulation.

The change OCIMF states will provide “more accurate information to enable OCIMF members and programme recipients to make judgements on the quality and the likely future performance of a vessel.” (OCIMF, 2022c). OCIMF has summarised the changes into four key focus areas:

Accuracy: Facilitating an accurate description of how key safety and operational risks are managed and verified on a vessel.

Capability: Training and developing inspectors who are of the highest quality, consistency, and integrity.

Reliability: Strengthening vessel inspections and reducing the number of repeat inspections required.

Adaptability: More rapid response to human factors, industry changes, regulatory framework updates and technology advances.” (OCIMF, 2022c).

The enhancements will be facilitated by making the inspection process more comprehensive and more controlled, with the aim to make the reporting more thorough. SIRE 2.0 will also include “Enhanced inspection criteria on **equipment, procedures and human factors**” (OCIMF, 2022c). Along with a more comprehensive pre-inspection and monitoring processes. The increased use of technology enables “inspections and feedback to be reported and documented in real-time and to allow inspections to be completed more efficiently” (OCIMF, 2022c). Changes within the system will be published on a “process documentation library”. OCIMF believes that the increased governance of the programme will promote “transparency

and control for all parties involved in the programme, either directly or indirectly” (OCIMF, 2022c). The changes are also believed to result in an improvement of training and continuous improvement of inspectors, with the aim to keep standards of inspections as high as possible.

The inspection program will now be risk-based and is meant to be easily updated to adapt to emerging risk trends or new regulation. The questions for each inspection is compiled from a question-library, and consists of three types of questions: (1) **Core Questions**, which are deemed the most important and will be asked at every inspection, (2) **Rotational Questions** which are allocated to a vessel on a “occasional basis” and (3) **Campaign Questions** which are rotational questions subjected to all vessels, during a limited timeframe (OCIMF, 2023c), focusing on current identified risks or trends in the industry found by OCIMF. The selection of the questions in all types of questions can be affected by a vessel's operational history, type, and equipment onboard. The way questions are observed will also change, SIRE 2.0 will go away from the current system that uses a binary response (yes or no), and will instead have a five-level answer, ranging from Not as Expected to Exceed Expectation (OCIMF, 2023c).

The human factor part of the assessment is implemented to try to understand if a task can be executed correctly in the future (OCIMF, 2023b). For the inspector to decide which response a task deserves on the five graded response scale, they use the Performance influencing factors (PIFs) to assess what factors that might affect the person carrying out the task. The PIFs consist of organisational, social, psychological, and physical characteristics that can affect human performance. OCIMF has summarised the PIFs which they find to be the most relevant to vessel operation as follows:

1. Recognition of safety Criticality of the task or associated steps
2. Custom and practice surrounding use of procedures
3. Procedures accessible, helpful, understood, and accurate for tasks
4. Team dynamics, communications, and coordination with others
5. Stress, workload, fatigue, time constraints
6. Morale, motivation, nervousness
7. Workplace ergonomics including signage, tools, layout, space, noise, light, heat, etc.
8. Human-machine interface (Controls, Alarms, etc.)
9. Opportunity to learn and practice (OCIMF, 2023b)

2.1.8 The transition to SIRE 2.0

OCIMF has on their public website published several documents intended to support and guide companies through the transition of SIRE 2.0 (OCIMF, 2023c). OCIMF explains that the new digitalized inspection report programme SIRE 2.0 will be rolled out in a phased transition. The website consists of several guidance and instructional videos and documents, for example the preliminary question-libraries (OCIMF, 2022d; OCIMF, 2022e), along with a comparative analysis between SIRE 2.0 and VIQ 7 question sets (OCIMF, 2022f).

There is also the published framework OCIMF (2021), created with the aim to assist companies with the implementation and integration of human factors into their existing management systems. The framework is based on the principles in the publication the Tanker Management self-assessment (TMSA), previously released by the organisation but is not yet integrated to it (OCIMF, 2021). The framework has compartmentalised the human factors into five focus areas: (1) The role of leadership in defining the culture, (2) Well-executed tasks and procedures, (3)

Well-designed equipment and controls, (4) Skills to respond to emerging situations and (5) Learning before and after things go wrong. All focus areas are presented in the framework together with a couple of bullet-points, which aim to further explain the focus areas and give the reader best practice guidance. The framework also ends with a summary of text based key performance indicators (KPIs) that could be used to evaluate the current level of performance in regard to the five focus areas.

To understand if and how these measures correlate and are expected to decrease the involvement of human factors, it is necessary to comprehend what human factors are and what makes humans make mistakes, which will be explained in the following.

2.2 Humans are part of the System too

Human factors are part of ergonomics, which is the scientific study of how to optimise the design of a workplace for human use so that the environment and tools used, enhances productivity in a safe manner. Having influences from other fields, such as psychology, medicine, and engineering, ergonomics covers physical, cognitive, and emotional demands and solutions when humans interact with surrounding systems, machinery, or tools (Salvendy & Karwowski, 2021; Informa Healthcare & Karwowski, 2006). Examples of this could be chairs designed with good back support, clear instructions for handling heavy machinery or the offering of counselling services in mentally straining professions. Among the many subjects studied in ergonomics, one of them is the occurrence of human errors and its causes.

2.2.1 Why Humans do Errors

Human perception is individual and so are personal traits. Personal traits strongly influence how a person behaves and reacts to contextual random events, but they are difficult to generalise, foresee or plan for (Informa Healthcare & Karwowski, 2006; Norman, 1986; Norman, 1983). Therefore, by stopping the investigation when the human error has been identified, the opportunity to understand and address the underlying causes of the human error is lost, because cause and effect rarely has a linear relationship (Leveson, 2012; Portela da Ponte Jr, 2021; Norman, 1986; Norman, 1983). There are several individual, organisational, and environmental factors that can contribute to unsuccessful decisions that end in accidents and incidents. There are also several factors that can contribute to successful decisions that lead to optimised and safe results (Salvendy & Karwowski, 2021; Leveson, 2012; Informa Healthcare & Karwowski, 2006; Portela da Ponte Jr, 2021). These, also known as human performance influencing factors (PIFs), each having their own effect, have direct or indirect impact on human performance. How large of an impact they have, depends how they interact with each other and the person (Salvendy & Karwowski, 2021). Listed with some examples of what they can consist of, they are as follows:

- **human** – such as stress, intelligence, personality type, experience, or motivation of an individual or the size, climate, or ambition of a team,
- **task** – the level of complexity of a task, as in if it is repetitive, requires special qualification or is time limited,
- **environment** – how the physical environment is perceived in terms of noise, illumination, or temperature and how the social environment is in terms of team-feeling, management systems or policies,

- **tool/interface** – how well supported the task is, as in if relevant tools are available, if its user friendly or if sufficient personal protection equipment is provided,
- **job object** – the features of the task, such as if it is dangerous, can only be executed during the day-light hours or if it demands standing for long periods of time, and
- **working progress** – if there are suitable procedures, collaboration, or communication enough to successfully complete a task (Salvendy & Karwowski, 2021).

As an example, for concepts explained above, the European Maritime Safety Agency (EMSA) have sorted root causes to accidents according to one or several contributing factors: External environment, Shore management and Shipboard operation. (EMSA, 2022). According to their 2022 report for incidents in 2021, the most represented contributing factor type was Shipboard Operations (70%), consisting of two major accident event types: Human action with 68.3% and System/equipment failure with 18.8% of all contributing factors. Also, when comparing all accidents for each type of vessel for the period of 2014 to 2021, Human behaviour was the most significant contributing factor category, with 50.3% of the contributing factors, followed by 'Environment' with 29.2% (EMSA, 2022).

Another accident investigation stated that the fifth most common reason for incidents is “poor judgement” and the third most common being “failure in communications”, the latter being the immediate cause of groundings and the second most frequent immediate cause of collision (Acejo, et.al., 2018). This has led to largely attributing incidents and accidents to human error and attaching the root causes such as unwise behaviour by seafarers, poor motivation, deficiencies in the safety culture, and failure to apply the ISM Code (Rozanov, 2020; Acejo, et.al., 2018; Baştuğ, et.al., 2020) Other studies concur the most common factors to accidents and near misses, being human error, negligence, or ignorance (Zalewski & Posacka, 2021; Çakır, 2019; Md Hanafiah, et.al., 2022) where ignorance includes inadequate procedures, skills, and training, as well as insufficient quality and extension of training (Coraddu, et.al., 2020; Çakır, 2019).

Underlying causes to the mentioned human factors vary whether it is a near-miss situation or an actual accident, but some factors mentioned have been fatigue, relying on automation, lack of situation awareness and teamwork, health issues and stress (Hetherington, et.al., 2006; Bicen & Celik, 2022; Coraddu, et.al., 2020; Reason, 1995). Insufficient crewing, multi-tasking, administrative burdens under time pressure which are especially heavy on staff on tanker vessels, and the lack of speak-up culture are some other aspects (Rajapakse, et.al., 2022; Baumler, et.al., 2020; Coraddu, et.al., 2020; Tetemadze, et.al., 2021).

Human errors cannot be regulated away (Reason, 1995) but by paying attention to the human PIFs, it is possible for an organisation to manage human factors by:

- offering training programs that increase the awareness of human factors and how they can have an impact on safety,
- promoting a safety culture that encourages safe behaviour and decision-making,
- designing appropriate positions and tasks that minimise the likelihood of human error,
- designing the work environment appropriately so the likelihood of human error is reduced,
- developing appropriate operating procedures and policies that provide clear guidance and expectations for safe work practices, and

- regularly monitoring and giving feedback on the appropriate management of human factors (Portela da Ponte Jr, 2021; Pyć, 2020; Leveson, 2012; Claxton, et.al., 2022).

2.2.2 Human factors

According to the International Ergonomics Association, human factors are defined as:

“...the scientific discipline concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance” (IEA, 2000).

However, there are several different definitions that have been debated by scholars as well as industry experts since the early 1900s when the concept was popularised. This applies to the shipping industry as well where IMO, defines the human element, as they call them, as:

“The Human Element is the term used to describe the critical impact of human performance on safety and security at sea, pollution prevention and the efficiency and effectiveness of shipping. The importance of human factors in ensuring safety, security and environmental protection has long been recognized by IMO” (IMO, u.d.).

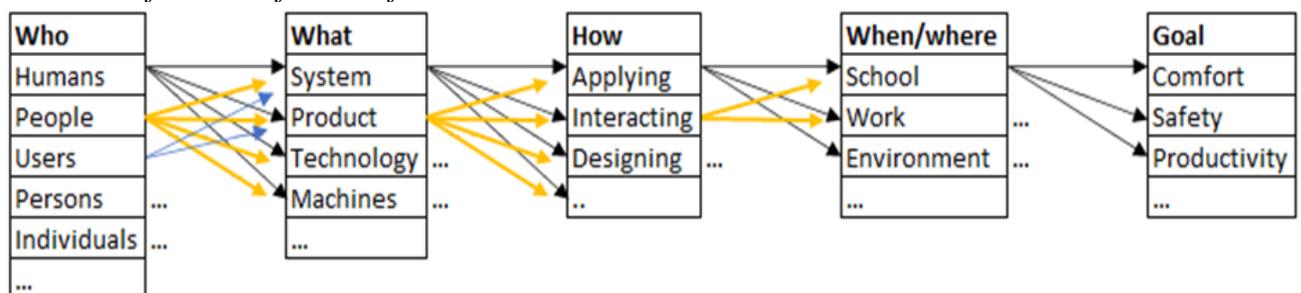
OCIMF on the other hand, opting to use the term human factors, defines it as:

“Human factors refer to the environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety” (OCIMF, 2020).

As of today, consensus has not yet been reached on one single definition, although there is agreement on what human factor involves: a **who**, interacting with **what** in a **how** way, at **somewhere** or **sometime**, for a **goal** (Informa Healthcare & Karwowski, 2006; Salvendy & Karwowski, 2021). As the figure below shows, the number of definitions and combinations can be numerous.

Figure 2

Possible definitions of human factors



Note. All combinations possible allow for many correct descriptions of Human Factors. Adapted from: “A Short List of Terms Assigned to a Simple Category Structure Describing Human Factors/Ergonomics,” by P.G Dempsey, M.S Wogalter, and P.A Hancock, in Informa Healthcare, & Karwowski, W. (2006). International Encyclopedia of Ergonomics and Human Factors- 3 volume set (2nd ed.). p.35 (W. Karwowski, Ed.) CRC Press. doi:10.1201/9780849375477

The same can be said about human errors. Although a universal definition has yet to be made, there is a general congruent understanding of what errors implicate (Informa Healthcare & Karwowski, 2006; Salvendy & Karwowski, 2021). Simply put, human errors are when individuals do things that do not render the expected results.

This happens because humans are constantly consciously and subconsciously going through a cognitive cycle of receiving information from their surroundings, that is sensed and perceived through outer receptors, such as eyesight, hearing, or touch. The received information is then compartmentalised, analysed, and “translated” into data that can be processed and fitted to a personal understanding. This “translation” is the process of taking new information and making it understandable and coherent by combining it with what is already known, for example, from prior experiences. The information will then be tested, accepted, discarded, or re-evaluated depending on the nature of the information and the recipient. This cycle has several different stages and each stage triggers distinct cognitive mechanisms. Each of the stages can “fail”, producing unintended actions or lapses that lead to divergence from the intended results (Informa Healthcare & Karwowski, 2006; Salvendy & Karwowski, 2021). The likelihood of “failure” or human errors, also depends on several other conditions; internal conditions, such as fatigue, illness or nervousness, and outer conditions such as noise, vibrations, or temperature. Since people respond differently to information and conditions, and have unique experiences and knowledge, it means that the more people that are involved the higher the risk that an error occurs (Informa Healthcare & Karwowski, 2006). Despite this, the variations of errors are relatively limited, and have therefore been grouped into three kinds of errors:

1. **skill-based errors** due to inattention, or lack in perception or memory. Happens most commonly when an operator does routine or automatic tasks, they are not fully engaged in,
2. **rule-based errors**, when a person follows an incorrect rule either due to inexperience, lack of training or understanding, and
3. **knowledge-based errors** where the operator lacks knowledge or information enough to make a successful decision (Reason, 1995).

As it is discussed in section 2.2.1, it might seem like humans are the cause of accidents and incidents (Salvendy & Karwowski, 2021; Leveson, 2012). The high prevalence of human factors being stated as the cause to why accidents happen, has been argued to be counterproductive to safety because it can put far too much focus on individual errors and blame, which is not effective preventing accidents and incidents (Leveson, 2012; Claxton, et.al., 2022; Parker & Davies, 2020). One of the reasons is because even when individuals are to blame, blame and the fear of blame can become barriers for transparency and openness, something that is necessary for learning, and continuous improvements (Salvendy & Karwowski, 2021; Leveson, 2012). Even when a human error has contributed to an incident or accident, there should be a difference between blame and accountability, and this difference is not always clear (Parker & Davies, 2020).

A second reason the use of the human factor in this way can become ineffective, is because it can be a biased and simplistic way to identify and address the root causes of incidents and accidents, not suitable for complex systems and situations (Salvendy & Karwowski, 2021; Leveson, 2012). Studies have shown that the conclusions in accident investigations depend on the personal traits of the people involved, the relationship between the analyst and the respondents and especially, the severity of the accidents. Notably, it has been deduced that when

similar events have happened, accidents resulting in losses have been attributed to human errors, while near-misses without losses have been attributed to technical deviations. This concurs with data showing that accidents will more likely be attributed to human errors, the more complex and the less is known about them. Later, when closer investigation has been made, often there is evidence found of other factors (Leveson, 2012).

Still, as mentioned in section 2.2.1 there are ways to manage human factors. But in order to identify and take the appropriate measures, a holistic approach is needed, something that system safety engineering offers.

2.2.3 System Engineering

Ergonomics and system safety engineering have similar goals when it comes to safe optimisation of system performances, approaching similar issues from different perspectives. While ergonomics focuses on how to optimise systems and products to be safe and efficient for humans (Informa Healthcare & Karwowski, 2006; Salvendy & Karwowski, 2021), system safety engineering focuses on making complex systems that are safe and efficient in its entirety. This includes the processes, technology, and humans within the system (Leveson, 2012; Rokseth, et.al., 2018). In addition, technology is rapidly advancing, resulting in functions and interactions between humans and technology becoming increasingly intricate and complex, which means that new types of hazard analyses and risk assessments are needed (Leveson, 2012; Hancock, 2023; Parker & Davies, 2020).

The holistic approach goes beyond finding whom (human) or what (machine) is to be blamed, and instead examines the event in context to the entire sociotechnical system which includes social, regulatory, and cultural factors (Leveson, 2012; Pyć, 2020; Claxton, et.al., 2022). This means that methods like Human Reliability Analysis (HRA) (Parhizkar, et.al., 2022) that are used to identify and quantify the probability of human errors are not effective. Firstly, because it leads to a dead end when it is already established that humans do make errors, and secondly because these methods tend to focus on the cause rather than the reason (Leveson, 2012; Rokseth, et.al., 2018; Parker & Davies, 2020). In relation to human errors, this means that although the starting point is to find the decision that did not give the intended result, it is more important to analyse why that decision was made in the first place (Leveson, 2012). What PIFs were affecting the decision? Were there inappropriately designed measures implemented to control human factors?

A holistic approach in shipping means that an incident must be put in relation the entirety of shipping: including the ship, including the relations and processes between the ship and the shore-based organisation, including the organisation as a whole in relations to regulations and stakeholders (Rokseth, et.al., 2018; Claxton, et.al., 2022; Pyć, 2020). Finally, the holistic approach has been reached when the regulations and stakeholders relate to continuous sustainable development of society (IMO, 2017). One approach to how this can be achieved will be described in the following sections.

2.3 The SDGs and Shipping

Shipping has made several advances, contributing to the SDGs. Such as, safe marine engine operations, alternative fuels, and measures against biofouling to name a few. But there is still a

lot of room for improvement in many areas such the usage of alternative fuels, biofouling monitoring, among other examples to include all three pillars of sustainability (Karvounis, et.al., 2022; Wu, et.al., 2023; Xue & Lai, 2023; Stavroulakis & Papadimitriou, 2022).

Since the resolution to transform the world for the better was adopted in 2015, resulting in the Sustainable Development Goals (SDGs), the aim has been to reach the goal by 2030, replacing the Millennium Development Goals (MDS), through an action plan based on three sustainability pillars: economic viability, environmental protection, and social equity. The so called 5Ps are five key elements of the 2030 agenda, which are the following:

- “People – ending poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.
- Planet – protecting the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources, and taking urgent action on climate change, so that it can support the needs of the present and future generations.
- Prosperity – ensuring that all human beings can enjoy prosperous and fulfilling lives and that economic, social, and technological progress occurs in harmony with nature.
- Peace – fostering peaceful, just, and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
- Partnership – mobilising the means required to implement this Agenda through a revitalized Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.” (United Nations, 2015)

To reach the SDGs, corporations, and businesses play an important role, since they incorporate the 5Ps in general, but also because some of the SDGs depend on their contributions. Among them are Goal 7: Affordable and Clean Energy, Goal 8: Decent Work and Economic Growth, Goal 9: Industry, Innovation and Infrastructure, Goal 12: Responsible Consumption and Production and Goal 17: Partnerships for the Goals (United Nations, 2015).

In 2017 IMO, adopted resolution A 30/Res.1110, in which they declared their vision for years 2018 to 2023, to among other things, uphold:

“...its leadership role as the global regulator of shipping, promote greater recognition of the sector's importance and enable the advancement of shipping, while addressing the challenges of continuing developments in technology and world trade and the need to meet the 2030 Agenda for Sustainable Development” (IMO, 2017).

In addition, the IMO Secretariat came together with other participants to form the Maritime Just Transition Task Force, with the aim of supporting a just and human-centred decarbonisation of the shipping industry. In a Position Paper launched in November of 2022, the task force puts forward a 10-point action to achieve a Just Transition for Seafarers. The paper includes recommendations to various stakeholders, among which the commercial shipping industry is included, on how to ensure that the transition to a sustainable maritime industry is fair and equitable for all workers (Maritime Just Transition Task Force, 2022).

Some of these improvements rely on the shipping companies investing on the onboard personnel, because engaged employees that are committed to promoting environmentally sustainable practices can make a great impact on the operation of the industry (Usman, et.al., 2020). When organisations set out goals, it is important that the ones carrying them out are doing so willingly. This can be promoted by increasing the awareness of sustainability issues, training and encouraging environmentally friendly practices (Podgorodnichenko, et.al., 2020; Usman, et.al., 2020)

Therefore, it has been suggested that Human Resource Management (HRM), in developing sustainable companies should play a leading role in the sustainability process, because they have the possibility to promote employee engagement and wellbeing. Also, Human resources are at the core of an organisation when it comes to reaching out to employees in different departments (Podgorodnichenko, et.al., 2020; Wang, et.al., 2023). HRM also facilitates an increased coordination and cooperation between departments. Companies with high internal integration and coordination have shown to have been better prepared for improving their sustainability practices, not only because it has been easier to change norms, but also because knowledge sharing, innovation, and operational performances have been more efficient (Wang, et.al., 2023).

There are additional benefits to aligning HR with sustainable practices. A study has shown that organisations that monitor and invest in staff and the work environment are more likely to have positive business outcomes, because there is a strong correlation between employee satisfaction and business performance (Rose, et.al., 2013). There are generally four areas where a good work environment can make a difference. Firstly, increased work satisfaction when providing a healthy and safe workplace, makes it easier to promote a positive and safe organisational culture. Secondly, by reducing distractions while promoting support, communication and collaboration, the employee productivity increases. Thirdly, it can contribute to sustainability efforts by reducing waste, boosting resource efficiency, and enhanced ethical and responsible business practices. Finally, it can have a direct impact, improved customer satisfaction, more efficient overall business performance and sustainable staff retention by reducing employee turnover. (Rose, et.al., 2013; Fasoulis & Kurt, 2019). Staff retention is a sustainable business practice because it provides economic stability, additionally it is also a sustainable use of resources and intangible assets. A high turnover rate is not only costly in terms of funds, but also because much of the knowledge, culture and experience disappears with staff that leave the organisation (Zorn, et.al., 2017).

But in order to accomplish the above mentioned there has to be a change in the mindset and culture of businesses today, so that sustainability is not an isolated task to be done when opportunity appear, but rather an integral part of the core mission and strategy of the organisation (Podgorodnichenko, et.al., 2020). If the organisation integrates sustainability practises early, it increases the likelihood for business success and sustainable economic outcomes benefiting all stakeholders in the long run (Fasoulis & Kurt, 2019). But unless everybody involved knows what the goal is and why, this will not be accomplished. Therefore, it is important to connect and build relationships that understand that purpose and are willing to contribute to it. The next sections will explain how this can be done through communication.

2.4 Information and public relations

Information and public relations can be described as the activities used to establish and maintain positive relationships between one party, the sender, and their stakeholders, the receiver. The sender and receiver can be individuals, organisations, or both (Kotler, et.al., 2012). When building and sustaining social relationships of any kind, trust is a key component. In turn, trust is established when being perceived as behaving predictably in accordance with written and unwritten rules and norms. Another aspect is being perceived as credible (Citraën, 2021; Camilleri, 2021). In the following sections it will be described shortly how this can be achieved and what must be in place for an organisation to gain their stakeholders' trust and credibility. These two elements are even more important in connection to change, because parties with already established good relationships need to be convinced that the change will benefit future relationships, making the need for good communication crucial (Kotter, 2012).

2.4.1 Organisational Purpose

The first step to build positive relations is to have a clear picture of what the organisation wants to achieve and communicate this purpose to external stakeholders (O'Brien & Gallagher, 2021; Kotler, et.al., 2012). Although the following quote was published in 2012, it describes the “global trend of purposeful mindset” (O'Brien & Gallagher, 2021) in business and consumers alike of today:

“Over the past decade, there has been an apparent shift from adopting more responsible business practices as a result of regulatory citations, consumer complaints, and special interest group pressures, to proactive research exploring corporate solutions to social problems and incorporating new business practices that will support these issues” (Kotler, et.al., 2012).

This new perspective, also described as informed empathy, is the mindset where knowledge, understanding and capabilities are combined to create a more empathetic and compassionate purposeful worldview. Informed empathy is something that applies to both people and businesses that aim to be socially responsible environmentally, economically, and socially beyond what is demanded by law (O'Brien & Gallagher, 2021; Kotler, et.al., 2012). There is some evidence showing that organisations that lead a socially responsible business can be more profitable, but this requires the purpose to be clear and the actions following being perceived as genuine. Consumers and stakeholders today demand transparency and visibility into how businesses conduct themselves. They are having access to technology that quickly gives instant access to information, can therefore rapidly become informed and critical towards organisations that cannot act according to what has been promised (Kotler, et.al., 2012)

2.4.2 Target audience

For an organisation that has a clear and credible purpose to convey, the next step is to communicate it to the relevant recipients they need to gain trust from. An organisation's actions must reflect the objectives and values they are projecting to stakeholders. Also, the company's objectives must align with the preferences and priorities of the stakeholders (Weiner, 2021; Citroën, 2021). The recipients of the message must find it relevant, interesting, and compelling, because their perception of the message will be influenced by what they already know and believe, their culture and own objective and values (Citraën, 2021; Kotler, et.al., 2012; Weiner,

2021). These stakeholders are what is called in marketing and communication theory, the target audience (Kotler, et.al., 2012; Citroën, 2021).

There are three kinds of receivers or audiences:

- the **transactional** audience: usually end-users, consumers or segments targeted for sales or investment, thus being the core audience,
- the **purposeful** audience: the core audience and other people or organisations that share an interest the purpose, but not sharing the same goal as the sender and,
- the **peripheral** audiences: those who are otherwise not interested or involved in the objectives or an organisation but that can momentarily have an impact (O'Brien & Gallagher, 2021).

Organisations therefore need to not only identify the target audience, but also their functional and emotional needs (Citroën, 2021). This includes what they do, where they are located and what is important to them as well as what they need to know and want to feel. This is needed to be able to convey an organisation's message as relevant, convincing, and aligned with the recipients' own views and purposes (O'Brien & Gallagher, 2021; Kotler, et.al., 2012; Citroën, 2021). Although it is important to know the target audience, it is seldom possible to map the needs, objectives, and purpose of each member of the target audience. Therefore, not every member of the target group will be convinced (Kotler, et.al., 2012). But the design of the message can greatly impact how credible and trustworthy the purpose is.

2.4.3 Conveying the message

Communicating the purpose is two-tiered; one strategic and one tactical. At the strategic level, it is easier to achieve credibility and trust when the purpose and objectives are realistic and measurable within the message. In addition, it should also include how the objectives of a purposeful sender will interact and positively affect the receiver or other, such as positive impact on the environment, economy, or society. This will set up what the receiver can expect from the business in the future (O'Brien & Gallagher, 2021; Kotler, et.al., 2012). In other words, the message must explain “the *who*, the *what*, the *when*, and the *by how much*” (Weiner, 2021; O'Brien & Gallagher, 2021).

The tactical level of communicating the message is the “*how*”, as in how the message is delivered and through which forum it is done (O'Brien & Gallagher, 2021; Camilleri, 2021; Weiner, 2021). With today's technology, there are several different mediums to use, such as external web pages, social media, and review sites not owned or controlled by the organisation itself. Mediums controlled by the organisation can be their corporal website, offering subscriptions to newsletters, and email. Emails in particular have been suggested to be the most effective medium for organisations to reach their target audiences, tailed by intranet and eye-to-eye communications in second (Camilleri, 2021).

Lately other alternatives have emerged such as interactive systems like augmented reality and gamification technologies, such as cloud gaming as well as virtual events and webinars through live streaming (Camilleri, 2021; Weiner, 2021)

2.4.4 Troubleshooting the Message

Sometimes, despite the best efforts the expected outcomes fail to appear. At times this may happen due to technicalities such as ineffective targeting of audiences, not enough resources allocated, or the message being timed poorly, which are issues relatively easier to rectify (Weiner, 2021). When the efforts do not pay off due to misaligned strategy, tactics or efforts missing the target audience, it might prove harder to rectify because these failures might create the perception of a gap between what was perceived as being promised and what was perceived to be done (O'Brien & Gallagher, 2021; Citroën, 2021). There are two kinds of gaps that can emerge. One, when the sender is caught underdelivering on their promise, whilst the second is when the sender is doing more than what the target audience were aware of them doing (O'Brien & Gallagher, 2021). Either way, a perceived gap has in turn repercussions on the perceived trust and credibility in the sender while potentially making pre-existing dissatisfaction and already critical audiences even more so (Kotler, et.al., 2012; Citroën, 2021; Camilleri, 2021). As mentioned, although these kinds of divergences might be harder to rectify, they are still possible to amend.

2.4.5 Own the Message

When the efforts do not pay off the first step is to identify what is being perceived as misaligned and assess the damage, in order to see what can be done short- and long-term to rectify the problem. The analysis of what the gap is can be done based on direct feedback, but may also include gossip, rumours, or speculation from the target audience, because it can pinpoint whether the gap is real or only perceived, but it can also give an indication of future possible gaps (Citroën, 2021; Kotler, et.al., 2012; O'Brien & Gallagher, 2021).

In continuation, the source of critique or feedback concerning gaps should also be evaluated, to sort out outliers from the majority view. If there is widespread criticism, especially if it is justified, own it. Not acknowledging the situation will not make it disappear. The sender should therefore get out in front of the issue through honest authentic, transparent, and comprehensive communication that shows that the gap has been acknowledged and present what is being done to address it. This will allow the sender to take control of the situation, move on and return the focus to what the original intention was. Handling criticism is often taxing but it is crucial and may even leave the sender stronger (Citroën, 2021; Kotler, et.al., 2012; O'Brien & Gallagher, 2021).

With all said, as mentioned in earlier chapters, humans are central for achieving sustainable quality management of shipping and subsequently a target audience. In order to reach them, then their functional and emotional needs should be known. The following sections will thus investigate some of the aspects of being a seafarer.

2.5 Being a seafarer

Seafaring is a high-risk occupation since it involves many different stressors, health risks and strains (Brooks & Greenberg, 2022; Abila & Acejo, 2021). Depending on whether the vessel is on route or at port, operations and workload may differ, resulting in various kinds of stressors and levels of stress (Pollard, et.al., 1990). Exposure to the elements (Sampson, 2021), noise, vibrations, dangerous compounds (Strandberg, et.al., 2022), and physical strain is common resulting in seafarers having an increased risk to suffer from cardiovascular disease (David, et.al., 2021), infections, and gastrointestinal diseases (Forsell, 2018; Eriksson, 2019), accidents,

cancer (Forsell, et.al., 2015), liver deceases and suicide (Carter & Jepsen, 2014; Sampson & Ellis, 2021; Rozanov, 2020; Mathieu, et al., 2022). To mitigate the risks involved in day-to-day labour and operations, shipping companies have risk management tools (Kamiński, 2022; Kamiński & Szczepanek, 2022). By working with systematic risk analysis and improvements of work conditions, there has been a decrease in health issues and casualties reported (Sampson, et.al., 2017; Sampson, et.al., 2018; EMSA, 2022), since some objective factors in the working conditions onboard such as noise, vibrations, and temperature changes are easier to identify and measure (David, et.al., 2021; Lefkowitz & Slade, 2019).

But psychosocial hazards such as stress, fatigue, feelings of isolation, and the lack of psychological safety, can be harder to identify and assess on both a collective and personal level, as these risks are perceived subjectively by individuals (McVeigh, et.al., 2019; Hystad & Eid, 2016). The link between stress, fatigue and depression, combined with studies showing that working in the maritime industry is connected to elevated risk for burnout and suicide, has gradually become a growing problem (LeMoult, 2020; Mathieu, et.al., 2022; Rozanov, 2020; Lefkowitz & Slade, 2019).

2.5.1 Why are there subjective stressors?

One of the major differences and reasons for high levels of stress when working as a seafarer compared to other occupations, is the requirement of living in the workplace (Chung, et.al., 2017; Sampson & Ellis, 2019; Allen, et.al., 2008). These circumstances means that seafarer mobility is limited to the size of the vessel, where they cannot control their own time. Even if most have specified work and rest hours, they are on the same time continuously on standby, and since calls from shore do not always coincide with the vessel's time zone, port calls are not always possible within work hours. Additionally, if there is an alarm, it must be attended to independently regardless of the time (Turgo, 2022; Sampson, 2021).

The longer a vessel stays in port, the more berthing fees and other expenses may accumulate, which can diminish a ship owner's profits (Tetemadze, et.al., 2021; Turgo, 2022). Therefore, with ships being scheduled to spend the minimum amount of time required in port to load or unload cargo, refuel, and complete other necessary tasks, there is little time for crew members to go ashore during port calls, and subsequently omitting an opportunity to recharge. This makes port calls to be among the busiest instances because the tight schedules intensify the workload. To bunker and handle cargo efficiently, requires safe and secure handling of the practical operations as well as the documentation, providing the paperwork required by international and port state regulations. In addition, the crew also must supply the shore personnel with all the relevant data they require. This can be challenging for shore personnel to gather this information in a timely manner, particularly if the seafarers onboard the ship are already working at full capacity, which often leads to overtime (Turgo, 2022; Bloor, et.al., 2000). The longer the seafarer stays onboard the higher the level of stress is perceived while motivation declines (Hystad & Eid, 2016; Barnett, et.al., 2017)

Lack of motivation, stress and fatigue has been recognized as negative influences when it comes to important decision-making, and selection of priorities (Chung, et.al., 2017; Iversen, 2012), as the person gradually wears down physically and psychologically, which can increase the risk of making fatal mistakes (David, et.al., 2021; Chung, et.al., 2017; Iversen, 2012; Ekeström & Persson, 2019)

The length of the stay onboard also affects how stressful work may be perceived (Slišković & Penezić, 2016); it can also determine how severe the feeling of isolation may become. Some factors, such as rank, gender, age, and marital status (Mellbye & Carter, 2017; Sekhon & Srivastava, 2021), may provide different levels of resilience to isolation and psychological stresses. Since connectivity to shore sometimes is not possible, the relationship to colleagues also has a significant effect on the well-being (Brooks & Greenberg, 2022; Sekhon & Srivastava, 2021; Sampson, 2021; Sampson & Ellis, 2019).

While new technology has allowed the shipping industry to streamline operations and downsize onboard crew despite the gradually increased workload (Baumler, et.al., 2020; Rozanov, 2020; Rydstedt & Lundh, 2010; Alderton & Winchester, 2002), the globalisation of shipping and the use of flags of convenience has made the job market within shipping more international (Alderton & Winchester, 2002). With more competition, the industry has put more emphasis on the economy which has led among other things to strategically recruiting lower-paid staff from all around the world (Rozanov, 2020), thus mixing nationalities onboard. Therefore, the possible cultural differences and linguistic barriers can contribute to feelings of isolation (Sampson, 2021; Mathieu, et.al., 2022; Jensen & Oldenburg, 2020; Baumler, et.al., 2020). The more cultural distances there are between crew members, and the longer and more stressful the adjustment is the higher the likelihood of misunderstandings and conflicts, even when individuals are set to get along (Mellbye & Carter, 2017). Additionally, having a higher position may add further to feelings of loneliness and isolation, since it may lead to a hierarchical distance to co-workers of lower rank as well as less rest hours that can be spent on socialising (Sekhon & Srivastava, 2021; Brooks & Greenberg, 2022; Mellbye & Carter, 2017). This is especially true when there is a lack of supervision and support (Carotenuto, et.al, 2012; Brooks & Greenberg, 2022). Additionally, respondents have reported not receiving regular feedback on their work or having regular meetings to discuss the work environment, leaving them feeling like they could not influence decisions concerning their work tasks (Ekeström & Persson, 2019; Brooks & Greenberg, 2022).

While seafarer's personal perception of work-related satisfaction, self-confidence, and general well-being amongst other things (Lefkowitz & Slade, 2019; Rozanov, 2020; Mellbye & Carter, 2017) will determine the level of personal resilience, the work environment will determine the outcome. All above-mentioned stressors, while depending on the resilience of each individual to tackle them and their capacity to handle difficult situations, can be perceived to have lesser impact when there is an equal and supportive work environment. But in case of the contrary, if the workplace is unjust, unsupportive, and lacking resources to work effectively, safely and with dignity, even high personal resilience cannot compensate for or even out high levels of stress (McVeigh, et.al., 2019).

Despite the risks mentioned, many of them can be reduced (MacLachlan, et.al., 2012) through improving the organisational and psychosocial work environment through systematic work environment management, raising awareness, and tackling frustration among staff continuously (Ekeström & Persson, 2019; Hystad & Eid, 2016; Lefkowitz & Slade, 2019; Rozanov, 2020). But for this to work, there must be transparency, willingness, and possibilities to do so. Therefore, some of the barriers to this will be addressed as follows.

2.6 Barriers behind mistakes

As mentioned earlier, there have been a number of accidents attributed to human factors in an industry system that is strictly regulated, held to a high standard, and inspected accordingly. Therefore, it is of interest to investigate how mistakes still are made in such an environment.

One component that determines what interactions a person will have with a system, is the level of control the person has over it. There are three main kinds of possible interactions: manual, supervisory and fully automatic control (de Winter & Hancock, 2021; Heikoop, et.al., 2019), all of them represented onboard. In manual control, a person fully controls what a system will do based on feedback from the system, as in manually steering a ship. In a system with supervisory control, based on system feedback, procedures are adjusted. An example being overseeing bunkering operations. Finally, in fully automatic control, a person does not control any part of the system other than starting or stopping it, such as automated cargo handling systems. (Heikoop, et.al., 2019).

Independently of the type of interaction or control, the person operating within the system or machine needs to adapt their behaviour to fit the system to ensure the “correct” interactions (Heikoop, et.al., 2019; Wang, et.al., 2021; Norman, 1986). Three common strategies to adapt humans to a system have been through 1) introducing standard procedures and incentives to adhering to them, 2) training staff in the required skills and knowledge to increase their performance output in relation to procedures and 3) by selecting staff to interact and control the system, that have excelled in strategy 1 and 2 (de Winter & Hancock, 2021). The following section will explore some barriers to why standard procedures do not always work in the shipping industry and what the incentives may be.

2.6.1 Standard procedures and incentives

A study made in Norway on why maritime industry employees violate procedures found that documentation structures lacked clear and consistent terminology and categories (Bye & Aalberg, 2020). Some documents classified as “instructions”, “procedures”, “plans”, “rules” or “system descriptions”, could be referred to as other categories in the documents and there was no description of the difference between concepts, such as what the difference between “procedures” and “instructions” were. There was no distinction between action rules, process rules or performance goals, and several documents denoted as procedures did not include any rules for how to act or what to achieve. At the same time the staff perceived that they had conflicting expectations from different stakeholders. For example, the customer expected them to keep the schedule stipulated in the contract, otherwise they would be fined. The shipping company wanted them to maintain economical speed to preserve fuel and the port expected them to comply with arrival procedures. Also, the staff needed enough time to have sufficient time to load and unload safely according to safety rules in the SMS. Since keeping the schedule had precedence, it meant that the staff found it unavoidable to violate other procedures (Bye & Aalberg, 2020). The reason why the staff were placed in this situation, was reported to be because the systems “are not made by seafarers” and are perceived to be created to safeguard the company from being held responsible and put the “blame” on staff. There was also a presence of informal norms based on the belief that a “proper seaman” should rely on their own competence, skills, and performance and not in a manual for procedures. Further, it was noted that the higher the position, the higher the number of deviances would be self-reported (Bye & Aalberg, 2020).

According to the previously mentioned method on how to tackle these challenges could be to report them to higher-ups, so that new procedures can be made and rehearsed. Also staff with “upgraded” knowledge can be appointed to interact with the system (Heikoop, et.al., 2019; Wang, et.al., 2021). The study of Bye and Aalberg (2020) highlights that people tend to create their own solutions when the system is not fully adequate to the demands (Danielsen, et.al., 2021; Aylward, et.al., 2020; Norman, 1983)

There are even examples where deviating from flawed safety procedures could be the safest option (Puisa, et.al., 2021). The Bye and Aalberg study also show that, where expertise is appointed, it tends to make the surrounding people not to question neither the system nor the person operating it, making “incorrect behaviour” the norm (Bye & Aalberg, 2020).

The amount of self-report increasing with position highlights two other barriers within the industry, namely a culture of silence (Carballo Piñeiro & Kitada, 2020; Hershcovis, et.al., 2021; Rajapakse, et.al., 2022; Tetemadze, et.al., 2021; Zahlquist, et.al., 2019) and the hierarchical system (Bhattacharya & Tang, 2013; Forsell, 2018; Eriksson, 2019).

Self-reporting incidents and accidents should be a valuable tool to mitigate and prevent similar outcomes (Puisa, et.al., 2021), but only if they are accurate, honest, easy to understand depictions of what happened and following a unison form (Goerlandt & Liu, 2023; Hasanspahić N, et.al., 2020) which is not always the case (Goerlandt & Liu, 2023).

In a case study reviewing four tankers from two well reputable organisations, showed a significant discrepancy between managers and crews’ opinion and understanding of functions and purpose related to the ISM code. During the interviews job insecurity was identified as the most common concern for the seafarers stemming from the short-term contracts of employment commonly used within the industry (Bhattacharya, 2012). This insecurity had a major influence in the operation of the ISM Code and prevented seafarers from uttering any disagreement, creating a difference in opinion of the Code between ratings and officers. For the ratings, the management of risks was merely a regulatory exercise, that they did not partake in. Meanwhile, officers saw the Code as a managerial tool benefitting the shipboard health and safety required to be enforced by everyone (Bhattacharya, 2012). The discrepancy between the opinions creates a climate that lacks seafarers’ honest input on the systems thus rendering occupational health and safety aspects of the systems less effective (Bhattacharya, 2012).

If procedures are perceived to be in place to blame individuals so that the organisation can avoid accountability (Bye & Aalberg, 2020), the likelihood of reporting near misses is diminished since staff may fear being blamed for them (Bhattacharya, 2012). Therefore, it is crucial for organisations to strive for having a no-blame culture (Hasanspahić, et.al., 2020; Hasanspahić, et.al., 2021; Bhattacharya, 2012). At the same time, within the same organisations, it can be perceived there is too much of at stake to have a no-blame culture, since superiors consider it their responsibility to make sure incidents are not repeated, which at times means taking actions or reprimanding the individual behind an incident (Bhattacharya, 2012).

A culture of silence is not only about keeping quiet, but also being silent or not being heard once speaking up (Hershcovis, et.al., 2021), as well as fearing negative feedback something that can happen to subordinate and superior positions alike (Wolfe Morrison & Milliken, 2000). A person in a superior position may avoid speaking up in fear of losing face, having their competence questioned or fearing they will lose their authority (Wolfe Morrison & Milliken, 2000; Bhattacharya, 2012; Hasanspahić, et.al., 2021). Being able to trust neither the system or

the colleagues is a strong inhibitor of good communication (Bhattacharya, 2012), also caused by role conflict (Rydstedt & Lundh, 2010; Zahlquist, et.al., 2019; Bhattacharya, 2012). If the demands of the role are at conflict, the insecurity and frustration can lead to fear of not only being blamed, but shamed, made fun of, as well as losing the respect from colleagues (Hasanspahić, et.al., 2021).

The next section will investigate the second strategy of adapting humans to a system by training staff in the required skills and knowledge.

2.6.2 Training

The past decades technology within shipping has rapidly become more sophisticated and advanced (Danielsen, et.al., 2021). Although technology has improved much of the work onboard, there is still efficiency to be gained by making it more suitable for the end-user (Danielsen, et.al., 2021; MacKinnon, et.al., 2020; Norman, 1986; Norman, 1983). Sometimes technology is not always the best fit for the crew, which may cause them to create “own solutions” substituting poor design (Danielsen, et.al., 2021; Aylward, et.al., 2020). The same kinds of solutions may be sought after if there is not enough knowledge, trust or understanding in how the technology works or how an action may have an impact on subsystems (Aylward, et.al., 2020). Not enough knowledge may also lead to over-reliance on technological systems. For example, if a deviation from the norm happens, the operator either does not react or hesitates too long before taking control of the situation (Danielsen, et.al., 2021; Melnyk, et.al., 2022).

As previously mentioned, a method to adapt humans to a system is by introducing standard procedures and incentives, training staff, and then selecting those who perform the best (de Winter & Hancock, 2021). This approach has some drawbacks though. One of them being only focusing on the “best” interactors with a system. That may cause others, that are not “selected”, to not question neither the operator nor the procedures even when identifying discrepancies (de Winter & Hancock, 2021). There are also drawbacks regarding training because it is not possible to practise for every event. Therefore, someone who is trained and performs well in one condition, may not do so when circumstances change. Also, since training seldomly is tailored to individuals’ abilities and way of learning, good results from training may not necessarily be indicative of a person being the most suitable for a task. Instead, it may point out the person who responded best to that particular training method (de Winter & Hancock, 2021; Praetorius, Hult, & Snöberg, 2020).

Since 1995, the STCW code has also included crew resource management (CRM), inspired by the approach the flight industry has been using for decades (Praetorius, et.al., 2020). The now mandatory concept of Bridge Resource Management (BRM) aims to use and distribute all resources available on the bridge in an effective and safe manner, with a course covering topics such as situational awareness, decision making, communication, leadership and teamwork (IMO, 2003; Praetorius, et.al., 2020), requiring both technical and non-technical skills (NTS) (Praetorius, et.al., 2020b; Praetorius, et.al., 2020).

Although research has shown that BRM indeed improves the skills and usage of crew resources while making operations safer (Campaniço Cavaleiro, et.al., 2020; Röttger & Krey, 2021; Ma, et.al., 2022), there are some challenges with the approach when it comes to NTS starting at an early stage of education. Firstly, while BRM is practised in a school setting through classes and simulations, techniques and tools taught are not always applicable in real life because some

operations onboard are difficult to fully mimic in a simulation set (Praetorius, et.al., 2020b; Praetorius, et.al., 2020; Sellberg, et.al., 2018). Also, NTS are difficult to evaluate and identify, consequently it is also difficult to target specific or tailored needs for students to improve on (Praetorius, et.al., 2020b; Praetorius, et.al., 2020; Melnyk, et.al., 2022).

Secondly, there is a lack of agreement on what NTS are. Though considered important, more abstract themes like leadership, communication, stress managing and decision making seems to mean different things for different individuals (Fjeld & Tvedt, 2020; Fjeld, et.al., 2018; Yushan, et.al., 2021; Wahl & Kongsvik, 2018). Because students are evaluated and graded separately, their own understanding of what each NTS is, may be reinforced further by not having the opportunity to learn in a social context. Good grades may, therefore, not automatically be indicative of good skills or the ability to apply learning in real-life situations (Fjeld & Tvedt, 2020; Yushan, et.al., 2021).

So, when studies and reports show that the human factors behind accidents and near misses consists of negligence, lack of communication, misinterpretations, improper description of causes, lack of training, education and experience among other things (Coraddu, et.al., 2020; Çakır, 2019; Bicen & Celik, 2022; Norman, 1983), maybe they are showcasing issues that are not solely rooted on the inadequate human actions in an objective manner, but perhaps is a psychological reconstruction biased by the clarity of hindsight (Puisa, et.al., 2021). Since humans tend to act similarly under the same conditions, it is also possible that when the same kinds of human factors cause similar accidents, the reason might not be people making the same mistakes, but instead only reacting similarly in the same kinds of conditions (Puisa, et.al., 2021).

The next section will describe one segment of the crew onboard in particular namely the “managers”, in the third part of the strategy to adapt humans to systems by selecting staff to interact and control the system,

2.6.3 What leaders to select

The contribution of a crew’s combined knowledge, competence and adherence to the SMS is needed (Zalewski & Posacka, 2021), but senior officers are key to a well-functioning crew and well-functioning communication. They have dual responsibilities onboard, such as the safety onboard, technical maintenance, navigational duties, and practical supervision of cargo handling. At the same time, they manage and are supposed to provide guidance and support to lower ranking colleagues (Bhattacharya & Tang, 2013). As technology is rapidly evolving the demand for updated technical expertise also increases (Norman, 1983), which in turn affects the demands on leadership and skills needed to lead (Fjeld, et.al., 2018).

While managers are more concerned with supervising and directing staff, planning, and budgeting, problem solving, productivity, and maintaining operations in line with set goals, leaders have other approaches to the same tasks a manager would supervise (Panayides, 2019). Instead of explicitly telling staff what to do, they try to convey a sense of purpose and direction to them so the staff voice their opinions and make decisions for themselves that will contribute to the common goal by deflecting attention from themselves. By not putting themselves as the centre of decision making, they communicate performance expectations aligned to organisational core values, mission, and vision. This does not mean they do not make decisions, but they rather lead by example and challenge others to the same, through feedback, rewards and contributing to a healthy work culture (Panayides, 2019). This requires a set of non-

technical skills that in the shipping industry has shown to be essential contributors to promoting the safety culture needed (Bhattacharya & Tang, 2013) as well as sustainable practices (Su, et.al., 2020). Trust and positive communications, together with work balance have been shown to yield efficiency in operations (Ricardianto, et.al., 2020) and increased abilities to communicate and teach, maintaining a calm demeanour when something unexpected happens as well as being able to give and receive feedback has shown having a vast impact in how well teamwork functions and in consequence how safe operations are when carried out (Fjeld, et.al., 2018).

Furthermore, studies have shown that safety culture onboard, the notion of always assessing and making decisions in the safest way possible, are heavily influenced by the behaviour of superiors (Bhattacharya & Tang, 2013). If superiors show that they care for safety and act accordingly, they encourage others to do the same (Panayides, 2019; Kim & Gausdal, 2017). This includes caring and supporting others to encourage sharing of lessons learned, best practices and speaking up when issues emerge, because although decisions have to be based on the guidelines and rules established, if a decision has to be made that deviates from the normal operations, the team has to have established trust and knowledge enough to handle it (Kim & Gausdal, 2017; Fjeld, et.al., 2018). This also means that if safety is going to have top priority as culture rather than just being bullet points on a checklist, there must be budgetary support, training and necessary equipment and tools provided by the organisation for everyone included in it (Kim & Gausdal, 2017).

3. METHODS

Since it covers techniques for describing meaning, rather than quantifying data, based on how people interpret, construct, and add meaning to their experiences, it was determined that an inductive qualitative method was to be used to identify and gather general information, themes and broad descriptions of the subject answering the “what” and “how” (Hesse-Biber & Johnson, 2015; Merriam & Tisdell, 2016). The inductive approach was considered suitable also, due to the novelty of the SIRE 2.0 program, leaving academic literature yet to be published on the topic, this is something further explained in the following section.

Because of the novelty of SIRE 2.0 an experienced vetting inspector who wishes to remain anonymous was interviewed in January 2023, to better grasp the implications of the changes leading to SIRE 2.0 were and what they thought of it.

The inspector shared their concerns regarding the objectivity of the inspections due to:

- the evaluation of human factors and the performance is very hard to make a concrete judgement of, that even psychiatrists struggle with,
- the current vetting inspectors’ capabilities of making qualitative evaluations regarding these matters,
- that the new evaluation method including four categories ranging from not as expected to exceeding normal expectations is much harder to determine compared to the binary evaluation method in the original SIRE, because it creates room for interpretation,
- the same was said about the evaluation of the performance regarding the human factors, the so-called Performance Influencing Factors (PIFs) which are intended to be added as an explanation to the inspector's graded answer regarding the involvement of the human factor,

- although inspections are aimed to be anonymous, the position of the evaluated crewmember is named which could create added pressure and increased stress-levels during and after vettings, as the size of vessel-crews and the exact date of the inspection could make it possible to figure out who's been evaluated.

This interview provided guidance to what areas the theoretical framework might be needed.

3.1 Theoretical framework

As the launching of SIRE 2.0 had not been carried out fully when this thesis was commenced during the fall of 2022, little research had been published on the effects of this initiative. However, extensive research was and is published in similar areas within and outside the maritime domain that could be used to build the underlying structure of this thesis (Merriam & Tisdell, 2016; Saldaña, 2011; Hesse-Biber & Johnson, 2015). To construct the theoretical framework where the sample selection of sources was structured, comprehensive and transparent (Hiebl, 2023; Adams, et.al., 2017; Hiebl, 2023), the literature used in this thesis was divided into two groups that had to meet certain criteria.

3.1.1 Grey literature

IMO is a United Nations specialised agency tasked with being the global standard-setting authority of international shipping, creating the regulatory framework the shipping industry follows internationally. Therefore, the work of OCIMF is partially based on IMO regulations and publications. This kind of literature, being defined as, grey literature (Hiebl, 2023; Adams, et.al., 2017; Saleem, et.al., 2023) was included based on the criteria below.

The criteria for what sources to include from IMO, was that they had to:

- be regulations, requirements or expectations related to topics covered in SIRE 2.0,
- be regulations, requirements or expectations related to topics concerning human factors or
- explain regulations, requirements or expectations related to topics covered in SIRE 2.0,
- explain regulations, requirements or expectations related to the human experience on board ships,
- be of current use for the industry or contributing value through describing past circumstances within the industry.

When deciding what publications would be included published by OCIMF, they had to meet the following criteria when using the OCIMF website search engine:

- publications about SIRE 2.0,
- publications explaining different or all parts of SIRE 2.0,
- publications that referenced to SIRE 2.0,
- publications explaining concepts, parts, procedures, or topics coined by OCIMF, found in SIRE 2.0 related publications.

3.1.2 Academic Literature

To find relevant academic literature the main database used was the Chalmers Library Database (CLD) together with SCOPUS. If a source was found when using other databases, such as Google Scholar or Google, before it would be included it was searched through CLD, since CLD offers the option to limit the search to “Peer Reviewed Full Text” to ensure that source had been peer-reviewed prior to publishing. Results from CLD were cross-checked in Scopus and vice-versa. If any doubts remained, the articles were checked using Ulrichsweb.

Each section of the theoretical frame was searched for separately, by using variations of some keywords. For example, for the topic on vetting inspections, some of the search terms included were: “Maritime accident + human”, “shipping vetting inspection” “vetting shipping”, “oil tanker accidents history shipping “, “safety management system shipping”. For the full list search terms, see Appendix 1.

All searches started out by limiting the results to be published during or after the year 2020. If no relevant sources were found within this span, two more years were included etcetera until enough information was found to understand a topic.

The second method to find academic sources was through snowballing. If the search terms were found in the reference lists of articles found following the above-described methods, these were handled as if they were found through a database (Wohlin, et.al., 2022; Mourão, et.al., 2020; Merriam & Tisdell, 2016). All sources were assessed according to the CRAAP test (Lasky, 2022; Blakeslee, 2004; Appendix 2).

This made the date of publication for the different topics included in this thesis to be as follows:

- Barriers: 1983-2023
- Being a seafarer: 1990-2023
- Human factors and System safety engineering: 1983-2022
- Information and Public Relations: 2012-2021
- Management Systems onboard: 2018-2023
- Method: 1981-2023
- SDG: s: 2013-2023
- Vetting Commercial: 2010-2023

3.2 Gathering of Primary data

Using a qualitative research approach allowed the researchers, being the primary instruments for data collection, the advantage of processing, clarifying, and reacting to information immediately through verbal and non-verbal means (Merriam & Tisdell, 2016). To counteract the presence of the researcher’s biases and subjectivities influencing the results of the research (Hesse-Biber & Johnson, 2015; Merriam & Tisdell, 2016; Saldaña, 2011) it was decided that the primary data would be collected through semi-structured interviews that would be following a script as to ask the same questions to all participants. This will be explained further in section 3.2.4.

3.2.1 Sample group

Participants in the interviews were selected through purposeful sampling strategy (Merriam & Tisdell, 2016; Taylor, et.al., 2016) and triangulation using different types of participants and the use of the perspectives of different researchers (Merriam & Tisdell, 2016; Hesse-Biber & Johnson, 2015; Saldaña, 2011).

The different types of participants were divided into three groups, and each group had different sets of criteria as follows.

1. **The first group** would consist of representatives from operators and oil-companies that would be providing content, instructions, information, or training in SIRE 2.0.
2. **The second group** of participants had to be:
 - consumers of instructions, information, or training in SIRE 2.0,
 - working in a tanker shipping company,
 - working directly with vettings or in a support position for vettings,
 - land based,
 - as superintendents, inspectors, vetting coordinators, or in risk, compliance, or safety management connected to the fleet.
3. **The third group** had to:
 - be consumers of instructions, information, or training in SIRE 2.0,
 - be crew members in any position onboard,
 - have experience in preparations and administration before and after vetting inspections,
 - participated in actual vetting inspections.

3.2.2 Ethics

After setting up the criteria for the different participants, a consent form was made that explained the ethical rules of the study. This was done since if the participants were going to be recorded, they needed to be aware and consenting to it, as well as informed on how their participation was going to be used (Merriam & Tisdell, 2016; Saldaña, 2011; Taylor, et.al., 2016). The form included the ethical stance of Chalmers University of Technology (Chalmers, 2023) and the statement that the study would be complying to the EU general data protection regulation (GDPR) concerning any and all personal information shared (The European Council, 2016).

The form (see appendix 3) was attached together with information about the study (see appendix 4) and was handed out during SJÖLOG (for more information see section 3.2.3.2) and attached whenever an interview was booked.

The ethical rules of the study were also added to a website containing information about the study, the purpose, the criteria for participation and a form where people interested in partaking or receiving further information could sign up to be contacted.

When the interviews were being conducted, all participants were asked for their consent prior to any recording being started. Finally, once the recordings had begun, it was repeated as a reminder for both the participants and researchers, that the participation was voluntary with the

option to withdraw at any time and that anything said was going to be handled according to the ethical rules of the study and the GDPR, to which the participants had agreed to.

All the material gathered, including work in progress, has only been handled and stored by the researchers. Any material of this study that has been shared with supervisors and peers during the writing process has been devoid of anything that can identify the participants. Once this thesis has been approved, all recordings, transcripts and personal data will be deleted.

3.2.3 Demography

Once the consent form and the Google form were done, the participants were identified and approached differently depending on the group they belonged to. The different number of participants in each group was decided through saturation, meaning that when no new themes could be generated, no new participants were included (Guest, et.al., 2020; Hennink, et.al., 2017).

3.2.3.1 First group

Participants in the first group were approached through emails stating the purpose of the study and the request of their participation. Meetings and interviews were thereafter booked and carried out digitally in accordance with recommendations found in academic literature (Merriam & Tisdell, 2016; Taylor et.al., 2016; Hesse-Biber & Johnson, 2015) through Microsoft Teams.

This group consisted of five representatives in total from two organisations, OCIMF and INTERTANKO, publishing directives on how to proceed with the transition to SIRE 2.0. Although all the participants gave their consent to publish the name of the organisations, their work titles are omitted since those can be used to identify the individuals.

3.2.3.2 Second group - Shore Group

These participants were approached in person during SJÖLOG, on 2 February 2023. SJÖLOG is a fair arranged by an association within the Students Union of Chalmers University of Technology, where students and representatives from companies within the shipping segment get the opportunity to mingle and network. All companies that could provide participants within categories two or three were contacted and received contact information to the Google form mentioned in section 3.2.2, to pass onto suitable colleagues. Companies approached during SJÖLOG that did not have the suitable participants present, were contacted through email.

In summary, this group of 12 participants working in shipping companies that undergoes vettings consisted of:

- four superintendents,
- a Superintendent/Inspector, a Head of Health, Safety, Quality and Environment Department,
- a Vetting coordinator,
- a Compliance and Systems Manager,
- a Vetting inspector,
- a Designated Person Ashore (DPA),
- a Risk Manager,
- a HR Director (ashore and onboard),

- a personnel manager/captain

In total group 2 consisted of three females, aged 40-50 and eight males, two aged 20-30, two aged 30-40, three aged 40-50 and three aged 50+.

All the above were interviewed through Microsoft Teams. The companies the participants worked in were situated in Germany, Greece, and Sweden.

Although most participants gave their consent to publish the name of their organisations, some were apprehensive because they did not want to answer “incorrectly” and thus put their company in a bad light. Therefore, neither of the company names will be disclosed. Other than here, none of the work titles are to be cited since those could be used to identify the individuals.

3.2.3.3 Third group - Ship Group

Participants in the third group were mainly identified through snowballing (Taylor, et.al., 2016; Hesse-Biber & Johnson, 2015) when asking participants in the second group to share contact information or reference to suitable participants within their organisations but were also identified through personal contact. The seven participants had been onboard German, Japanese, Norwegian and Swedish flagged tanker vessels and consisted of:

- two Second Officer: Navigation/Safety,
- three Second Officers: Navigation,
- two, Second Officers: Navigation
- one Chief Officer and
- one Captain (male)

In total group 3 consisted of three females, two aged 30-40 and one 20-30. Total males were four, two aged 20-30, one 30-40 and one 40-50.

Just as for the participants in group two, interviews were set up through email and were carried out digitally through Microsoft Teams with one exception: a hybrid Microsoft Teams and telephone interview due to poor internet connection.

3.2.4 Semi-structured interviews

As mentioned, the semi- structured interviews were carried out digitally, which allowed synchronously recording and automatic transcription of what was being said as well as building rapport with the participants (Merriam & Tisdell, 2016; Taylor, et.al., 2016).

Most of the interviews were conducted by mainly one of the researchers, while the others observed, took notes, and asked follow-up questions. It was decided that having one person conducting most of the interviews would add to the uniformity of how they were carried out, as the skills and personalities of researchers have influence (Merriam & Tisdell, 2016; McIntosh & Morse, 2015). For the same reason, it was therefore important to make participants understand that the interviews were about what their reality and perspectives were and not a test of knowledge about the SIRE program, vettings or regulations, since their attitudes, feelings and orientation in the interview can have an impact on the answers given (Merriam & Tisdell, 2016; McIntosh & Morse, 2015).

The questions asked during the interviews were a mix of background/demographic questions, experience and behaviour questions, opinion, and values questions as well as knowledge questions (Merriam & Tisdell, 2016; McIntosh & Morse, 2015). The three different groups were interviewed using three different forms (see appendix 5, 6 and 7). Although the questionnaires were designed different as to be appropriate to the respective responsibilities, the same three themes were covered, namely:

1. **Progress/Implementation**, a depiction of the present,
2. **Impact**, the expectations on the future, and
3. **Measures**, identifying what is needed or unwanted between theme one and two.

These numbers were attached to the questions expected to cover the themes before the interviews, although as mentioned earlier, the design of the interviews depended on what group the participants had been categorised into. For the first group, the question focused more on their expectations on the industry, the inspectors and the people that would work with compliance. Also, more focus was put on what purpose the changes and new additions could have.

For participants in the second group the interviews focused more on the strategy of how to help onboard crew to comply with the changes and get ready for future inspections. Several of the questions were kept at a corporate level and questions about their evaluation of instructions and information acquired focused on mainly external sources of such. The questions for the third group focused on what impact SIRE 2.0 could have practically in the respondents' everyday routines and how they envision actual vettings to be carried out. Also, when they were asked about information and preparations given, it was mostly focusing on internal sources.

Although all the questions were the same for all participants within the same group, the order in which they were asked varied, depending on the direction of the respondents' answers. Semi-structured interviews also allowed the auxiliary method of asking both prepared sub-questions (Merriam & Tisdell, 2016), requesting clarification if that was needed or an unexpected answer was given.

3.3 Thematic analysis

After the interviews, the transcripts were reviewed and manually corrected by comparing the audio and the text. This was done partly because the voice-to-text application sometimes would not be transcribing the correct words due to dialects or differing pronunciation, but also to use the verbatim transcripts as guidelines for how to improve the next interview as well as getting familiarised with the content (Braun & Clarke, 2022; Willig, 2013; Guest, et.al., 2012).

The recordings were listened through at least one time again, to get familiarised to the way participants expressed themselves. During the following listening and reading through, repetitions, false starts and comments not related to the topic such as "I apologise but I need to answer this call" or "can you still hear me?" were removed. Due to the semi-structured method of interviewing, the next step was to go through each interview and check that all questions had been answered despite not being explicitly asked, because some of the participants could cover additional questions within the same response to one question.

By now, the interviews had been reviewed enough times to commence encoding and grouping the answers. All coding and grouping were done manually (Braun & Clarke, 2022; Braun & Clarke, 2021; Terry, et.al., 2017; Braun & Clarke, 2006) in Microsoft Excel. The three themes were set up in excel and responses to the questions that were coded to be related to each theme were copied from the transcripts and pasted into the same file.

The answers were then summarised to as few words as possible, so that the core meaning of the answers could be identified regardless of how the answer was formulated (Braun & Clarke, 2022; Braun & Clarke, 2021; Gibbs, 2018; Braun & Clarke, 2006). For example, when asking how a respondent was informed about the upcoming transition, the response included: when that happened, the venue attended, what conversation was being held, the participants of the conversation and what led to someone telling the respondent about the news. That response would be summarised as “personal informal communication”.

The summaries would then be grouped together based on the similarity between them, by counting and ranking the topics of the summaries. Once this was done, the groups were named, thus becoming sub-categories presented in the results (Braun & Clarke, 2022; Braun & Clarke, 2021; Braun & Clarke, 2006).

3.3.1 Saturation

The number of participants for group two and three were decided by saturation of sub-category themes (Hennink, et.al., 2017; Braun & Clarke, 2021; Braun & Clarke, 2021b). These themes were triangulated (Chitac, 2022) against the theoretical framework, the statements of group one and in between groups one and two.

4. RESULTS

This chapter is divided into two parts, section 4.1 for research question: “How will SIRE 2.0 affect the crew?” and section 4.2 targets research question two: “What possible procedures, actions, or measures could facilitate the transition?” These sections are divided into the sub-themes identified during the thematic analysis, and are explained shortly in the beginning of each section. The sub-themes are then divided into headings, which further describe their content, separated by each group. As a reminder: group 1 consists of the governing associations OCIMF and INTERTANKO, group 2 consists of shore personnel, and group 3 consists of the ship crew personnel. For further information about the groups, please see section 3.2.3.

4.1 Impact

In general, all participants, except for one, were positive about the introduction of human factors into SIRE 2.0, with 11 participants ready to start at any given moment. All participants expressed confidence in their organisations, the skills of all involved and in managing the transition whenever it is due.

Apart from one of the participants from group 2, the inclusion of human factors in SIRE 2.0 was perceived to be positive by both groups although with the reservation that it was understood correctly. Both groups also perceived that SIRE 2.0 would have an impact on the workload on the crew. The impacts were discussed both as in short-term and long-term impact. Most of the participants when asked “What outcomes are you expecting with SIRE 2.0?”, would answer by separating their ideas on what would happen in the beginning of the transition and

implementation, and then what they expected would happen once SIRE 2.0 were up and running. Also, when describing the impact, because they would compare short-term and long-term, they would give different scenarios such as: if I interpret the information to be X, then Y will happen. If it should be interpreted this other way, then I think Z is most likely”.

Below in the table is an overview of each sub-theme identified and the headings are the attributes of each sub-theme.

Table 1

RQ 1 “How will SIRE 2.0 affect the crew?”

Main theme	Sub-themes	Headings:
1. Impact	1.1 Workload 1.2 Psychosocial work environment 1.3 Safety 1.4 Leadership 1.5 Competition	1.1.1 Short and long term 1.2.1 Recognition and changes 1.3.1 Increased emphasis on Safety 1.4.1 Change and support 1.5.1 Companies and crew

Note: This table consists of the analysis aimed to answer research question 1. The **main theme** identified is the “Impact” that the changes might bring. The main theme is then divided into **sub themes** which is presented in the analysis under the above presented **headings**.

4.1.1 Workload

All groups shared the same expectations in regard to the short-term workload, namely that it would probably increase notably during the transition and early stages after it, until everyone had adjusted to the news part. Thereafter the opinions differed in regard to the long-term workload once SIRE 2.0 is the new norm. Since OCIMF wanted to keep inspections lasting 8-10 hours, they have adapted the number and type of questions to fit that time frame so that the workload would be the same. But group 1 and 2, doubted that the workload would go back to the same levels as before the transition once everything settled down. This was mostly attributed to the pre-vetting inspections, that calls for pictures and additional information to be submitted ahead of inspections.

What differed between group 1 and 2, was that the shore staff was more focused on practical matters such as the conducting of pre-vetting inspections or rectifying observations. The ship crew also spoke of practical details but were more focused on how the introduction of PIFs could improve their work situation and in turn their workload in the future.

Short term workload - Group 1 Governing Associations

When SIRE 2.0 was being compiled, OCIMF aspired to keep the same timeframe of the inspection as for current versions. With this in mind, they say that they had to design the system with fewer questions because it would otherwise not fit the time frame. The system had therefore in an effective way selected the “right number of questions to be applied” to each vessel.

INTERTANKO said the same and mentioned that the workload would be increased in the beginning:

“it's going to be an increase in workload, there will be a ramping up, everybody's ramping up now. So, it's climbing rapidly [...] the amount of work. It will tail off and plateau and it will be the new system.
INTERTANKO

Short term workload - Group 2 Shore

Apart from one of the participants, the workload for the onboard crew was expected to increase severely, even after the transition period. The participant that did not expect much to change stated also their company is in the early stages of assimilating information on SIRE 2.0 and relatively small, so changes are easier to go through which was the reason for their answer but that “they would see” if they still felt the same later when having more information.

The other participants explained with different wordings that anytime there is any change, no matter the type, there is an increase in the practical workload since it takes time to adjust to the changes. Double-checking, correcting, or looking up information naturally takes more time in the beginning, but once the crew is used to the change, the workload “becomes the new normal”. The same was expected to happen with SIRE 2.0, but the “new normal” would never go back to the “old level”, because as a participant put it:

“there's a lot more preparations to be done before an inspection is carried out, that must be done by the vessel. Also, regarding the availability of photos, it may become a little more difficult for operators when it comes to a certain problem, to explain it [*and make it more transparent*]” (P2).

Long term workload - group 2 Shore

Their explanations, which was shared with all other participants except one, was that although OCIMF has stated that the duration of an inspection will be kept the same as currently, the preparations and inspections will be more complex thus demanding more time and energy of the crew. The increased workload would most probably weigh most heavily on the senior officers because they are not only expected to learn “their own parts” but also be of guidance and assistance to the rest of the crew. This concern was in general terms and not specifically alluded to the inclusion of PIFs or related to human factors.

What worried more than half of the participants was not being sure about how much time it would take to take care of the increased numbers of observations. As one participant explained, they usually get two or three observations at most when vetted which rarely are of a very serious kind. They say that their company puts a lot of emphasis on keeping a high standard and therefore invest a lot of time to rectify observations, but also to analyse the root cause, saying:

“If we get 3 observations, we spend a week rectifying those, maybe two weeks. That's three guys. Yeah, so if we have 20 observations, it's... [*the participant shakes their head, shrugs, and sighs*] well, we'll see [...] The demands are not reasonable at all times” (P1).

One participant thought the workload would increase significantly for the crew onboard and would not decrease after the transition, because the end-customers' demands are at odds with being profitable and safe at the same time. Instead of bringing any improvements, the assessments of human factors and the PIFs would be used to shift the responsibility away from the oil companies:

“Let’s say that everyone in your crew is always tired. I do the vetting and I realise that according to the performance indicators, you're tired and we go to the root cause, and the root cause is that it's the oil companies making such demands [*that forces the crew to work 18 hours per day*]. You either have to succumb to your business or break the rules. That's the option, they're giving it. Then you double the crew on board, huh? Means double the operational expenses, which is not profitable anymore to operate. They don't care [...] they are setting their rules. So, either you play with them, or you just go [*away*]” (P7).

Short term workload - group 3 Crew

All the participants in this group said that communication between the ships and the office was good, that they felt supported, and convinced that their respective offices were doing their utmost to provide the vessels with information. At the same time, they sometimes felt sorry for the administrative staff ashore, because they are supposed to guide the vessels, but sometimes cannot since they do not have more information than what the crew already have been provided with. This could make it difficult to demand for more help when they knew the office could not do more.

The crew onboard were all concerned about the amount of information that had to be taken in, as a participant put it “1200 pages, the new info takes a lot of time and work to go through. Hard to fit it in on top of normal operations that must be done [*as usual*]”. The participants also explained that it was hard to get an oversight, even when they got some time to spare, because it was difficult to know if they were focusing on the correct things to study. Several of them mentioned that they wished they could have a checklist of sorts, so they could assess their own progress. All the participants were also convinced that it would be a lot to do in the beginning but that it would probably calm down once everybody was more used to it.

Long term workload - group 3 Crew

All of them thought that it probably would settle down once they were more used to SIRE 2.0. They explained that as long as they had understood the inclusion of human factors correctly, then they were used to working on them. This was because their respective companies already started working on human factors on their own initiative.

They were therefore positive to the PIFs, naming that in the long run it could help them and their companies to find root causes to problems while “understanding the bigger picture and not only the aesthetics”. They could also help them and their companies to become more proactive and help to identify when more training was needed.

All of the mentioned above would be possible under the condition that the inspectors were fair and that the “land side” of shipping could support them onboard, especially with all the administrative parts. As one participant explained it “you get what you put into the system”, predicting that companies with “weak supportive management”, probably would lose staff due

to the heavy workload. If the companies did not provide support, then the crew would not have time to do “real” work, only work with vetting.

They also mentioned that depending on how they understood the pre-vettings, they would either be something to simply get used to, and then it would not take so much effort or they could become massive, with pictures and paperwork that they definitely will need extra staff for.

4.1.2 Psychosocial work environment

During the interviews, the idea was to ask questions about the psychosocial work environment in broad general terms. This was done to capture how each participant had related the introduction of human factors in SIRE 2.0 to their own organisation and if that application coincided with what OCIMF and INTERTANKO expected.

Group 1 explained that the introduction of the assessments of PIFs has multiple goals. First and foremost, the aim is to go deeper into the root causes of issues as to enhance safety. Secondly, they are intended to identify what can be improved to support and make the work easier for the crew onboard, who tend to sometimes be too self-reliant. Finally, they should also encourage a more active approach to inspections that rewards work well done. But for this to work, the mindset on inspections needs to shift from the avoidance of a high number of observations, to focusing on the quality of observations given.

Neither group 2 nor 3 were very surprised that SIRE 2.0 would introduce human factors, because their respective companies had been working with matters related to the psychosocial work environment.

Group 2 hoped that the introduction could bring improvement to the psychosocial work environment, by giving recognition to the hard work it is to be a seafarer and thus changing how they are treated. But at the same time the group was a bit apprehensive about the inspectors, because if they misinterpreted a person or situation the outcome would be more stress.

Group 3 expressed the same apprehension towards the inspectors as group 2, but they were less convinced that SIRE 2.0 would bring any changes. Instead, they were more concerned about the nervousness and stress their ratings had expressed in being inspected in the future. The reason behind the fear of inspection, group 2 thought was due to inexperience but also because of different cultural aspects.

Effects on the Psychosocial work environment - Group 1 Governing Associations

OCIMF said that “the ultimate aim of the human factor was to find and motivate or find excellence where it existed and motivate people.” They explained that the human factors are going to be identified using Performance Influencing Factors (PIFs). OCIMF selected this term because they believe them to be the standard human factor terminology. The aim with the PIFs is to advance deeper investigation that goes beyond concluding human error as the cause, while encouraging the identification of how to effectively support humans and making life better for the ones on board. OCIMF also mentions the importance of leadership accountability, as the crew rarely makes mistakes from a malicious standpoint, yet a blame culture very much is still alive in the shipping industry, something the added human factor aspect of SIRE 2.0 hopefully will help decrease.

OCIMF explains further that the new system is an attempt to figure out why human failures happen, and to find the root cause so that it can be amended. OCIMF exemplified in regard to what negative human factor related observations should be focused on:

“Was it that they had no guidance? Was it that they didn't understand what was expected of them? Was it that there were other factors that influenced the way they were behaving? For instance, extreme cold, extreme heat, extreme noise? Bad morale and all these things like this” (OCIMF).

OCIMF also said they wanted to add positive reinforcement into SIRE 2.0. They have done this by moving away from the, “yes or no” possible responses in the original SIRE to a five graded scale, going from “not as expected” to “exceeds expectation”.

INTERTANKO who explained the addition of Human Factor in similar terms, put emphasis on the need for change in regard to the attitude towards inspections themselves. This attitude meant that the aim during inspections must shift from avoiding observations, but instead understanding that the point is to continuously improve, which they say the industry already is doing well: “You know, if you've got a stable system, people know how to work it” (INTERTANKO).

Instead, the major difference will be in the mind-set of why inspections are carried out. For example: one attitude that will require change, is the self-reliance that for a long time has been seen as positive and a necessity to work in the industry. The change, although subtle, may have a great positive impact for seafarers.

“Unfortunately, seafarers, [...] one of their great attributes is [that] from day one they've been told that they must get on with the job. They must do the job and they must be self-reliant to do the job. No one is coming to rescue them, their mother's not coming to pick up their socks and so on. So, you get the job done, and sometimes we gotta pull that attitude back a little bit and go: “look, you can take a rest. It's not all on your shoulders. You know you can call for assistance” and so on.” (INTERTANKO)

They connected the change of mindset to the concerns about the added human factor aspect, the PIFs and the presumed increased number of observations that they have perceived from their members. They stated that it is important to make sure that everybody understands and remember that the purpose is not to assess if people are good at their job, but rather if people have the tools necessary to do a good job. They also explained that the new focus should not be the quantity of observations but the quality.

Effects on the psychosocial work environment - group 2 Shore

With the exceptions of one, the participants felt that their companies had a head-start, because they have already started to work more towards improving the well-being of the crew as well as some soft skills, so neither the assessments of human factors nor the PIFs were really news. Participants explained that for some time now, there has been more recognition of how the psychosocial work environment relates to safety and therefore their companies had been putting more effort into improving. For several of the participants it was difficult to give a decisive answer about what they thought SIRE 2.0 would lead to in the long run though, because they felt it was either too soon or unclear to declare the one or the other. For the time being they could see both positive as well as some more challenging additions The general perception was

that SIRE 2.0 is bringing a needed change to the industry for the crew, which in turn would heighten the safety and quality of the operations, as stated:

“It could shift the type of people getting involved in the maritime industry because at the moment it's very heavily weighted towards the nuts and bolts and the practicalities. And then if you're having this sort of need for a soft skill assessment, it's perhaps a different kind of person. (P4).

Five participants thought that SIRE 2.0 had the potential to turn the work environment more people orientated, make it easier to identify psychosocial problems and probably create the need to increase communication between shore and ship, which as a result could change the type of people entering the industry. Nine participants in group 2, thought that the outcome would depend most heavily on the inspectors and that the assessment of human factors and the PIFs would put more pressure and mental strain on the crew. They had some difficulty seeing how it would be possible for an inspector to maintain objectivity and come to the same conclusions as another:

“That means that you have every single person putting their own spin, their own perspective, their own experience, their own focus, [...] what they think is important and compared to something else [...] I know that they do training courses and everything, but we all know how human people like, actually work. So yeah, when it comes to a nice concept and how it actually gets implemented, it's always different things” (P4),

They worried about how the inspectors would rate their colleagues onboard, fearing that it would not be possible for the inspectors to assess them fairly because of the limited time-frame an inspector is on board, when it comes to soft skills such as teamwork or personal traits such as shyness. As one participant explained, they found it hard to see how it would be possible for an inspector to discern if a person really deserved an observation or was simply having a bad day. Furthermore, if someone received an observation unfairly, how is the opposite proved?

The participant also mentioned that they had experienced problems like this in the past, which most frequently had occurred because of language barriers. One participant thought that SIRE 2.0 would not do anything positive at all for the psychosocial work environment. On the contrary it would worsen, by putting even more pressure on already overworked crews:

“The better for the crew [*would be*] more time at sea and more time at sea for the crew means quiet, means they are more relaxed and they are resting. Port stay for the crew is a nightmare. They are so stressful there, so full of pressure, because delays means somebody's losing money. So this is the reality now on the ship. Everybody knows it. And on top of that, we are putting inspections, vetting, inspections, post state controls, flag state controls. We have audits, we have company visits [...] The focus is skewed, what about the mental stress the inspections create? SIRE is always a bad thing, because it adds stress” (P7).

Effects on the psychosocial work environment - group 3 Crew

All of the participants thought that SIRE 2.0 could have a positive impact on the psychosocial work environment once everything settled down a bit, with one saying, “that we will see that in two years' time”. But they believed just as group two, that it would depend on the inspectors'

ability to assess people. One participant exemplified saying that if the inspector thinks “I don't like the way you speak. I don't like your tone”, it was probable that they would start to question everything more than they should or normally would do.

“Should be good because we might be able to be more humane. So in the box we created we actually lost a little bit of humanity in this process. Maybe this person is nervous, maybe this person, it's the first time they're being in a vetting and they might know everything, but they're so nervous that all of this is being wrongly answered. But on the other hand, if we put a little bit too much weight on this interpersonal aspect, maybe if I know the inspector and if I have something really, really bad but we can maybe risk a situation when we start to see through the fingers of such bad things” (P16).

They were not very nervous about being assessed themselves because they felt that they had enough support and were used to being in and out of “vetting mode”, as one of the participants called the time before and during an inspection. They explained that when they and their colleagues knew there would be an inspection, the two weeks prior to it would be utterly busy, because everybody, becoming antisocial, would be focusing on going through checklists so that everything would be in order for the vetting. Once they passed it, they all would feel relief and go on “as usual” until the next “vetting mode” had to be activated.

This participant also thought that SIRE 2.0 probably will have an impact, because “vettings are during a short period of time and will probably have the same effects as the current program”, but they really hope they would be proven wrong.

As mentioned, they were not worried about themselves, but did share some concerns for their rating, because they knew they were nervous and worried. When asked why they thought the ratings were nervous, the most common reasons given were cultural backgrounds and different expectations on the respective positions. They explained that they worked with colleagues that culturally were not used to speaking up out of respect for superiors, so being questioned was new to them. Also, ratings are not expected to “take command” over situations, give orders or explain to the same extent as officers during vettings. This made the ratings fear that they would answer incorrectly and “cost them a vetting”.

4.1.3 Safety

All groups expected safety to improve further with SIRE 2.0, although their reasons for why they thought so varied just like their convictions.

Group 1 expects SIRE 2.0 to improve safety by outing those who are so familiar with VIQ 7 that they know how to hide information or issues to avoid observations during inspections. Instead, by encouraging honesty, it will become easier to investigate the root causes of issues while at the same time improving the work safety for the crew. As a bonus, the increased amount of data gathered may aid in identifying trends or common negative factors in the industry.

Group 2 also expected safety to improve, based on three reasons. Firstly, several participants mentioned that OCIMF has said it will improve safety, and therefore they expect that “that promise” will be kept. Secondly, they expect that companies that do not take safety seriously enough, will either must improve significantly or be put out of business, making either scenario a win-win situation. Thirdly, it could help improve the general knowledge of the crew onboard,

making operations safer. This reason was given under the condition that the number of administrative tasks do not increase further, since they already have reached excessive levels.

Group 3 felt like SIRE 2.0 could improve safety by increasing the safety culture onboard but were even more apprehensive than group 2. This was because they sometimes felt like some procedures in SIRE were more done for the record than for safety, even saying that occasionally preparing for a vetting would become a safety risk in itself.

Increased emphasis on Safety - Group 1 Governing Associations

Another problem that OCIMF had identified was related to the intent behind making procedures onboard and that the industry at large had gotten used to the VIQ 7 and the traditional inspection process. Rendering companies that had gotten good at hiding things during inspections in order to pass them. OCIMF therefore saw the need to change the viewpoint and use of an inspection to better align with its intended purpose, making the industry safer.

OCIMF explained that they think it is important to not be able to hide things onboard and instead accept that mistakes happen, because this allows the ships to put more of an emphasis on how to change the procedures that made the mistake possible to happen in the first place, and highlighted the following:

“You know they cannot hide it anymore. They've got to address the truth. That's in front of them. And so therefore, firstly, vessel operators have to stop trying to hide stuff. They have to recognise that s**t happens as they say, but when things go wrong, the most important point is not, what's happened? But what you do after it, how do you recover from that situation?” (OCIMF).

OCIMF also believes the data gathered from inspections can help the industry at large, by moving away from the pass or no pass evaluation process in the current system. For example, the human factor portion can aid the industry, by indicating trends and common negative factors and consequently making it easier to implement the most effective corrections.

INTERTANKO explains that since SIRE has been around for 20 odd years, the program needed to be upgraded to better meet and inspect new technology, new approaches and new ideas. Although INTERTANKO uses the term “human elements”, and OCIMF uses “human factors”, the meaning coincides. So, when OCIMF declared their intention to focus more on the people working onboard, it was received positively by INTERTANKO since SIRE 2.0 would incorporate one area of major focus for them. For INTERTANKO this means making sure the seafarers are doing the right job, with the right tools and equipment, in a safe working environment, something that may break through the plateau in accident statistics.

Increased emphasis on Safety - Group 2 Shore

The general point of view regarding the safety impact of SIRE 2.0, is that it will further improve safety in the industry. About the new Safety Inspection Program, the participants said it was put in place to enhance the safety at sea for the environment and for the people onboard, stating that it had been promised by OCIMF. A common opinion was also that because of the increased thoroughness of the inspections, bad actors or less serious ones will have a harder time within the industry:

“What's the largest opportunity? To get the black ships out of the market. Other ship Owners.” P11

But they also expressed hope that the changes will lead to the crew becoming more knowledgeable, because the dynamics of the industry has changed regarding the duration of employment contracts, and the time individuals spend on the same ship. How now, partially because of the shorter contracts reduces the seamen less knowledgeable about the vessel which they are working on. But there were also negative observations from the shore-side. Mainly about how the increased workload regarding the inspections might result in time being taken away from more important things:

“[...] the more you need to focus on other things that maybe are not involved in your daily operation or your routine onboard, [...] the more focus you take away from the things that are important” (P11).

A participant gave an example of this issue. One of their vessels navigates in a narrow channel with a lot of traffic fairly often. They explained that the first focus should be to be alert and pay attention to the passage and surrounding traffic in relation to their own position. But instead, much of the time that should be used doing that, they had to use on making calculations, marking their position on paper charts, and other administrative tasks verifying their position. They concluded that they do many things that are not very important for navigational safety but rather more to prove later that they had navigated in the correct way. Another participant shared a similar story:

“It could be hard for the crew on board to keep focus on what's really important when sitting in the CCR and then loading the vessel, you have to be more worried that you fill in the log when you open and close the valve, what time, than you are on that you actually open the correct valve maybe, that's all. So [...] the more pressure put on all this, the more things to take away from things that are important” (P11).

The motive behind SIRE 2.0 to increase the safety of the industry, was also questioned by one of the shore-based participants, doubting the level of true virtue coming from the oil-majors. Regarding what would happen if it was discovered the crew needed more rest participant number 7 said the following:

“You know the theoretical approach is always so good. [...] If we find now that the reason is because [...] the trade is so demanding, then what? [...] if I tell the oil majors, I will stop the ship for 8 hours, you pay everything and the crew is going to rest. Do you believe they are saying, ‘of course? This [*has*] been established by SIRE 2?’ I'm pretty sure that [...] they won't accept this. So [...] it's more, as I said, a more hypocritical approach they have. So, if the crew is tired, it's my problem. [...] of course it's my problem. So, what would be the solution? To have a second crew in the port, exchange the crew, fresh new and then fly them where? We are complicating shipping for nothing” (P7).

Increased emphasis on Safety - Group 3 Crew

All participants thought SIRE 2.0 had the potential to improve safety. Three participants thought the impact would be more or less like the current program, and if there were any higher impact through the human assessment tool and the PIFs, it would show in the safety culture

onboard because it “might be a positive impact, because [*safety would be*] a little more of a common responsibility, a ‘common mentality’” (P16).

Three of the participants were ambiguous, perceiving SIRE 2.0 either being a positive impact or just for show, saying that:

“Sometimes it feels it's just too much and it feels like it's [...] It's wrong to say lots of paperwork, but some things that you do, feels like it's not just for safety, it's just [...] too much and they are just adding more and more, which feels sometimes it will not get any better. It's just to [...] protect your back. so [*what*] they are adding [*is to*] have some safe to go back to, to say “we have this on the paper. So, now it should be good!”. But sometimes theory and reality are very different” (P18).

One of them was explaining that sometimes preparing for a vetting would become a safety risk in itself. They explained if anything unexpected happened during the preparations, the pressure of getting good vetting results combined with having an already small crew, created the opposite effect of what SIRE aims to accomplish. They shared how the expectations to get “10 out of 10” on the inspections, combined with the tight crewing, made them fall behind on preparations for vettings quickly if anything unexpected happened. This in turn put them in a catch 22: either stop preparing for vetting or stop taking care of operations. Since none of the alternatives are an option, they instead worked very long hours to be able to catch up. Luckily, they never had any incidents, because they knew that sometimes they had been too tired to actually be allowed to make decisions.

4.1.4 Leadership

The three groups all agreed on the importance of having good leaders onboard, each group highlighting different aspects.

Considering how much influence people in leading positions can have for the company as well as the crew, they are key figures in the ship-shore communication, and thus need support and guidance to do their job well. For group 1, good leadership is required for the industry to get rid of the blame culture that still exists, as well as the improvement of procedures.

Group 2 agreed on the importance of good leadership, most of them mentioning that their respective companies already had started efforts for improved leadership and thus did not expect that SIRE 2.0 would result in any issue in regard to that matter.

For group 3 this was one of the topics that they personally connected to. Since they themselves are in leading positions, they discussed the subject from their own expectations with clear ideas on what makes a leader good or bad. They thought that SIRE 2.0 could help “flushing out” bad leadership, and that it will influence the selection of future leaders, making soft skills more requested.

Change and support - Group 1 Governing Associations

OCIMF also mentions the importance of leadership accountability, as the crew rarely makes mistakes from a malicious standpoint, yet a blame culture very much is still alive in the shipping industry, something the added human factor aspect of SIRE 2.0 hopefully will help decrease.

OCIMF also lifted the importance of shipping companies being able to project their desires onto the vessel and staff through their procedures. Especially in larger shipping companies, they do not think it is viable to leave all up to the captains and their own best opinions. Instead, guidance is needed so that the whole fleet is pushing in the same direction, dealing with unexpected events the same way. OCIMF recognises that a lot of money has been spent on training and education in the past and yet sometimes procedures aren't followed anyway when the company produces the procedures rather than personnel onboard. According to OCIMF there can be discrepancies between what is happening onboard and what senior management thinks is happening where SIRE 2.0 hopefully can assist to lessen this difference:

“This inspection programme is only, hopefully, gonna tell people what the truth is at sea now and if you don't like what you see, it's not because something's changed. It's because we are just able to uncover that. And the vessel operators realise that the way that we've set the questions up is there's nowhere to hide.” (OCIMF)

This will in turn put pressure on some vessel operators to train their employees and analyse their performance better:

“and not just accept the status quo. Push for excellence rather than just accepting mediocracy.” (OCIMF)

Change and support - Group 2 Shore

All of the participants in group 2 expressed confidence in the staff onboard and believed that their companies had invested enough resources in senior officers, for SIRE not to become an issue. When one participant was asked to explain the motivation behind their trust, they explained that it was related to the culture of their company:

“The human resources are the biggest asset in our company, which we have to train, whom we have to motivate. Take care of your crew” (P8).

They continued to explain that because of this culture, the company had started to focus on strengthening senior officers years ago. For example, by having “special courses” for the highest ranking officers onboard each vessel, regarding cooperation, communication and workload management.

With the exception of two, the rest of the participants talked about similar preparations that had been done in their organisations.

Change and support - Group 3 Crew

All of the participants in group three spoke about leadership based on the expectations they had on themselves to behave toward the rest of the crew. They explained that good or bad leadership can have a great impact on how the work environment onboard is, and consequently how vettings are. They also thought the SIRE 2.0 probably would change how leadership onboard is done, that more soft skills and “people persons” would be needed.

"OK, everything comes down to the work culture on board, truthfully speaking. If [*the captain or chief engineer*] shows his seriousness in following the procedure by the court, everybody else does. If the master of the chief engine or the chief officer is lax in it, nobody else does. And yes, it

makes a big difference. To simplify things, it makes the chance of following them more sincere” (P12).

As one (P14) explained, inspections can show where the knowledge gaps are, so they can be used to follow up on the crew, and that crew should speak up when they are unsure. All of the participants highlighted the importance of sharing knowledge and learning from each other, as well as making sure that enough resources are invested in the crew. They further explained that the amount of information pushed out should be more balanced.

Also, as a participant pointed out, SIRE could “flush out” ineffective leadership:

“You find all sorts everywhere. Got people who are extremely stuck up, extremely demanding. You have people who are not willing to teach. Unfortunately, I'll still say there's a very large percentage of masters who will keep the chief officer forward for stations. Until it is time for command and he comes to the bridge and he doesn't know what to do. So we do need better old guys” (P12).

4.1.5 Competition

All groups agreed that it is probable the changes will affect the competition within the industry. Group one, the governing associations, talked more about the uncertainty regarding commercial evaluation, and what effects this might have on the operators. This is because the charterers, if they focus more on the number of observations rather than the quality, might decline doing business with vessels despite being safe to charter.

Group 2 and 3 went a step further and focused more on the “facing out” effect that might occur for less serious operators within the industry, the “bottom-feeders”, because inspections would be made more fair with the usage of photos and tablets. Group 2 shore and 3 crew also often mentioned the increased possibility to prove to the industry how good they are, even if it wasn't the opinion of every participant. It was also brought up by some participants, what effect the increased focus on soft skill might have on the type of personnel hired in the industry. This shifted focus might change the archetype of seafarer recruiting from being a predominantly hard-skilled, highly technical focused person to instead seeking more soft-skill type people.

Competition - Group 1 Governing Associations

OCIMF also believes the data gathered from inspections can help the industry at large, by moving away from the pass or no pass evaluation process in the current system. For example, the human factor portion can aid the industry, by indicating trends and common negative factors and consequently making it easier to implement the most effective corrections. But it is also acknowledged that it may create worry in the industry:

So, the biggest concern is, [...] how is it received by the people that make the decisions on who uses the ships. And that is yet to be determined,” (OCIMF)

Further, OCIMF also addressed some of the concerns people may have surrounding the changes. One of the largest, that also contributed to the delay of the launching, was how the commercial section of the industry would interpret the observations. Because the inspections are available for people to review and that they are used to decide whether a ship should be used for chartering or not, the program can have considerable economic impact. Therefore,

there are concerns surrounding how the chartering world reviews the results of the inspections, especially around human factors.

INTERTANKO calls passing a SIRE inspection “the ticket to trade” for businesses that want to carry products for the largest energy companies in the industry. This has been a positive contribution to safety, because shipping companies do their best to be approved, but it also has its downside according to the representatives. They point out that, if a vessel gets a large number of observations during an inspection for an oil company, the ship may be put on technical hold. If so, the company owning the vessel must investigate and rectify the observations before it can be put on the market again. If the observations are deemed to be noncompliance of severe nature, the whole company can have all their ships put on technical hold, which means that none of the vessels can be traded. This is something that can have disastrous economic impact on the organisation:

“*[This]* system where everybody shares reports, every company sees that. So *[if oil company X]*, for example, puts your company on technical hold, you're not gonna get any business from *[oil company Y]* and so on. So, it's a cross industry problem and that's why everybody's worked so hard to make sure that ships pass inspections. The ships are much safer, but sometimes there is a suspicion that you just work to pass the exam rather than work to make sure the ship is entirely proper and safe” (INTERTANKO).

So, governing has also contributed to the motivation behind SIRE 2.0. INTERTANKO also explains that SIRE 2.0 will create a competitive advantage for companies with high ambition since the new grade system also will credit well accomplished operations and adherence to regulations.

The implementation date has been a moving target because OCIMF had to get the technology right. When OCIMF first started working with the Vessel Inspection Programme (VIP), the precursor to SIRE 2, it was decided that it would be more efficient to log notes from an inspection in real time using a tablet. The tablet would also log the time various inputs made during the inspection. The motivation behind this was to minimise interference during the inspections.

“Due to the commercial implications of getting observations, if a ship gets above a certain number of observations, your ship may no longer be chartered by someone else, and if you don't charter it, you don't sail the ship and so on, *[since]* SIRE really is the ticket to trade. Then the people on board the ship would pressure the inspector to say, ‘hey, look, remove this observation here. It wasn't done or it's been corrected’. I mean, there's many things which can be corrected at the time. That has been now removed” (INTERTANKO).

When writing an observation into the pad, later, when the inspector and the captain are having the closing meeting, it will be possible to edit or remove observations if needed as is done today, with the difference that the pad will record the amendment with a timestamp, to ensure a clear audit trail.

When asked about the implications of the transition period, INTERTANKO mentioned that SIRE 2.0 is expected to prompt an increased number of observations. because it assesses more areas of the working vessel. For example: if a faulting piece of hardware results in an observation, then the process and the human factor related to it may also be issued an observation, for not effectively addressing the broken piece of equipment in the first place. This could be interpreted by charterers that the vessel is doing poorly if they only look at quantity and not the implication of the observations. INTERTANKO continued saying a great concern may be that if “a 25-year-old second mate onboard the ship says something wrong, it can then put the whole ship on a technical hold and impact the commercial viability of the company and so on”.

Competition - Group 2 Shore

The aspects of competition in group 2 were only mentioned in regard to their own company having the possibility to gain an advantage:

“I think the viewpoint from our company is that, in some way, this new inspection system will benefit us. Because [...] , we do have well maintained ships and we do put a big effort into ensuring that they do look good and have Good Housekeeping and good maintenance. And I mean being compared on the industrial level with ships that sometimes maybe do not put such a big emphasis on appearance for example, then it's a good thing for us to have this.” (P6).

The same participant later expressed that the comparison between ships world-wide would hopefully be fairer in the new system. Several of the participants onshore also mentioned the possible change of the type of crew that will enter the industry. The new kind of recruits would probably need to have less of a “just get the job done” mentality as a result of the increased focus on soft skills:

“But I think in terms of the impact, I think it potentially could shift the type of people getting involved in the maritime industry because at the moment it's very heavily weighted towards the nuts and bolts and the practicalities. And then if you're having this sort of need for a soft skill assessment, it's perhaps a different kind of person.” (P11).

Competition - Group 3 Crew

The group shared the hope and expectation that SIRE 2.0 would give their respective companies competitive advantages because all felt they were working for “good companies” that really care and that set high standards for themselves. One participant explained that sometimes they feel frustrated over the “number counting” of observations instead of looking at the quality of them:

“[Bringing] I think more of equal vetting inspections. So the vesting inspector doesn't doesn't affect that much your observations that it will get more equal” (P17).

They also thought SIRE 2.0 could eliminate passive or negligent staff, giving better opportunities for qualified and ambitious people to get forward:

“The persons who just work and do minimal work, [*that*] don't have the interest to evolve in the work, they will be gradually phased out. They won't be able to work in this business. They have to go someplace else, so that the more qualified persons may stay” (P18).

This could also apply to companies, so that organised, and well-functioning companies would perform better with the changes.

4.2 Procedures, actions, or measures that could facilitate the transition.

Most participants could not say if anything was missing or say anything in particular was needed when asked directly other than “a start date”. But during the interviews, while answering to other questions, several themes emerged of what could ease the transitions, when they were describing what they were worried about, what they were unsure of or could not answer.

This main theme was divided into three subthemes, connected to different groups within the industry. **Communication** towards OCIMF, **Gap analysis** for operators, and lastly the **Mindset** affecting everyone. Although the sub-themes could be applied to other groups, they are directed to those most capable of doing something about them.

Although both the shore and ship group thought that they had been given enough information to probably get started with the transition, they were unsure about several issues. The quality of the information given was mostly satisfactory, however some suggestions of changes were made, especially regarding the structure and presentation of information.

In the second sub-them, in addition to a gap analysis of the content in SIRE 2.0, three areas were highlighted that could be useful to review, presented as headings in the table 4 below.

Finally, the third sub-theme on Mindset is addressed to everyone, because it will affect the success of the implementation.

Table 2

RQ2 - What could facilitate the transition.

Main theme	Sub-themes	Headings
2. Procedures, actions, or measures that could facilitate the transition	2.1 Communication: OCIMF	2.1.1 Trust in inspectors 2.1.2 Expectations and delays 2.1.3 Guidance on outcomes/gaps 2.1.4 Structure and channels 2.1.5 Purpose of SIRE 2.0 2.1.6 Charterers

	2.2 Gap analysis: Operators	2.2.1 Soft skills and Culture 2.2.2 Shore vs Ship vs Support 2.2.3 Leadership
	2.3 Mindset: Everyone	2.3.1 Human Factors 2.3.2 Psychosocial work environment 2.3.3 Inspections

Note: This table consists of the analysis aimed to answer research question 2. The **main theme** is “Procedures, actions, or measures that could facilitate the transition”. The main theme is then divided into **sub-themes** which are presented in the analysis under the above presented **headings**.

4.2.1 Communication

This section concerns the participants' opinions about the communication surrounding OCIMF and SIRE 2.0. In general, the shore and ship participants felt that the information content of OCIMF publications is straightforward and coherent when it comes to best practices and questionnaires. On the other hand, the pace of how information has been provided, has sometimes made the delivery to be perceived as scattered.

During the thematic analysis, the headings that emerged show areas where the understanding of the participants did not coincide with information published by OCIMF on their website and what was provided during the interview for this thesis. The most frequently mentioned area that did not coincide, and where the understanding differed the most was concerning **the inspectors**. There was doubt expressed in how they would conduct an inspection, how they would assess the PIFs, to what extent they were trained to be able to assess PIFs, and the confusion as to why they should use the tablets.

Next area was related to confusion about what **expectations** OCIMF had, which made the participant unsure on how and what to prepare until SIRE 2.0 goes live. This confusion was also strongly connected to not having information on why the launch of SIRE 2.0 has been delayed. Not knowing this not only enforced the perceived unclear expectations but was also perceived as derailing their progress.

The third most common area was the wish for **less** and more **guidance** from OCIMF and/or INTERTANKO. Less in terms of number of documents and data, and more in terms of practical guidance, such as advice on suitable areas where to do a gap analysis or a checklist that helps structuring what to prepare on.

The next heading (structure & channels) shows that OCIMF and INTERTANKO usually are not the first source of information. Instead, their information is preceded by rumours and gossip from **channels** that are not controlled by group one. This lack of **structure** distorts information along the way, allowing the target audience, the shore and ship groups, to become misinformed.

In section 4.2.1.5 (Purpose of SIRE 2.0) it was identified that not all participants have a clear understanding of why SIRE 2.0 is being launched, making them doubt the **purpose** and thus also the outcome.

The last section (Charterers) addresses the concern about whether **charterers** have enough knowledge about SIRE 2.0 to understand that an increased number of observations does not necessarily mean that a vessel is not fit for business, depending on the quality of the observations. If the charters lack this awareness it could result in economic losses, if a ship fit for trade is denied.

4.2.1.1 Trust in inspectors

According to group 1 (governing associations), the new system will unify the quality of procedures globally. Making the inspections fairer, wherever they are conducted. Subsequently, the new system will not have to put as much trust in the inspector as previous versions. As more data about the inspection itself are recorded and time-stamped, therefore naturally making it harder to deviate from the truth. INTERTANKO also adds regarding the trust in the inspectors, that it is important to remember that they are professional and “very skilled individuals”.

Group 2 (shore) and group 3 (crew) is however not as optimistic regarding the inspector’s role in the new system and raised several concerns about the changes. Concerns mainly regarding the inspector education and capability of assessing human factors. But also, how the new system could negatively affect the mood of the inspectors, if they themselves do not like it. Explaining that, you don’t want an inspector in a bad mood, evaluating you and your vessel, as it might increase scrutiny or at least affect the outcome of the inspection.

Group 1 Governing Associations

OCIMF

Before launching SIRE 2.0, OCIMF noted that inspections and observations given could be varying depending on geographical location and inspector selection. This variability was not aligned with the desire from the oil companies to get a system that is universally consistent in its output and repeatable and reliable. Therefore, it was concluded that the key principles behind SIRE 2.0 had to be “bringing human factors and enhanced governance so that we could have a more reliable inspection programme that was repeatable and dependable.”. An aim with SIRE 2.0 was therefore to “enhance the governance of the programme”, with the aim to homogenise the inspections. For example, if an inspection is made by a different inspector, it should not change the outcome of the inspection. OCIMF also wanted to minimise the effect of irrelevant circumstances surrounding the ship to affect the quality of the inspection, such as the geographical location, which aligned with the oil companies according to the OCIMF representatives:

“The desire from the oil companies is to get a system that is just universally consistent in its output and repeatable and reliable. Rather than some companies thinking well, so and so company did that inspection” (OCIMF).

Wanting to move away from the more traditional inspection process, self-reporting was added “So instead of the inspector going on board a ship to play “hunt the Easter egg”, the system was created which would expect the vessel operator to essentially volunteer information to OCIMF either through pre-inspection questionnaires or by providing that information to the inspector at the beginning of the inspection.

By trail-run gathering feedback from the users over a period of about 15 or 16 inspections, they managed to rectify problems related to inspectors' understanding of the systems, the software related issues, and some programming problems, stating that it now was possible to predict that inspections would go as planned.

Once there, the inspectors had to undergo training, including a week-long course and “a whole series of exams” on the new question set and understanding the new way of recording the data. This was done online due to the COVID-pandemic.

Regarding the inspector’s opinion OCIMF said:

“That they can see difficulties with what we're suggesting, but obviously we've addressed most of their concerns. We hope with training [...], you know for most of them they haven't done a SIRE 2 inspection, so the proof will be in the pudding eventually when they start doing them. But they're experienced people, they principally know what we're trying to achieve. They're largely supportive of what OCIMF is trying to do. They have reservations about some of the procedures because nobody likes change. They've been doing the same thing for 20 years and we're asking them to do something different, but they're largely supportive.” (OCIMF)

INTERTANKO

They further connected the quality of observations with the concern about the new system removing the ability of inspectors to use their professional judgement if it turns out an observation has been misrepresented and if the inspectors are properly trained.

INTERTANKO explains that the ability to discuss things at the final meeting to remove observations will indeed be greatly reduced with the new system because the history of the observations is being logged. But it is still possible to rectify misunderstandings, the difference however is that these also would be logged. This is not done to take away the expertise of inspectors but rather the contrary, so that an inspector cannot be pressured to change their initial judgement as easily, said INTERTANKO.

When it comes to the training of inspectors, they must take courses and exams to understand and work with SIRE 2.0, how to address the questions and how to assess the seafarers. There is also guidance published for how the inspectors should act but also for others to better understand the role of inspectors, adding:

“And we shouldn't forget, these are professionals. These have got professional judgments who are there, and these are very skilled individuals who have done this job for a long time” (INTERTANKO).

Group 2 Shore & 3 Crew

The most common concern in both group 1 and 2, was how the inspectors would be able to assess human factors. Several rumours had reached the participants regarding what inspectors had said would happen, and about the training they had or had not received.

“Inspectors that [...] have been trying... They have done this test to become this SIRE 2.0 inspector, but they have not really gotten any feedback. They don't know if they passed the test. So for me it seems a bit unclear with how the inspector [...]what their approach to this new update is” (P17).

And expressed a concern for the outcome of inspections, with inspectors walking into them already annoyed with the new system. The participant also questioned some inspectors' willingness to change:

“Basically, I think people at sea are quite reluctant towards any major changes, I mean, many of them might be grumpy, older men, and [*thinks*] “we have always been doing this in the past ... Why change?”” (P15).

There were several theories on how the inspectors were being educated, that they got education far too early in the process, but they have forgotten by now because of delays, not being fluent enough in English, etcetera:

“I think most of these gentlemen, they are about 60 and a little bit older. And I'm not an Oxford English speaking person, but [*their English is*] absolutely worse than [*mine*]” (P5).

4.2.1.2 Expectations and Delays

Group 1 (governing associations) explains that it is a complex system with many factors, and therefore takes a-lot of time to develop. OCIMF gave an estimated timeframe of five years before the industry can evaluate the performance of the new system. There are a lot of changes being made as stated by both OCIMF and INTERTANKO, saying that a phased transition was the better alternative, rather than switching it on directly. OCIMF states that the delays were mainly brought because the industry had expressed that they were not ready yet, OCIMF also added that they themselves probably weren't either. Group 1 also mentions that they do not expect the new system to work perfectly in the beginning, but that effectiveness instead will develop gradually. Group 2 (shore) and group 3 (crew) are not really sure what to expect of the new system. They mainly state that they are not worried, but at the same time can't really be sure of the new system's effects. The only thing they are unanimously agreeing on, is that SIRE 2.0 in some way will result in a higher workload in the beginning. Moreover, raising stress-levels onboard in the beginning, because of the new focus and requirements on human factors, are hard to prepare for exactly because the expectations are unknown.

Furthermore, the lack of information regarding why the launch is being delayed, was perceived as disrupting.

Group 1 Governing Associations

OCIMF

In the beginning stages of development of SIRE 2.0, OCIMF could not know if the system would work or not, therefore they did trial inspections to test all the programming work, the questions, and allocations etcetera to ensure that the software could take all the information, combine it to yield a suitable set of questions for a ship.

“By trail-run gathering feedback from the users over a period of about 15 or 16 inspections, they managed to rectify problems related to inspectors'

understanding of the systems, the software related issues, and some programming problems, stating that it now was possible to predict that inspections would go as planned” (OCIMF).

The current state of the development of SIRE 2.0 was estimated to be about 80-90% ready for launch at the end of February 2023 when this interview took place. Regarding the preparedness at launch OCIMF said they believe it will work because they tested it. But they acknowledge that there is still room for improvement. They also acknowledge that the understanding of the changes, especially the human factors will be gradual for the industry. During the interview they named the inspectors, the vessel operators, the submitting companies and the report recipients need time to apply what this means to them, and that it will probably take several years to get to maturity, saying:

“In five years’ time, all of the pain, hard work, disappointments and all the other things that have occurred during the development of this programme will be seen to be worth it” (OCIMF).

OCIMF explained that the “ultimate aim” of the introduced human factors was to find and motivate excellence, instead of just avoiding the “bottom bit where it's completely wrong”. By focusing on the other end of the scale and trying to raise the whole industry standards they expect that everyone in the industry becomes even better. They also explained that the new focus on human factors should not come as a surprise for the industry, and that the initial concern of the changes has mostly disappeared:

“We're definitely doing what they would expect us to do, which is start to look at human factors and improve that aspect of the industry. And we addressed their concern that the switch from one to the other would have undesirable and unmanageable results. So as a result of all of that. I think that the industry is starting to accept that we're going in the right direction, the phase transition gives us an opportunity to truly test whether it's working or not and. If something is not working, it means we haven't completely committed the industry to this change that can't be stopped, stopped or not stopped, but slowed down“(OCIMF).

INTERTANKO

When asking INTERTANKO about some of the concerns companies might have, they answered that the new program will not be very different content wise from the current programme. Even if the inspections will be done more digitally and the way questions are asked may seem different, the rules and regulations stated by IMO, the ISM, ISGOTT, SOLAS and best practices used as the foundation of SIRE inspections, are the same and will still be applied the same.

Finally, INTERTANKO wanted to remind everybody to have patience and understanding for each other during the transition, because it is new for everybody, and nobody is perfect:

“There's always the fear of the unknown. Even if you prepare [...] as much as possible, there's always going to be stuff which you don't know about, [that] you didn't anticipate. [...] For years of work preparing for this, then [...] the tablets didn't work, [...] things like this. So, there will be issues, there will be problems.” (INTERTANKO).

Group 2 Shore & 3 Crew

All participants were quite sure about the regulative parts of the inspections, saying that they are the same and that they are not worried about them, because they have confidence in their procedures and experience in complying. When it came to the tablet, 16 out of 18 participants shared explanations on why the tablets had been introduced, how they are going to be used and how it will impact them, that either aligned partly or not at all with what OCIMF and INTERTANKO had explained in their interviews. Two participants shared explanations that aligned with the intended use.

When it came to the purpose of introducing Human Factors and PIFs, ten of the participants described the idea behind the introduction of them, the intended usage and expected outcomes mostly aligned to what OCIMF and INTERTANKO. One of them acknowledged that the largest challenge is to ensure that everybody calms down and treat it like any other inspection they have done so far because “as long as you know how to do your work, it should be no problem” (P15).

The other participants gave explanations that differed partly or totally, where effort is put into “training” crew to answer in the “correct” way, or to memorise information better, rather than looking into actual PIFs.

“You have to be sure how to answer your question. Not just that you know how you do your job. It's just how to answer a question so that the inspector is happy” (P13).

Ten participants said that they were sometimes unsure when preparing for the transition, because they did not know what to expect and therefore did not know what to focus on. They shared similar experiences of putting a lot of effort and energy as soon as the transition was announced officially, but that they have come to a standstill. Several of them also shared that they had lost momentum and initial enthusiasm because the launch date has been postponed for so long “and nobody knows anything”.

“Because, you know, we have been preparing and then they postpone, and you prepare and then you postpone... I mean it's like if you prepare for the Olympics and then they [say] “now we postpone it six months! That is what I'm actually missing, [the start]. If you are trying to be in the best of shape for like 2 years and they are just postponing the Olympics, six months at a time, I mean, then of course you will not be in the best of shape” (P19).

The lack of information regarding the start date and the lack of information to why the date has been pushed forward, has allowed rumours to flourish about the reasons for the delay.

“A proper timeline to end all the gossip and guessing and rumours and so on, because there is a lack of information coming from OK. And then people have a tendency to make their own conclusions, which are not always the right conclusions” (P19).

Another uncertainty that emerged was about what the expectations are on rectifying observations regarding human factors. Because some of the solutions can take time, they wondered about what will be required to prove that measures have been taken.

4.2.1.3 Guidance on outcomes/gaps

Group 1 (governing associations) mentions that an extensive educational push has been made by OCIMF to relieve the industry of as much confusion as possible. INTERTANKO also presents a lot of recommendations regarding guidance of transitioning to the new system. One of them being the use of gap analyses, to compare an organisation's current work and procedures compatibility with the upcoming changes of requirements. Four of the participants in group 2 (shore) were pleased with the information they could find and receive from OCIMF, the other half not so much due to the amount of information and the lack thereof. In group 3 the administrative personnel ashore are their main source of information and except for one participant, they were pleased with the information they were given from the office.

Group 1 Governing Associations OCIMF

To minimise the possible drawbacks that the unfamiliarity could result from, OCIMF said that they had made an “educational push, and they are publishing information continuously on their website, such as educational videos, comparisons on how questions have been changed etcetera. At the same time, they mentioned that each company must make SIRE 2.0 their own.

INTERTANKO

They understand that added stress could be a factor, so the whole human element part is something they will be monitoring closely, especially in the beginning. But to combat this stress they once again point out that:

“*[The companies]* have to train their crew, they need to understand how to answer questions. So, they have to make sure that the crew understands what they're being inspected for, why it's being done. It's a change of mindset [...]. So, we've gotta train the seafarers [...] to understand how and why they're doing this. It shouldn't be any different for what they're doing, all *[the inspectors]* are doing is checking you on how you're doing the job” (INTERTANKO).

When asked about what companies could do to make the transition as smooth as possible, they listed the following:

- Read everything that OCIMF publishes on the topic and watch all the training videos.
- Members of INTERTANKO have the possibility to consult with them. Non-members may consider a membership. Either way, it will be useful to talk to the people with the expertise.
- Think about SIRE 2.0 and what it will mean for the company. Make sure to do a gap analysis between style one and style two so that everybody is well aware and understands what is coming.
- Try and do the trial inspections to find out what is new and how inspections are going to be like once SIRE 2.0 goes live.
- Be aware that there will be an increase in workload. There will be a ramping up, the amount of work will climb rapidly, but also remember that it will then tail off and plateau once the new system is in place.
- Give the crew understanding about how to answer questions, while instilling that it is not a trial or examination, it is a check to see if they're doing it right.

- Do not go overboard with all the guidance to the ship. Do not bombard the seafarers with information. Instead make sure there is a psychologically safe environment in which the seafarers can work.
- If someone gets something wrong, do not jump on them, remember that everybody is learning, so treat people well and fairly.

INTERTANKO also wanted to highlight that SIRE 2.0 is not just about assessing vessels, but the company at large, including the shore side. So, when the inspector goes on board the ship whatever is stated in the TMSA, the inspector will check the work onboard against those shore procedures as well. Therefore, they encourage companies to improve the communication between shore and ship, to make sure there is enough support both ways. Also, to support development of more soft skills.

Group 2 Shore & 3 Crew

Four of the participants in group 2 were pleased with the information they could find and receive from OCIMF, the other half not so much due to the amount of information and the lack thereof. They explained that a lot of information is being pushed out and that it is sometimes too much and hard to navigate through. The information seems scattered, and several different documents are needed to get the full picture.

“The challenging part is to be able to review all these sources and implement what is absolutely necessary. “Good to have” stuff becomes a nightmare in shipping. So, better to keep in line with the regulations and this is it. If you'd like to have over and above...it's always good, depending of course, on the consequences” (P9).

At the same time there is too little information of the kind wished for such as checklists, guidance on what a suitable gap analysis could include, or advice on how to train the crew for the changes. In group 3 the administrative personnel ashore are their main source of information and except for one participant, they were pleased with the information they were given from the office. They trusted the information and felt like the office was doing their best to sort out information to be easier to handle for them. They rarely went straight to OCIMF or INTERTANKO to find information, mostly due to the lack of time but also because it could be overwhelming. Only one of the participants would actively and regularly go to the source of information.

4.2.1.4 Information structure and channels

Group 1 (governing associations) states that SIRE 2.0 is a collaborative effort made with every concern possible taken into account in the development. INTERTANKO and OCIMF has roughly been working together on the new system for five years, and states that every part of the tanker industry has had a chance to voice their opinion.

Group 2 (shore) and group 3 (crew) mainly heard about the upcoming changes through rumours spread across the industry, with only two of the participants stating that they heard about SIRE 2.0 directly through OCIMF. The main information channel used by group 2 and only to some extent by group 3, are OCIMFs public website where they have gradually published a lot of material. However, the effectiveness of the publications released on this website is often questioned by group 2 and 3, who state that the sheer amount of information and its sometimes-unclear use of application, can make it hard to understand and follow. Additionally, the unexplained delays have only aided in the creation of rumours and increased confusion.

Group 1 Governing Associations

OCIMF

To conclude, OCIMF regards their organisation to build on collaboration, where their part is to compile and consolidate the contributions from “subject matter experts' ' and best practices provided by their members. The publications from OCIMF have also been pre-checked by collaborative international associations like INTERTANKO and SIGTTO. So, when it comes to SIRE 2.0, by the time the questions set was finished, it meant,

“there really wasn't anybody in our industry that didn't have the opportunity to opine on what we'd done. So that's how one aspect or one stream of collaboration was done.” (OCIMF)

This also included feedback from individual companies, going back and forth discussing and making changes. OCIMF expressed the following view:

”So now they've recognised that change is coming. And it would be better to support it rather than fight it.” (OCIMF).

INTERTANKO

Although not involved directly in the initial stages of planning, INTERTANKO has been working together with OCIMF regarding the transition to SIRE 2.0 for roughly five years. About three and a half years ago INTERTANKO became a more active partner with OCIMF, when INTERTANKO's secretariats, dedicated to different areas of expertise and their member organisations, would analyse drafts and documents generated by OCIMF. This included revising regulatory aspects as well as practical feasibility, and gave the following reason for their close cooperation:

“If one of our members, carrying a cargo for [*oil company A*] [*oil company B*] or [*oil company C*] and runs aground on the Florida Keys, it doesn't matter if that ship is not from that company. The oil company, the Energy Company, is the one who's going to be blamed for this [...] they understand this. So, we're carrying the risk for them and it's a major risk, a company ending risk [*for all involved*]” (INTERTANKO).

Group 2 Shore & 3 Crew

Of all the participants there were only two who had heard about SIRE 2.0 straight from OCIMF. All others had heard about it through other channels, such as customers, inspectors, and colleagues.

Several of them took the initiative to check on OCIMF's website, research for more information and understanding ahead of any official information being shared.

“I was going looking for it then. Yeah, that's correct. I mean, after I heard this from a colleague from another company, I started to do some investigation and then I found the information. I think at that point we haven't heard anything from OCIMF [*yet*]” (P6).

A participant explained that they had not really understood the width of the changes, they thought it was just about introducing the tablet. After a while they understood the extent when

a colleague from another company asked them how they intended to approach a certain aspect of SIRE 2.0. This participant later said that they still preferred to turn to colleagues within the industry when they needed clarification, rather than going to the original source because the colleagues gave clearer answers. This sentiment was shared with half of the participants, because the sessions together helped them interpret what OCIMF really meant.

4.2.1.5 Purpose of SIRE 2.0

Group 1 (governing associations) states that the main purpose with SIRE 2.0 is to increase the safety within the industry. This is believed by the group to be accomplished by the increased governance and focus on human factors. Group 2 (shore) and group 3 (crew) have some varied opinions about the purpose of SIRE 2.0. Mostly all agree it is made to increase the safety of the system, increase governance of the inspectors, and hopefully make the inspections more unified and fairer globally. But some also voice a more negative point of view, saying that many of the changes are made just for the oil-majors to cover their backs, not giving too much care for the operator, or actually taking any responsibility in improving the industry.

Group 1 Governing Associations OCIMF

The motivation behind introducing the new SIRE 2.0 was said to stem from several different factors. The wish to incorporate “some human factor type questions” into the vetting-system had already appeared in previous versions, (VIQ-six and seven) as an addition to the already inspected ship, hardware, equipment, and procedures onboard. OCIMF also mentioned that a plateau had been reached in the safety development between the period about 2015-2018, and that the limits were reached for the current version of SIRE from a hardware and procedure perspective.

The key principles behind SIRE 2.0 would therefore be to incorporate human factors and enhanced governance so that the inspection programme would become more reliable. This aligned with the oil companies desire to get a system that is universally consistent, repeatable, and reliable in its output, stepping away from how it works today where the results may differ depending on what company has carried out the inspection.

One of the reasons given by OCIMF for adding the human factor aspect to the inspection programme to overarch and take into account the area identified to be needing the most attention:

“...it always takes people to carry out the procedures and operate the equipment effectively, and it was recognised that the part of the [...] programme that was the least well developed was around the human and yet analysis of instant data demonstrated that the human was the most important part of the [...] machine, of the operating vessel” (OCIMF).

OCIMF further explained that the humans onboard are the ones enforcing the procedures, those who work with the equipment. They are the ones that report and thereby initiate that corrective measures are being made, involving managers and other responsible personnel, and it was therefore deemed very important to evaluate issues around human factors on ships which Sire 2 was developed to do as well as keep an eye on hardware and procedures.

INTERTANKO

INTERTANKOs explanation about the purpose behind SIRE 2.0 aligned with what OCIMF said, while adding that the human factor aspect has high priority in their organisation:

“SIRE one, as it were, has been around for 20 odd years or so. And so, any system needed to be upgraded needs to recognize new technology and new approaches, new ideas. So, they wanted to focus much more on the people, and quite rightly too, because that's one of our major focuses. It's looking at the human element. It's about making sure the seafarers are doing the right job, have the right tools, have the right equipment, are working in a safe environment, are able to do the job that is their task to do and also, it's not just about the negative side. Now there's also scope for putting the positive side in there. So, if the inspector sees that some seafarers are doing a very good job. They can write a positive comment into the report, and previously it was all negative. It was all about the negative side” (INTERTANKO)

Group 2 Shore & 3 Crew

During the analysis a theme emerged in relation to the trust in the vettings and the program in general, both the current and SIRE 2.0. There seemed to exist a certain level of distrust in why vettings are done. It was suspected that they are not really used to enhance safety, but rather to shift blame and control as well as endorsing business.

“The purpose of SIRE 2 sounds good. Put practically the oil-majors will mainly care about the cost” (P7)

“It has felt like the OCIMF are using those kinds of questions... they are trying to, I don't know... it just feels like they are trying to feed the training centres with the fresh meat all the time” (P1).

“Sometimes it feels it's just too much and it feels like it's [...] It's wrong to say lots of paperwork, but some things that you do, feels like it's not just for safety, it's just [...] too much and they are just adding more and more, which feels sometimes it will not get any better. It's just to [...] protect your back. so [*what*] they are adding [*is to*] have some safe to go back to, to say “we have this on the paper. So, now it should be good!”. But sometimes theory and reality are very different” (P17).

4.2.1.6 About charterer communications

Group 1 (governing associations), OCIMF mentions that an extensive educational push has been made to decrease the confusion in the industry. But INTERTANKO acknowledges the concern for commercial effects that the increased amount of observation might have on the industry. The latter were pretty much in unity with group 2 (shore) and group 3 (crew), who otherwise did not discuss the commercial effects very much.

Group 1 Governing Associations

OCIMF

To minimise the possible drawbacks that the unfamiliarity could result from, OCIMF said that they had made an “educational push” to reach out to those who base commercial decisions on the vetting results:

” To make sure that the people who read the reports are recipients, and then make the evaluation of them and the recommendations to other parts of the organisation to decide on whether a ship should be used or not to make sure that there isn't a misunderstanding of the additional information they now will be receiving”.

INTERTANKO

When asked about the implications of the transition period, INTERTANKO mentioned that SIRE 2.0 is expected to prompt an increased number of observations. because it assesses more areas of the working vessel. For example: if a faulting piece of hardware results in an observation, then the process and the human factor related to it may also be issued an observation, for not effectively addressing the broken piece of equipment in the first place. This could be interpreted by charterers that the vessel is doing poorly if they only look at quantity and not the implication of the observations.

“We don't expect the chartering departments of those oil companies to understand the differential. So, you can get a ship which under SIRE 1 had one or two observations and let's say for example, that same ship under SIRE 2 could end up with 18-20 observations. Those in the commercial chartering [...] will then go “OK, it's too many observations. We only want two, we only want four”. And so just by changing the system, the great fear, the great concern is that a lot of ships will end up in trouble.”

They stated that it is important to make sure that everybody understands and remember that the purpose is not to assess if people are good at their job, but rather if people have the tools necessary to do a good job:

“The concern everybody has at the moment is the number of observations. That's the number one concern because too many people work on the sheer number thing. So, what we're trying to do is make sure everyone understands that it's not a numbers game, that it's not about: ‘*ohh, you had three before and now you got 20*’. [*That 's*] irrelevant, it's about the quality of them “

Group 2 Shore & 3 Crew

Several participants from group two and three shared the same concern as OCIMF and INTERTANKO

4.2.2 Gap analysis (operators)

Mainly INTERTANKO, group 1 (governing associations) mentioned the importance of making a gap-analysis, explaining that it would aid the transition into SIRE 2.0. An opinion also shared by the participants from Group 2 (shore) and group 3 (crew). However, everyone had not conducted one, sometimes participants expressed an unknowingness towards if someone at their company actually had made one. This sub-theme is focused on what operators can do, and is divided into the three following headings: **Soft skills and culture**, where group 2 (shore) and group 3 (crew) mentioned a perceived increased focus on soft skills in the industry. With INTERTANKO also noting it is important to acknowledge that it is not only the vessel that is inspected in SIRE 2.0. As the organisations support regarding human factors are crucial for good results and safety. In the second heading **Shore vs ship vs support** INTERTANKO states the importance of not overloading the crew with information. An opinion also voiced by the recipients, some of them wishing for more concise direct information, in order to make it easier to comply with OCIMFs new requirements. The third heading **Leadership**, the groups are unified in the opinion of the grave importance leadership has onboard a ship. Minimising blame culture and assisting development of soft skill all groups agree is important to facilitate the transition to SIRE 2.0 as making the industry safer.

Group 1 Governing Associations

INTERTANKO suggests making a gap analysis:

“Think about it. Make sure to do a gap analysis between style one and style two so that everybody's well aware and understands what's coming. Try and do the trial “

Group 2 Shore & 3 Crew

Although some participants felt like they were at a standstill, they shared that making a gap analysis was a good place to begin to prepare for the transition:

“I think as of now we are setting ourselves up for the sire 2.0. We have made a gap analysis between our procedures and the new question library, where we tried to identify where we stand and to fill those gaps in terms of the requirements. What is this required from us? I think that once it goes live, we will start to do the real work actually. Just cause then we will finally get some feedback of where we are and where we're standing“(P1).

A participant shared how the gap analysis of the question library has helped them identify some areas where some training was needed thus allowing them to plan ahead.

Participant 4 explained how the gap analysis was used to identify what to add in guidance articles and videos they made for the crew as a compliment to those made by OCIMF.

4.2.2.1 Soft skills and Culture

From group 1 (governing associations) INTERTANKO points out that it is important to acknowledge that it is not only the vessels that are being inspected but the company at large, meaning that shore and ship must work together even more than now, to support each other. This will call for soft skills to a wider extent than now, when SIRE 2.0 has included human factors and the PIFs.

Group 2 (shore) and group 3 (crew) often mentioned that they had identified an increase of focus on soft skills and culture within the industry. Several of them stated that due to their respective companies already focusing on these aspects, they do not anticipate too much of a change regarding their own procedures, but they predict it will be hard on the companies that have still to do so.

Group 1 Governing Associations:

INTERTANKO wanted to highlight that SIRE 2.0 is not just about assessing vessels, but the company at large, including the shore side. So, when the inspector goes on board the ship whatever is stated in the TMSA, the inspector will check the work onboard against those shore procedures as well. Therefore, INTERTANKO encourages companies to improve the communication between shore and ship, to make sure there is enough support both ways. This means to support development of more soft skills to implement a culture that can meet the requirements in SIRE 2.0.

Group 2 Shore & 3 Crew

All of the participants but one shared how their organisations lately have been increasing their focus on soft skills and culture onboard. Several of the participants explained that it was a natural step to take when working with Bridge Resource Management since it requires teamwork and communication skills, and for that soft skills are useful. P4 also mentioning the organisations incorporation of soft skills in their assessments:

“These soft skills, assessments, reflection, evaluation of performance, it's really coming in more and more. We have engineering assessments, navigational assessments [...] whereby you know during a review process, as you're on board in the bridge, and you're seeing them actually going and at their business, you're like, “OK, did they follow the procedures, but also what would their attitudes, you know, were they communicative, all this kind of stuff,” this kind of assessment.” (P4).

All participants agreed on the importance of communication, not only in relation to work but as informal bonding as well. The ability to engage in informal conversation and show interest in colleagues to cultivate healthy relationships with others onboard as well as with the offices were among the most often repeated themes in relation to having a successful safety culture.

“I will not say that I put a certain amount of time to engage with the crew, I mean, **that is** exactly my job. My job is to engage with the guys [...] Everything comes down to the work culture on board, truthfully speaking” (P12).

In regard to culture, there were two kinds of culture referred to, safety culture and ethnic culture. If there is good communication, understanding and tolerance then safety culture can remove some of the ethnic cultural aspects that otherwise may cause misunderstandings. The participants also predicted that soft skill would become even more important, because SIRE 2.0 has the potential to uncover issues that may originate in lacking soft skills. As a participant explained, they thought that people who would have issues with SIRE 2.0, would probably be those lacking soft skills.

4.2.2.2 Shore vs Ship vs Support

In connection to the prior section regarding shore-ship support, INTERTANKO mentioned that it is important to not overload the crew with information. Something that group 2 (shore) but

mainly group 3 (crew) also pointed out. To remedy this, a suggestion was made for OCIMF to create more concise and direct information, more usable and digestible for the organisations. Rather than just giving all information, additionally giving guidance in how to use it to effectively increase safety onboard and within the company.

Group 1 Governing Associations

INTERTANKO mentioned that it is important to not overload the crew with information:

“Don't go overboard with all the guidance to the ship. Don't bombard the seafarers and make sure there's a psychologically safe environment in which the seafarers can work, so that if someone gets something wrong you can't just jump on them” (INTERTANKO).

Group 2 Shore & 3 Crew

Both group two and three, except for one participant, thought the success of their respective companies had strongly depended on the good relationship existing between shore staff and ship crew. For participants in group two, the feedback from the onboard crew was essential for them to perform well in their own work.

For participants in group three, a good relationship with shore was crucial regarding safety aspects but also regarding the transition. This was because they relied on the shore staff providing them with the information needed “readymade” since they do not have the time to analyse what parts apply where. As a participant explained about the information from OCIMF:

“They could make shorter information to send out to the ships more than like here is the whole file because we have no time to read everything from work” (P14).

So, for this participant, the office functioned as gatekeepers for too much information, forwarding what was really important and applicable onboard. They also explained how the actions of the two groups could have a direct positive or negative impact on each other's work:

“I say they have been a little bit late on that, that it feels like they have saved everything for the last minute and now it's a lot of things to do. And it could have been spread out like When we first heard of it, that trying to get more and more information as early as possible because now it feels like we have a lot to do. Yeah, because we have known about it for a very long time” (P18).

4.2.2.3 Leadership

OCIMF repeatedly mentioned the ineffectiveness of blaming individuals onboard, hoping that SIRE 2.0 will decrease this and instead make the organisation look into the root cause of the problem and work on that. They explained that one of the conditions to achieve this is having leadership onboard due to the high influence the officers have on behaviour.

Group 2 (shore) and group 3 (crew) talked a lot about the importance of good leadership on a ship that takes care of the crew. The effect of such leadership is not only positive to the work environment, it also enables staff to grow together with the company, contributing to a higher retention rate with personnel that keep adding value.

Group 1 Governing Associations

OCIMF

OCIMF also mentions the importance of leadership accountability, as the crew rarely makes mistakes from a malicious standpoint, yet a blame culture very much is still alive in the shipping industry, something the added human factor aspect of SIRE 2.0 hopefully will help decrease. They explained that officers not only have a high influence on how the crew behaves and reacts onboard, but they also have the responsibility to support the crew so they can perform better. They often are the first to find out when something is amiss, and the link between the shore side of the organisation and the ship. Therefore, those who have such positions need to be proficient in more than technical and navigational skills.

Group 2 Shore & 3 Crew

Both groups expected that SIRE 2.0 would have an impact on the future of leadership onboard as was explained in section 4.1.4, and therefore it was recommended that companies give officers support and the tools necessary to succeed, because “we are in this together”.

As an example, a participant from group 2 explained that during the pandemic, the company still managed to maintain a relatively good work environment onboard to others because the office did not spare any costs to help and support the officers manage the situation onboard. They kept constantly updating them about what was going on ashore, so that they in turn could talk to the crew. For the company, this support has also a positive effect economically, because they have a high retention rate, saving them costs of recruiting and training new staff “from scratch”. Additionally, from group 3, all of the participants emphasised that officers onboard have the responsibility to lead through example, but also that it is their job to help others to become better at their job:

“I am neither teaching nor assessing, I'm involving them. Giving them the opportunity to figure out the risks and the best way to go about doing anything” (P12).

“Provide a good workspace for people to make it attractive and feel comfortable as well to work in to remain with the operator” (P3).

4.2.3 Mindset for everyone

The last sub-theme is directed towards everyone in the shipping industry because no one can solve these issues alone. The first heading is about the definition of human factors and psychosocial work environment and the second sub-theme is about the outlook on the inspections in general. Regarding the human factors and the psychosocial work environment no clear understanding of the terms could be identified, even though pretty similar, the answers given displayed an uncertainty towards what OCIMF is perceived to try to achieve. Regarding the inspections the groups displayed an attitude towards inspections being just to pass them, something Group 1 expressed they want the industry to move away from with the help of the new system.

4.2.3.1 Human Factors and Psychosocial work environment

The responses to the question “please define the human factor”, were all different. Even though often in the proximity, this clearly displayed a level of confusion regarding what OCIMF is

trying to implement with the new vetting system. Even if OCIMF had published instructions directly relating to the PIFs, it was clear that it had not reached the whole industry.

Group 1 Governing Associations

OCIMF defines the term human factors as:

“Human factors refer to the environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety”.

For INTERTANKO working with human factors means making sure the seafarers are doing the right job, with the right tools and equipment, in a safe working environment.

Group 2 Shore & 3 Crew

During the interviews, the participants were asked to share their definition about human factors. Even though most described similarities, except for two, none of the definitions aligned fully with what OCIMF defined it as. Although none of the responses were alarmingly off it showed that there is a risk of misunderstanding. Following are some examples:

“Human factor is responsible for everything and will always affect everything onboard”.

“Your interface with the equipment on board”

“Something that is related to our human behaviours in some way like [...] that is related to the human nature, like being forgetful or fatigued or too stressed out or just being unable for a human to fully assessed the situation”.

“The human element was the people in the centre of this surrounding concept of everything that influences their behaviour on board, so that being the human factors [...] with regards to design, systems, processes, environment etcetera and all affecting that human element in the centre now”.

The same could be said about the psychosocial work environment, all participants mentioned different aspects of the work environment connected to psychosocial wellbeing, but none selected the same. This may also present grounds for misunderstandings.

In several instances when participants were asked about the impact SIRE 2.0 would have on the psychosocial work environment, the first response would refute any impact on it. Later in the interview the participants explained effects that are decisively related to the psychosocial work environment. As example, a participant that did not expect any impact, described in the same response how nervousness and inexperience in some of the ratings had them feeling afraid and stressed when vetted.

4.2.3.2 Inspections

All three groups spoke about a change in the mindset of the expectations, mostly related to the attitude towards inspections, mentioning that sometimes there is a “suspicion” that you only work with safety to pass the inspection, not to make the ship in its entirety safe.

Group 1 Governing Associations

Regarding the attitude towards inspections INTERTANKO stated the following, expressing a wish for the industry to focus more on the chance to improve rather than to pass a test:

“So, it's a cross industry problem and that's why everybody's worked so hard to make sure that ships pass inspections. The ships are much safer, but sometimes there is a suspicion that you just work to pass the exam rather than work to make sure the ship is entirely proper and safe” (INTERTANKO).

Group 2 Shore & 3 Crew

The same opinion was expressed by an onboard crew member. explaining that people deal with audits and inspections like going for an exam every time rather than a check to see that everybody is on the right track in everyday operations and thus should not be anything that needs preparations. As a participant explained, sometimes there are so many inspections that the reason behind having them, namely ensuring safety, is forgotten. As they summarised what the inspections really are all about:

“I have to convince any inspector whether it be port, state, SIRE, right ship [does not matter the kind], that the safety of the vessel crew and equipment *‘is much more my responsibility than it can ever be yours’*. If I truly believe in it and the inspector feels that I believe in it, I’m doing alright” (P12).

At the same time, several of the participants flagged for “unreasonable demands” on the crew with the number of inspections they are already going through, naming internal inspections, different vetting inspections, which can be SIRE but also other programs because not all oil companies are part of OCIMF, port state controls, flag state controls, audits, company visits etcetera. So even if the idea behind is for good it is becoming too much.

5. DISCUSSION

This chapter starts with the discussion of some of the most important findings regarding research question one. Which includes “The potential Impact” in regard to “human factors”, “leadership & soft skills”, “the industry”, “Designing the system around the human” and the “Potential of improvement”.

The second part is connected to research question two, focusing on “What possible procedures, actions, or measures that could facilitate the transition”. This section includes a “definite start date”, “rumours”, “safety measures”, “measures for operators”, “information and public relations”, “owning the message”, “opposition to change” and “the communication channel”.

5.1 RQ1 The potential Impact

The results showed that all interviewed stakeholder groups were in agreement that the introduction of SIRE 2.0 had the potential to have a positive impact on the tanker industry. However, there were some concerns raised on how the introduction would affect the crew both in a short- and long-term perspective and how the launching of these new vetting routines should be facilitated.

5.1.1 Human factors

Not surprisingly, the results from this investigation said that likely, the launching of SIRE 2.0 would entail an increased workload, especially in the short-term, adding to an environment where previous research has given evidence to working on board being stressful environment with a high workload where elevated risk for burnout and suicide, has gradually become a growing problem (LeMoult, 2020; Mathieu, et.al., 2022; Rozanov, 2020; Lefkowitz & Slade, 2019). However, the governing associations argued that as the PIFs are designed, to among other things identify situations that create a high workload, over time this will have a positive effect and instead hopefully decrease the stress. Theory corroborates that, taking into account the management of human factors can lead to a better work environment for employees while also enhancing the overall safety (Leveson 2012; Pyć, 2020; Claxton et.al., 2022). Considering how some of the human factors stated as underlying causes to incidents being fatigue, lack of situation awareness and teamwork, health issues and stress, it may be fitting to assess why these causes exists (Hetherington, et.al 2006; Bicen & Celik, 2022; Coraddu, et.al., 2020).

By looking into human factors from a safety perspective, the psychosocial work environment can also be improved by proxy, since many of the stressors in shipping are related to the high workload of seafarers (Tetemadze, et.al., 2021; Turgo, 2022), something that the participants believed as well. Furthermore, group 2 and 3 believed that it could also affect the recruiting processes in the future, because they expected that soft skills would become more sought after, especially in those who are to occupy leading positions.

5.1.2 Leadership & Soft skills

Leadership and soft skills were in fact argued by the participants to be important facilitators to make SIRE 2.0 successful. Due to the STCW code including CRM and the mandatory BRM that requires both technical and non-technical skills (IMO, 2003; Praetorius et.al., 2020), the shipping industry has on an international level been paying more attention to non-technical skills, or as the participants called it, soft skills. This was something the respective companies the participants represented also had adopted. Why the participants believed it particularly important for staff in leading positions to be efficient regarding this, was because of how much influence they can have on the crew, in the achievement of company goals and on safety, something that is supported by theory (Bhattacharya & Tang, 2013; Panayides, 2019; Kim & Gausdal, 2017).

5.1.3 The industry

The participants believed that increased focus on soft skills while supporting leaders would improve safety because companies that already have a strong safety culture would become even stronger. They also believed that it would make companies that do not, to either conform or be phased out. Either way, safety would improve, something that was the main reason for OCIMF to introduce the human factors and the PIFs into SIRE 2.0 (OCIMF, 2023b). This was because they had noted that accidents in the tanker segment, that continuously had been decreasing since the 70s, had reached a plateau where further improvement stopped. When looking into why, it was noted that the majority of the accidents that continued to happen were attributed to human factors, so it was decided that the entire SIRE program had to be revised, to include human

factors as if they were any other subject of inspection. According to theory, this approach may prove to be successful, because research has shown that focusing too much on finding the who (person) or the what (equipment) to blame, tends to be counterproductive to achieve increased safety, since the why tends to be forgotten (Leveson, 2012; Claxton, et.al., 2022; Parker & Davies, 2020). This is especially true for complex systems and situations (Salvendy & Karwowski, 2021; Leveson, 2012), that are better served by a holistic approach to safety (Leveson, 2012).

5.1.4 Designing the system around the human

By assessing human factors and PIFs, there is an opportunity to assess how the system can be fitted to humans instead of making humans adapt to the system. Instead of trying to create even more regulations to prevent errors, there should be a possibility to manage human factors by designing the work environment appropriately, so the likelihood of human error based on how people actually work can be managed (Portela da Ponte Jr, 2021; Pyć, 2020; Leveson, 2012; Claxton, et.al., 2022). This will require a change in mindset. The difference lies in for example how errors are questioned, shifting from “why are you making mistakes in this environment?”, to “what in this environment is stopping you from making no mistakes?”.

5.1.5 Potential of improvement

This new way of asking requires some prerequisites to be pulled off, though. Firstly, it must be accepted that humans make mistakes. Secondly, humans must be seen as a part of a system that goes beyond the task they are doing at a specific moment, so that human factors can be managed (Pyć, 2020; Leveson, 2012; Claxton, et.al., 2022). By understanding that human actions depend highly on what a system allows, a holistic approach to safety is needed that considers the whole system humans are a part of. For shipping, this means the entire shipping industry, from the crew onboard, all the way to legislators (Rokseth, et.al., 2018; Claxton, et.al., 2022; Pyć, 2020). This also includes shipping societal perspective (IMO, 2017; Stavroulakis & Papadimitriou, 2022). Thirdly, since shipping has the possibility and responsibility to contribute to sustainable practices, addressing human factors opens for a great opportunity to do so (Maritime Just Transition Task Force, 2022; Podgorodnichenko, et.al., 2020).

But this may be easier said than done, because the results showed that there is no consensus of what human factors are. During the interviews terms related to human factors were mixed up with terms related to the psychosocial work environment and vice versa. And, when the participants were asked to define human factors, several definitions of human factors were in the vicinity of each other, but none of the definitions aligned fully. This lack of unanimity may become a barrier to the transition going smoothly if not addressed. A way to tackle this is through change communications, which will be explained in the next section.

5.2 RQ2 What possible procedures, actions, or measures could facilitate the transition?

In this second part of the discussion the analysis connected to the second research question: “What possible procedures, actions, or measures that could facilitate the transition?”, will be presented and weighed against the theory. This section of the discussion starts off by presenting the most significant findings regarding measures, it then leads to an attempt to explain such findings. The chapter ends with suggestions and further discussion on how to facilitate the transition into SIRE 2.0.

5.2.1 Definite start date

As presented in the results, the most common wish to facilitate the transition into SIRE 2.0 from group 1 and 2, was a definite start date. Which by the participants was explained to be necessary in order to be able to arrange preparations, to conduct an effective transition to the new system. This was further motivated by several participants, stating it impossible to have a vessel prepared for both systems at once. Because of the scarcity of time the crew felt subject to. An important part of the findings, as it was perhaps the most voiced concern by the participants.

5.2.2 Rumours

The delays that SIRE 2.0 has been a subject to, prompted several rumours within the industry, somewhat damaging the reputation of the new system and OCIMF themselves. Maybe the most noteworthy of such rumours, was the common concerns voiced regarding the inspectors, questioning the status of the education they were receiving, their ability to learn the more soft-skill focused approach and how their possible inability in such regards might affect the inspections. However, OCIMF exuding confidence in this regard, painted another picture. This discrepancy suggests a partial inability from OCIMF to effectively communicate their message to their stakeholders. Which however the theory describes may not be completely their fault, as later explained. To amend this however, OCIMF should be more open and transparent about the delays and changes.

Even if more communication will not have a direct impact on the start date, it may calm down some speculation that could otherwise diminish the credibility of the program and the organisation (Citraen, 2021; Kotler, et.al., 2012; O'Brien & Gallagher, 2021).

5.2.3 Safety Measures

Seafaring being a high-risk occupation (Brooks & Greenberg, 2022; Abila & Acejo, 2021), it is also very important to have good safe practices onboard. OCIMF with SIRE 2.0 has made an effort to take this development a step further, to try to aid excellence within the industry and raise it above the lowest acceptable standards through its new rating system. Which in addition to legislative pressure would also increase the reliance on commercial pressure and pride.

As Pantouvakis & Psomas (2016) discovered, it is important to continuously develop and work with leadership and culture onboard, not only focusing on “strict implementation” of rules and procedures. Something OCIMF and INTERTANKO as well says they are trying to move away from. Not treating an inspection as an exam, but to use it as a system for improvement.

5.2.4 Measures for operators

Pantouvakis & Psomas (2016) found that aligning TQM practices with the aim of the company are important aspects for a business. So, for operators to take a more embracing approach to practices within SIRE 2,0 truly incorporating it would probably aid the company even further. Something that many of the participants, especially in group 2 stated they were already working on. However, they are also described to be an immense job, facilitated by an extensive gap-analysis. To aid group 3 the seafarers to develop an understanding of the new system, they are often themselves suggested OCIMF could provide clearer and simpler guidance. Something that many in group2 explained were something they designed for their own crews.

5.2.5 Information and public relations

Regarding the communication between industry and OCIMF there was also uncertainty discovered in the interpretation of the “human factor” and PIFs, as previously discussed. Probably not optimal, if one of the “principle aims” with SIRE 2.0 are to improve in these areas (OCIMF). Using information and public relations practices to maintain a positive relationship between sender and stakeholders is important to keep trust between the parties (Kotler, et.al., 2012), it also aids in being regarded as competent (Citraën, 2021; Camilleri, 2021).

The two aspects increase in importance regarding change, as the aspect of requiring convincing stakeholders grows even bigger in such a scenario, demanding even better communication (Kotter, 2012). Reinforced by the need for preferences and priorities of the stakeholders to be aligned with the sender (Weiner, 2021; Citroën, 2021), a perceived gap parties can be damaging both for the relationships and the success of a strategy (O'Brien & Gallagher, 2021; Citroën, 2021). Which Weiner (2021) explains for example can happen because of technicalities such as ineffective targeting of the audience, lack of allocated resources or a poorly timed message. However as mentioned by (Kotler, et.al., 2012), it is important to note that you can't convince everyone. And it is probably important to note that the majority of the participants in this study, as presented in the analysis, was quite confident in their own abilities to manage the change successfully.

Positive relations with stakeholders are partially facilitated through being able to convey a clear message of the purpose (O'Brien & Gallagher, 2021; Kotler, et.al., 2012). If truly the purpose of increasing the safety within the industry is genuine, having the oil-majors adopting more responsibility could better motivate and foster their relationships with vessel operators and owners. As one of the participants voiced a distrust for the actual motive behind SIRE 2.0, stating that it is only the oil-major's interest to cover their backs, as they are not aiding in covering any extra costs appearing because of the new system. A gap between the belief in the motive of OCIMF and the participants was sometimes identified, especially regarding a couple of the participants, stating that it sometimes feels like all the paperwork is less about safety and more about something else, “feeding training centres”, or oil-majors covering their backs - “we have this on the paper. So, now it should be good!”.

A gap between the belief in the motive of the sender, can make a dissatisfied receiver even more so (Kotler, et.al., 2012; Citroën, 2021; Camilleri, 2021), making it harder to guide the coalition through change. So therefore, it is necessary to address the matter before lack of trust becomes a barrier to the change of mindset OCIMF is wanting to bring to the industry.

5.2.6 Owning the message

One method to rectify this, as presented in the theory, is to own the message. Evaluate the critique and feedback and be transparent in the way you are handling it and what measures (if the critique is deemed valid enough) the organisation is implementing to amend them.

As revealed in the analysis OCIMF has done an extensive job listening to the industry through owner associations like INTERTANKO and other groups within the industry. OCIMF during the interview were also open about talking about the feedback, worries and amendments they made to rectify these concerns. So, it seems like it's only the last part, the sharing and transparency about how they have handled the criticism that need to further communicate to the industry. As made apparent in the interviews, group 2 and 3 often didn't feel taken into account or valued. Perceiving a more "one-way" focused communication, "they say, we do". An increased level of transparency would then hopefully increase the positivity towards SIRE 2.0, as well as decrease the number of rumours spread about the changes (Citroën, 2021; Kotler, et.al., 2012; O'Brien & Gallagher, 2021).

5.2.7 Opposition to change

As mentioned by (Pun et al., 2003) challenges with a ship's management systems commonly relates to the opposition to change and the lack of knowledge, as well as the time you must implement and tailor it according to your own specific needs. All aspects identified as problematic from the participants regarding the transition to SIRE 2.0. The new system is unifying risk assessment and observation, which is right in line with what Kamiński (2022) suggested could be very beneficial for the industry, to make it safer. Thus, introducing the PIFs measurement part of a tool on how to assess the human factor, aligns with his suggestion. However, the theory also highlights the importance of the crew's levels of understanding of the risk management approach (Kamiński, 2022). Which many of the participants revealed could be better. Even if it is perhaps not OCIMF's direct responsibility, the question could be asked, if there is something more OCIMF can do regarding this problem, to increase the safety of the industry?

Group 3 perhaps showed the most confusion, motivated by not having enough time to familiarise themselves with the upcoming changes. The continuous operation of the ships, hectic schedules, and little free time, are giving them less time to prepare. Group 2 also quite often displayed uncertainty regarding SIRE 2.0, often explaining that "we will see what happens when the system goes live". With this display of uncertainty, there seems to be doubt to the effectiveness of the systems design to deal with management regarding safety, and all the changes resulting in increased observations and the new human observations.

Thus, more easily digested direct information as some of the participants from group 3 suggested might facilitate the transition. Which would also aid in the credibility of the message as it is easier to achieve and increase trust when the purpose and objectives are realistic and measurable for the receiver within the message (O'Brien & Gallagher, 2021; Kotler, et.al., 2012). And even though most agreed that the information provided by OCIMF was of great quality, concerns regarding the presentation and the amount of it were often voiced as concerns.

5.2.5 The communication channel

A suggestion for OCIMF could be to provide information in a more structured way, so the information becomes more easily digestible and the overview of the progress more manageable. A project time-map, to display where in the progress SIRE 2.0 is, and when the system is planned, or estimated to be launched, readily available on the public part of OCIMFs website. Eliminating the need to go through a third party, a membership forum or to rely on rumours.

The communication channels could be made clear by providing the date of when the documents were published on the public website. Not only providing the creation date, as it was identified that these two could vary. Additionally keeping the layout and orientation of the website the same throughout the transition, so as not to confuse the receiver of what has been examined before or not, and where to find them all the documents.

5.3 Method discussion

Since the goal for this thesis was to identify and gather general information and themes about a system that is not yet in place, it meant that several of the participants' answers to questions would be subjective based on background and experience, hence the reason to select a qualitative method. The disadvantage is that the researcher's biases and subjectivities may influence the results of the research (Hesse-Biber & Johnson, 2015; Merriam & Tisdell, 2016; Saldaña, 2011). Since biases and subjectivity are difficult to eliminate fully, it was decided that the primary data would therefore be collected through semi-structured interviews (Merriam & Tisdell, 2016), which would allow usage of the advantage of instant reaction while still following a script as to ask the same questions to all participants. This allowed for more fluent answers and relaxed atmosphere, because during SJÖLOG, several of the persons approached expressed insecurity and uncertainty regarding SIRE 2.0 (Merriam & Tisdell, 2016), leading to the belief that a survey or questionnaire might be perceived more like a test to check knowledge rather than asking for their conclusions.

The insecurity about SIRE 2.0, also had an influence on the demography. First noticed during SJÖLOG, when presenting information about the study some people were so negative about the upcoming changes that they refused to even touch the flyers that were being handed out. The same was also noted later when looking for participants for group 3.

It was therefore discussed whether the findings of this thesis would be applicable and representative for the industry or not, to which the answer is yes and no. We believe that the pre-set criteria for participants rendered professionals that are highly skilled in their respective areas, with experience and knowledge enough to provide trustworthy assessments and conclusions on the transition. The decision to let the sample group size be decided by saturation instead of a fixed number, contributes to the trustworthiness of the participants input. Therefore, their insights and suggestions on what is difficult and what can ease the transition are believed to be representative and applicable to the industry. Whereas, when it comes to their expectation on SIRE 2.0 having a positive impact in general to the industry, is probably not representative. This is because we failed in convincing highly critical persons in any position to participate in the study, making our sample group somewhat lacking in diversity of opinion. Would we redo this study, this is an aspect we would like to change, because we believe that the saturation could be different. Since our sample groups, except for one participant, generally had positive

expectations despite concerns, we believe we achieved a saturation in themes, but perhaps not in opinions (Braun & Clarke, 2021b)

Credibility and Dependability

Because this study was qualitative, it was decided that instead of using the terms validity and reliability, the terms credibility and dependability would be more suitable (Guest, et.al., 2012).

Credibility

In accordance with recommendations in literature (Shenton, 2004; Guba, 1981) the following steps were taken:

- Deciding to use thematic analysis, an established and recognised approach (Guest, et.al., 2012)
- Sampling previously unknown participants based on pre-set criteria, so random participants could be interviewed.
- Using triangulation when comparing the answers of three groups from different positions in the tanker industry.
- Ensuring anonymity for participants so they could feel comfortable to speak honestly without fear of repercussion would they voice unpopular opinions.
- Maintaining regular communications and discussion sessions with an experienced supervisor to make sure that the progress of the study retained credibility.
- Both authors would scrutinise each other's perceptions, thematic analysis, and coding to compare interpretations.
- Once the work with coding and sub-themes was finished but before compiling the results, they were cross-checked by peers that had participated in the interviews but who had not been involved in the analysis. The same was done again once the results had been compiled. The idea behind was to check if there was any result that they did not recognise from the interview or that they interpreted differently (Guest, et.al., 2012; Shenton, 2004; Guba, 1981).
- Using recognised, peer-reviewed academic literature to the highest extent possible to frame the findings.

Dependability

Several different methods were discussed prior to selecting thematic analysis and semi-structured interviews. Although commonly used methods by researchers, it was decided to describe the usage of them in detail in this study. Furthermore, the results were described in as much detail as possible to simplify the process would the study be repeated, but also to aid in the assessment of analysis and conclusions made in this report. (Guest, et.al., 2012; Shenton, 2004; Guba, 1981).

6. CONCLUSION

OCIMF is making big changes to the vetting system, affecting the way they are conducted and evaluated, through the implementation of SIRE 2.0 and its new focus on the human factor. The participants in this study seem to mostly agree that the changes have potential to improve the safety of the industry. But there is also a substantial uncertainty of additional effects such as increased workload, the changes could have on the industry. All the participants agreed that initially the changes would create an extensive increased workload for the crew onboard, while adapting to the new changes. It was also agreed that once implemented, a heightened knowledge of the crew would be demanded, to keep getting good results from vettings. Subsequently this could change the dynamics of the hiring processes within the industry, increasing the value of candidate's soft skills. In this regard leadership was deemed one of the most important factors impacting the success of a transition, as leaders are the ones guiding the crew, and have an immense effect on the culture onboard.

Regarding the industry, most participants thought that these changes would make it safer. However, it was sometimes expressed that the amount of paperwork needed to be done on board was sometimes skewed, as it took away focus from actual work focused on safety, leading to over documentation. Yet, the increased data gathered regarding the human factors, creates new possibilities within the industry to better adapt it to humans, potentially increasing safety even further as the systems could be designed with less inherent defiance of human nature, thus lessening the proportion of accidents being caused by human factors.

But to reach the maturity state of the transition more efficiently, there were several facilitators identified. Maybe the most significant and fundamental, was a definite start date, so that the industry can properly prepare for the transition and let go of obsolete procedures and practices designed for the former system. Along with a definite start date it was also identified that owning the message and being more transparent from OCIMFs side would facilitate the transition. As it has a great possibility of decreasing the number of rumours being created, which affects the opinion of the changes and OCIMF and the inspectors negatively. This could be facilitated with a more consistent and easily navigable website, as it is one of the main platforms for information regarding SIRE 2.0. This could increase the public and industry support, stated by OCIMF as necessary for a successful transition. However, also noteworthy is the inherent scepticism to change which inevitably also affects the maritime industry.

6.1 Recommendations for further research

The aftermath of the transition into SIRE 2.0 could be studied to find out what the changes resulted in, how it affected the crew and the industry, covering several different areas, such as effect on safety, the psychosocial work environment onboard, recruitment strategies and retention rates to name a few. As OCIMF stated it is a work in progress, and they anticipated the success would not be measurable until about 5 years, when the industry has had time to adjust and familiarise themselves with the changes. Until then, case studies could be carried out, comparing how different companies approach the transition, which later could provide insight in the efficiency of separate strategies to change.

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APPENDIX1 - SEARCH TERMS

Barriers:

Workload + seafarers / shipping / maritime
 Stress + seafarers / shipping / maritime
 Object detection
 General ergonomics
 individual differences
 learning and skill acquisition
 allocation of functions
 OHS + managers / management.
 OSH + shipping / maritime
 occupational safety & health
 Leadership shipping / maritime
 BRM-training
 Reporting shipping + silence culture shipping
 Near-misses shipping
 Incidents / accidents shipping

Being a seafarer:

Quality of work life + Shipping/ Maritime
 Occupational Health Shipping/ Maritime
 Stressors shipping
 Psychosocial work environment shipping / maritime
 Health issues / risks + shipping / seafarers
 Burnout shipping
 OSH practises shipping

Human factors and System safety engineering:

Human factors /+ management
 Human Errors /+ management
 Error theory + Error management
 Safety systems + human factor
 Safety system engineering + / shipping
 Personnel Management + /shipping
 CSR
 Safety Factors

Information and public relations:

Change communication
 Social responsibility of business
 Relationship marketing
 Communication in marketing
 Stakeholder theory
 Information technology
 Strategic planning
 Strategic corporate communication
 Organisational communication
 Reputation communication
 Branding

Management Systems onboard:

ISQMS
 ISM code / SMS
 SOLAS / ISGOTT / STCW + management
 Maritime safety regulations + - management
 Safety and security measures shipping / maritime
 Safety management system shipping /maritime
 Total + / quality management shipping / maritime

Methods:

Qualitative study / methods
 Research method approaches
 Sampling methods
 Interview methods
 Thematic analysis
 Saturation
 Validity / reliability

SDGs:

Human resource management
 Corporate social responsibility
 Sustainability
 Sustainable shipping management
 Corporate environmental management
 Environmental performance
 Environmental quality
 Green human resource management
 Sustainable green logistics

Vetting Commercial:

Maritime accident + human
 Shipping + accidents + human factors
 Shipping accidents + causes
 Shipping vetting inspection
 vetting shipping
 oil tanker accidents history shipping
 safety management system shipping
 Tanker accidents statistics
 Oil tanker accidents history
 Statistics of oil spills from tankers
 Oil spills
 Tanker accidents
 Ship accidents statistics

Management systems on-board

Safety management system shipping
 History of vetting
 Safety in shipping
 Quality management in shipping
 TQM in shipping

APPENDIX 2 - CRAAP TEST

CRAAP Test 2020*

When you search for information, you're going to find lots of it... but is it good information? The **CRAAP Test** is a list of questions to help you evaluate the information you find. Different criteria will be more or less important depending on your situation or need.

Currency: *The timeliness of the information*

- When was the information published or posted?
- Has the information been revised or updated?
- *Are there similar but more updated studies, articles, etc. on the same topic?*
- Does your topic require current information, or will older sources work as well?

Relevance: *The importance of the information for your needs*

- Does the information relate to your topic?
- *Does this information add a needed perspective to the rest of your sources?*
- Who is the intended audience?
- Is the information at an appropriate level for your needs?
- Have you looked at a variety of sources before deciding this is one to use?
- Would you be comfortable citing this source in your research paper?

Authority: *The source of the information*

- Who is the author / publisher / source / sponsor?
- What are the author's credentials or organizational affiliations?
- Is the author qualified to write on the topic? *What are their primary areas of study?*
- Is there contact information, such as a publisher or email address?
- *Can you verify information about the author/publisher from another unrelated source?*

Accuracy: *The reliability, truthfulness and correctness of the content*

- Is the information supported by evidence?
- *How* has the information been reviewed or refereed?
- Can you verify any of the information in another source or from personal knowledge?
- Does the language or tone seem unbiased and free of emotion?
- *Has all or part of the information been retracted? Or, conversely, cited many times since publication?*
- Are there spelling, grammar or typographical errors?

Purpose: *The reason the information exists*

- What is the purpose of the information? Is it to inform, teach, sell, entertain or persuade?
- Do the authors / sponsors make their intentions or purpose clear?
- Is the information fact, opinion or propaganda?
- Does the point of view appear objective and impartial?
- What are the political, ideological, cultural, religious, institutional or personal biases?
- *How was/is this author paid for their study? What are their funding sources?*

** adapted from the CRAAP Test 2010, Meriam Library, California State University, Chico*

The CRAAP Test WORKSHEET

Use the following list to help you evaluate sources. Answer the questions as appropriate, and then rank each of the 5 parts from 1 to 10. (1 = unreliable, 10 = excellent.) Add up the scores to give you an idea of whether or not this is a source you should use.

Currency: *The timeliness of the information*..... /10

- When was the information published or posted?
- Has the information been revised or updated?
- *Are there similar but more updated studies, articles, etc. on the same topic?*
- Does your topic require current information, or will older sources work as well?

Relevance: *The importance of the information for your needs*..... /10

- Does the information relate to your topic?
- *Does this information add a needed perspective to the rest of your sources?*
- Who is the intended audience?
- Is the information at an appropriate level for your needs?
- Have you looked at a variety of sources before deciding this is one to use?
- Would you be comfortable citing this source in your research paper?

Authority: *The source of the information*..... /10

- Who is the author / publisher / source / sponsor?
- What are the author's credentials or organizational affiliations?
- Is the author qualified to write on the topic? *What are their primary areas of study?*
- Is there contact information, such as a publisher or email address?
- *Can you verify information about the author/publisher from another unrelated source?*

Accuracy: *The reliability, truthfulness and correctness of the content*..... /10

- Is the information supported by evidence?
- *How* has the information been reviewed or refereed?
- Can you verify any of the information in another source or from personal knowledge?
- Does the language or tone seem unbiased and free of emotion?
- *Has all or part of the information been retracted? Or, conversely, cited many times since publication?*
- Are there spelling, grammar or typographical errors?

Purpose: *The reason the information exists*..... /10

- What is the purpose of the information? Is it to inform, teach, sell, entertain or persuade?
- Do the authors / sponsors make their intentions or purpose clear?
- Is the information fact, opinion or propaganda?
- Does the point of view appear objective and impartial?
- What are the political, ideological, cultural, religious, institutional or personal biases?
- *How was/is this author paid for their study? What are their funding source\$?*

TOTAL..... /50

✓ 45 - 50 Excellent ✓ 40 - 44 Good 📄 35 - 39 Average 📄 30 - 34 Borderline 📄 30 Below 🗲

APPENDIX 3 - ETHICAL RULES APPLIED IN THE PROJECT

1. Your participation is voluntary, and you have the opportunity to cancel your participation at any time during the project. You do not have to state any reason for doing so. Should you choose to cancel your participation, data linked to you will be disregarded from the study and the material will be destroyed.
2. No one beside the researchers will listen to any recordings. You are guaranteed anonymity in this project and emerging data reported, will be done without connection to ship, person, or shipping company. Your data will be coded, and the code key will be accessed and known by the researcher only. This coding will enable the possibility to contact you for any additional information, as well as identification of data linked to you in order to destroy it, should you choose to withdraw your participation in the study.
3. Emerging data in the project will be presented in reports, at seminars and conferences. At your request, you can read and approve the material ahead of publication.
4. None of your contact or personal information will be shared with any third party, nor used for any other purpose than the above stated. All personal data will be handled in compliance with the EU General Data Protection Regulation (GDPR) and in a manner that does not infringe personal integrity.

For additional information about the project, feel free to contact:

Monica Lundh from the Department of Mechanics and Maritime Sciences at Chalmers University of Technology, by calling 031 – 772 60 61 or by email: monica.lundh@chalmers.se

Henrik Ringsberg from the Department of Mechanics and Maritime Sciences at Chalmers University of Technology, by calling 031 – 772 18 64 or by email: henrik.ringsberg@chalmers.se

or contact us: vetting.masterthesis@gmail.com

APPENDIX 4 - BE OUR INTERVIEWEE!

We are four students attending Chalmers University of Technology in Sweden that are writing our master theses based on the introduction and transition to SIRE 2.0.

Our aim is to highlight what factors or procedures could ease the transition and implementation of SIRE 2.0, for the shipping companies that are about to do so.

Although the information and videos provided on the OCIMF website has given us plenty of material to work with, we now would like to get your point of view!

We look forward to hearing your perspective on SIRE 2.0, your expectations on future vetting inspections, as well as any possibilities and challenges you and your company may anticipate.

Our main interests are the Performance Influencing Factors (PIFs) and the human response tool, but are grateful for any input we may get. We welcome the views from crew members, operators, inspectors / auditors, or any other personnel onboard and ashore that will be involved in the transition to SIRE 2.0.

The interview is estimated to take a maximum of 60 minutes and will be conducted digitally.

Please share your contact information in this form so we may contact you and schedule a meeting that suits you.

We are looking forward to hearing from you soon!

Our Best Regards,

Ina, Linus, Marianthi, and Ria

APPENDIX 5 - INTERVIEW QUESTIONS GROUP 1

Now that you have given us permission to record this interview, we want to once again remind you that:

1. Your participation is voluntary, and you can choose to cancel your participation at any time during the project. You do not have to state any reason for doing so. Should you choose to cancel your participation, data linked to you will be disregarded from the study and the material will be destroyed.
 2. No one beside us four (Ina, Linus, Marianthi & Ria) will listen to any recordings, not read the transcripts. You are guaranteed anonymity in this project and if we choose to use anything you say in our study, it will be done without connection to a ship, person, or shipping company. Your data will be coded, and the code key will be accessed and known by us four only. This coding will enable the possibility to contact you for any additional information, as well as identification of data linked to you in order to destroy it, should you choose to withdraw your participation in the study.
 3. Emerging data in the project will be presented in reports, at seminars and conferences. At your request, you can read and approve the material ahead of publication.
 4. None of your contact or personal information will be shared with any third party, nor used for any other purpose than the above stated. All personal data will be handled in compliance with the *EU General Data Protection Regulation (GDPR)* and in a manner that does not infringe personal integrity.
-

1. Please explain your relationship with OCIMF? (collab/subordinate/member) (NOT OCIMF)

1a. How does OCIMF play a part in your day-to-day work? NOT OCIMF

2. Please explain how you connect vetting to your (COMPANIES) risk management and performance assessment?

2a. What does your company structure look like, for those procedures?

2b. Do you have your own structure, or do you acquire external support?

3. Means of communications to target groups:

3a. How do you communicate information about non-statutory changes? (Mediums)

3b. When are communicating information about non-statutory changes? (Periodicity)

3c. When did you first hear about SIRE 2.0 (officially /unofficially + sources) (NOT OCIMF)
(For OCIMF: When did you start the process?)

4. What were your first impressions?

4a. Are your initial impressions the same today?

- if yes, why have they not changed?

- if not, what are they and why did that change?

- concerns / challenges / possibilities

5. How does your company react to change:

5a. in general?

5b. regarding SIRE 2.0?

5c. Do you find the approach suitable?

5d. Will the changes in SIRE 2.0 change your target groups' company structure of how vetting is conducted?

5e. Concerns?

6. Are you pleased with the information and guidance provided by OCIMF so far? (positive/negative and why) / (For OCIMF: are pleased with the information and guidance you have provided so far?)

6a. Are you pleased with the guidance provided by industry experts?

6b. What information or guidance is missing?

6c. Would you had done anything differently? (Info. /Guide. / Tools)

6c. When support has been needed, whom have you turned to?

7. What outcomes are you expecting with the new SIRE 2.0 /from the companies)?

7a. What actions are you expecting from the companies with the new SIRE.

7b. What will this mean for you / the crew or shore / the future of the industry?

7c. Are the new demands reasonable? Why / why not? Suggestions to differ?

7d. What consequences will the change to SIRE 2,0 when assessing human factors be, on a corporate level?

7e. What KPI: s will change with SIRE 2.0. and why/why not?

8. How do you define human factors?

8a. How do should companies work with them?

8b. How do you define the human performance indicators, how do you think they will be used and what are your thoughts on it?

8c. How will the PIFs affect the psychosocial work environment?

8b. What strategy towards the new concept of "Human factors" should companies have?

8c. Some legislation/legislatives might follow the "Human factor" concept, what would your recommendation be for future work regarding this concept?

9. How have you had the chance to discuss the new changes with onboard crews -What was the reaction?

If yes	If not – is it something planned to be done?
What did they find being good?	What do you think they will like?
What did they find being bad	What do you think they will be reluctant to do?

9b. What specific preparations should companies make?

(Education, recruitment of new personnel, informing the crew, educating them, new policies/policy development etc)

10. Do you have any thoughts on how companies should allocate resources i.e., manpower, equipment for self-assessments/preparation/inspection?

11. What trending gaps in education have you identified in general?

11a. What will be needed besides the changes in SIRE 2.0? (Procedures, soft skills, teamwork, team dynamics and team cultures, technical skills)?

12. Looking at the PIFs, do you have an idea on how companies could work systematically with these and consider/define them into the psychosocial working environment working onboard the vessels - THE SMS (Systematisk arbetsmiljö/arbetsmiljöromd etc)

12 a. Do you think there is access to appropriate guidance management instruments for companies?

12.b. Suggestions on how to address and act on future observations?

12 c. Whose responsibility will it be to contact charterers?

12.d How do you suggest companies could deal with the thoughts/concerns/questions from the crew?

12.e. Is there a strategy you can recommend for how the crew can be supported in this transition?

Summary questions:

A. What in your opinion will be the largest challenge of the transition into SIRE 2.0?

Aa. Largest opportunity?

B. What in your opinion can shipowners and operators do to ease/streamline the transition?

C. What would you have OCIMF (+ yourself for OCIMF) done differently?

D. On a scale 1-10 where is current SIRE + SIRE 2.0? (Why the difference?)

E. What do you think SIRE 2.0 will lead to?

F. Do you think SIRE 2.0/vetting should not only be limited to the tanker sector? WHY?

G. How does your company generally react to change?

(attitude) Proactive - Neutral - Reactive- (Naïve)

APPENDIX 6 - INTERVIEW QUESTIONS GROUP 2

Now that you have given us permission to record this interview, we want to once again remind you that:

2. Your participation is voluntary, and you can choose to cancel your participation at any time during the project. You do not have to state any reason for doing so. Should you choose to cancel your participation, data linked to you will be disregarded from the study and the material will be destroyed.
3. No one beside us four (Ina, Linus, Marianthi & Ria) will listen to any recordings, not read the transcripts. You are guaranteed anonymity in this project and if we choose to use anything you say in our study, it will be done without connection to a ship, person, or shipping company. Your data will be coded, and the code key will be accessed and known by us four only. This coding will enable the possibility to contact you for any additional information, as well as identification of data linked to you in order to destroy it, should you choose to withdraw your participation in the study.
4. Emerging data in the project will be presented in reports, at seminars and conferences. At your request, you can read and approve the material ahead of publication.
5. None of your contact or personal information will be shared with any third party, nor used for any other purpose than the above stated. All personal data will be handled in compliance with the *EU General Data Protection Regulation (GDPR)* and in a manner that does not infringe personal integrity.

1. Please explain your relationship with OCIMF? (collab/subordinate/member)

1a. How does OCIMF play a part in your day-to-day work?

1b. Are you (your company) a member of any association or forum that provides guidance regarding changes in the industry?

2. Please explain how you connect vetting to your (COMPANIES) risk management and performance assessment?

2a. What does your company structure look like, for those procedures?

2b. Do you have your own structure, or do you acquire external support?

2c. Which departments are involved: preparing for/ pre-vetting/ actual inspection?

(CHECK departments /roles - HR, Superintendent, DP, Fleet Technical Manager, Fleet Manager, Fleet Captain, Compliance Manager etc)

3. Means of communications:

3a. How are you getting information about non-statutory changes? (Mediums)

3b. When are you getting information about non-statutory changes? (Periodicity)

3c. When did you first hear about SIRE 2.0 (officially /unofficially + sources)

4. What were your first impressions?

4a. Are your initial impressions the same today?

- if yes, why have they not changed?

- if not, what are they and why did that change?

- concerns / challenges / possibilities

5. How does your company react to change:

5a. in general?

5b. regarding SIRE 2.0?

5c. Do you find the approach suitable?

5d. Will the changes in SIRE 2.0 change the company structure of how vetting is conducted?

5e. Concerns?

6. Are you pleased with the information and guidance provided by OCIMF so far? (positive/negative and why)

6a. Are you pleased with the guidance provided by (previously mentioned associations? (positive/ negative and why?)

6b. What information or guidance is missing?

6c. What could be provided to make your work easier? (Info. /Guide. / Tools)

6c. When clarification has been needed, whom have you turned to?

7. What outcomes are you expecting with the new SIRE 2.0 (for the companies)?

7a. What actions are you expecting from the companies with the new SIRE.

7b. What will this mean for you / the crew or shore / the future of the industry?

7c. Are the new demands reasonable? Why / why not? Suggestions to differ?

7d. What consequences will the change to SIRE 2,0 when assessing human factors be, on a corporate level?

7e. What KPI: s will change with SIRE 2.0. and why/why not?

8. How do you define human factors?

8a. How do you (company) work with them?

8b. How do you interpret the human performance indicators being used and what are your thoughts on it?

8c. How will the PIFs affect the psychosocial work environment?

8b. What is your (company) strategy towards the new concept of “Human factors”?

8c. Some legislation/legislatives might follow the “Human factor” concept, what would your recommendation be for future work regarding this concept?

9. How have you communicated the new changes to your onboard crews (onboard colleagues if crew)? -What was the reaction?

If yes	If not - how is it going to be done?
What did they find being good?	What do you think they will like?
What did they find being bad	What do you think they will be reluctant to do?

9b. What specific preparations have you made?

(Education, recruitment of new personnel, informing the crew, educating them, new policies/policy development etc)

10. How do you allocate resources i.e., manpower, equipment for self-assessments/preparation/inspection?

11. What trending gaps in education have you identified in general?

11a. What will be needed besides the changes in SIRE 2.0? (Procedures, soft skills, teamwork, team dynamics and team cultures, technical skills)?

12. Looking at the PIFs, do you have an idea on how to work systematically with these and consider/define them into the psychosocial working environment working onboard the vessels - THE SMS (Systematisk arbetsmiljö/arbetsmiljöromd etc)

12 a. Do you have access to appropriate equipment and management instruments?

12.b. How will you address and act on future observations?

12 c. Whose responsibility will it be?

12.d How do you deal with the thoughts/concerns/questions from the crew?

12.e. Is there a strategy for how the crew can be supported in this transition?

Summary questions:

A. What in your opinion will be the largest challenge of the transition into SIRE 2.0?

Aa. Largest opportunity?

B. What in your opinion can shipowners and operators do to ease/streamline the transition?

C. What would you have OCIMF (+ any other org. named) done differently?

Ca. What would you wish for that would ease your work?

D. On a scale 1-10 where is current SIRE + SIRE 2.0? (Why the difference?)

E. What do you think SIRE 2.0 will lead to?

F. Do you think SIRE 2.0/vetting should not only be limited to the tanker sector? WHY?

G. How does your company generally react to change?

(attitude) Proactive - Neutral - Reactive- (Naïve)

APPENDIX 7 - INTERVIEW QUESTIONS GROUP 3

Now that you have given us permission to record this interview, we want to once again remind you that:

3. Your participation is voluntary, and you can choose to cancel your participation at any time during the project. You do not have to state any reason for doing so. Should you choose to cancel your participation, data linked to you will be disregarded from the study and the material will be destroyed.
4. No one beside us four (Ina, Linus, Marianthi & Ria) will listen to any recordings, not read the transcripts. You are guaranteed anonymity in this project and if we choose to use anything you say in our study, it will be done without connection to a ship, person, or shipping company. Your data will be coded, and the code key will be accessed and known by us four only. This coding will enable the possibility to contact you for any additional information, as well as identification of data linked to you in order to destroy it, should you choose to withdraw your participation in the study.
5. Emerging data in the project will be presented in reports, at seminars and conferences. At your request, you can read and approve the material ahead of publication.
6. None of your contact or personal information will be shared with any third party, nor used for any other purpose than the above stated. All personal data will be handled in compliance with the *EU General Data Protection Regulation (GDPR)* and in a manner that does not infringe personal integrity.

1. Please explain your relationship with OCIMF? (collab/subordinate/member)

1a. How does OCIMF play a part in your day-to-day work?

1b. Are you (your company) a member of any association or forum that provides guidance regarding changes in the industry?

2. Please explain how you connect vetting to your (COMPANIES) risk management and performance assessment?

2a. What does your company structure look like, for those procedures?

2b. Do you have your own structure or do you acquire external support?

2c. Which departments are involved: preparing for/ pre-vetting/ actual inspection?

(CHECK departments /roles - HR, Superintendent, DP, Fleet Technical Manager, Fleet Manager, Fleet Captain, Compliance Manager etc)

3. Means of communications:

3a. How are you getting information about non-statutory changes? (Mediums)

3b. When are you getting information about non-statutory changes? (Periodicity)

3c. When did you first hear about SIRE 2.0 (officially /unofficially + sources)

4. What were your first impressions?

4a. Are your initial impressions the same today?

- if yes, why have they not changed?

- if not, what are they and why did that change?

- concerns / challenges / possibilities

5. How does your company react to change:

5a. in general?

5b. regarding SIRE 2.0?

5c. Do you find the approach suitable?

5d. Will the changes in SIRE 2.0 change the company structure of how vetting is conducted?

5e. Concerns?

6. Are you pleased with the information and guidance provided by OCIMF (/or company if not first hand) so far? (positive/ negative and why)

6a. Are you pleased with the guidance provided by (previously mentioned associations? (positive/ negative and why?)

6b. What information or guidance is missing? From whom

6c. What could be provided to make your work easier? (Info. /Guide. / Tools)

6c. When clarification has been needed, whom have you turned to?

7. What outcomes are you expecting with the new SIRE 2.0 (for the companies)?

7a. What actions are you expecting from the companies with the new SIRE.

7b. What will this mean for you / the crew or shore / the future of the industry?

7c. Are the new demands reasonable? Why / why not? Suggestions to differ?

7d. What consequences will the change to SIRE 2,0 when assessing human factors be, on a corporate level?

8. How do you define human factors?

8a. How do you (company) work with them?

8b. How do you interpret the human performance indicators being used and what are your thoughts on it?

8c. How will the PIFs affect the psychosocial work environment?

8b. What is your (company) strategy towards the new concept of “Human factors”?

8c. Some legislation/legislatives might follow the “Human factor” concept, what would your recommendation be for future work regarding this concept?

9. How were the changes communicated to you + (onboard colleagues if crew)? -What was the reaction?

If all at the same time	If not – do you know when it will be done?
What did they find being good?	What do you think they (colleagues) will like?
What did they find being bad	What do you think they will be reluctant to do?

9b. What specific preparations have you made?

(Education, recruitment of new personnel, informing the crew, educating them, new policies/policy development etc)

10. How does your company allocate resources i.e., manpower, equipment for self-assessments/preparation/inspection?

11. What trending gaps in education have you identified in general / or been informed of?

11a. What will be needed besides the changes in SIRE 2.0? (Procedures, soft skills, teamwork, team dynamics and team cultures, technical skills)?

12. Looking at the PIFs, do you have an idea on how to work systematically with these and consider/define them into the psychosocial working environment working onboard the vessels - THE SMS (Systematisk arbetsmiljö/arbetsmiljöromd etc)

12 a. Do you have access to appropriate equipment and management instruments?

12.b. How will your company address and act on future observations?

12 c. Whose responsibility will it be to address them?

12.d How do you deal with thoughts/concerns/questions?

12.e. Is there a strategy for how the crew can be supported in this transition?

Summary questions:

A. What in your opinion will be the largest challenge of the transition into SIRE 2.0?

Aa. Largest opportunity?

B. What in your opinion can shipowners and operators do to ease/streamline the transition?

C. What would you have OCIMF (+ any other org. named) done differently?

Ca. What would you wish for that would ease your work?

D. On a scale 1-10 where is current SIRE + SIRE 2.0? (Why the difference?)

E. What do you think SIRE 2.0 will lead to?

F. Do you think SIRE 2.0/vetting should not only be limited to the tanker sector? WHY?

G. How does your company generally react to change?

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