Revista *Ratio Juris* Vol. 20 N.º 40, 2025, DOI: 10.24142/raju, pp.225-246 © UNAULA

ARTÍCULO DE INVESTIGACIÓN

LIABILITY AND RESPONSIBILITY IN AUTONOMOUS NAVIGATION: A CONTENT ANALYSIS*

RESPONSABILIDAD EN LA NAVEGACIÓN AUTÓNOMA: UN ANÁLISIS DE CONTENIDO

RESPONSABILIDADE CIVIL E OBRIGAÇÕES NA NAVEGAÇÃO AUTÔNOMA: UMA ANÁLISE DE CONTEÚDO**

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Recibido: 14 de octubre de 2024 - Aceptado: 22 de enero de 2025 -
Publicado: 12 de abril de 2025
DOI: 10.24142/raju.v20n40a8

Cómo citar: Propp-Arend, A. (2024). Liability and Responsibility in Autonomous Navigation: A Content Analysis. Revista Ratio Juris, 20(40), 225-246. https://doi.org/10.24142/raju.v20n40a8

* Aperfeiçoamento de Pessoal de Nível Superior-Brasil (CAPES) - Código Financiero 001. El autor desea agradecer a la Universidad del Sudeste de Noruega (USN) y al Profesor Asociado Dr. Ziaul Haque Munim, por el apoyo institucional y la orientación brindada.

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Abstract

This study compares maritime regulatory frameworks in Norway and the United Kingdom (UK), given the paradox of the reality of autonomous vessels in tests and in operation, while the guidelines of the International Code of Safety for Maritime Autonomous Surface Ships (MASS Code) is in development by the Maritime Safety Committee (MSC) at the International Maritime Organization (IMO). Through a content analysis, the research explores how these countries address the extracontractual liability of agents involved in maritime navigation. While acknowledging the complexity of the topic, the research aims to foresee the potential directions in autonomous navigation regulation, regarding civil liability. The study finds that, despite legal systems variations, primary liabilities are attributed to owners, operators, and masters. The fault-based system applies as a rule, but both countries consider strict liability in specific cases, e.g., oil pollution and other environmental damages. Besides these, the Supreme Court in Norway also considers liability to be strict when the damage caused results from technologicalfailures in some cases; and the UK courts adopt the principle of the duty of care as a guideline for their decisions on strict liability, with the exception of cases of failures resulting from extremely specialised services carried by third parties, which would exempt the shipowner from liability.

Keywords: Autonomous navigation, Liability, MASS, Responsibility, Strict liability.

Resumen

Este estudio compara los marcos normativos marítimos de Noruega y el Reino Unido (RU), dada la paradoja que supone la realidad de los buques autónomos en pruebas y en funcionamiento, mientras el Comité de Seguridad Marítima (CSM) de la Organización Marítima

Internacional (OMI) elabora las directrices del Código Internacional de Seguridad para Buques de Superficie Marítimos Autónomos (Código MASS). A través de un análisis de contenido, la investigación explora el modo en que estos países abordan la responsabilidad extracontractual de los agentes implicados en la navegación marítima. Aun reconociendo la complejidad del tema, la investigación pretende prever las posibles orientaciones de la regulación de la navegación autónoma en materia de responsabilidad civil. El estudio constata que, a pesar de las variaciones en los sistemas jurídicos, las responsabilidades principales se atribuyen a los propietarios, operadores y capitanes. Por regla general, se aplica el sistema basado en la culpa, pero ambos países consideran la responsabilidad objetiva en casos específicos, como la contaminación por petróleo y otros daños medioambientales. Además de éstos, el Tribunal Supremo de Noruega también considera que la responsabilidad es objetiva cuando los daños causados se derivan de fallos tecnológicos en algunos casos; y los tribunales del Reino Unido adoptan el principio del deber de diligencia como guía para sus decisiones sobre responsabilidad objetiva, con la excepción de los casos de fallos derivados de servicios extremadamente especializados realizados por terceros, que eximirían de responsabilidade al armador.

Palabras clave: navegación autónoma, Responsabilidad, MASS, Responsabilidad extracontractual, Responsabilidad objetiva.

Resumo

Este estudo compara os quadros normativos marítimos da Noruega e do Reino Unido (RU), dado o paradoxo da realidade das embarcações autônomas em testes e em operação, enquanto as diretrizes do Código Internacional de Segurança para Navios Marítimos Autônomos de Superfície (Código MASS) estão em desenvolvimento pelo Comitê de Segurança Marítima (CSM) da Organização Marítima Internacional (OMI). Através de uma análise de conteúdo, a pesquisa explora a forma como estes países abordam a responsabilidade extracontratual

dos agentes envolvidos na navegação marítima. Embora reconhecendo a complexidade do tema, a investigação visa antever potenciais direções da regulamentação da navegação autônoma, no que tange à responsabilidade civil. O estudo conclui que, apesar das variações dos sistemas jurídicos, a responsabilidade civil é primordialmente atribuída aos proprietários, operadores e comandantes. Como regra geral, os sistemas são baseados na culpa, mas ambos os países consideram a responsabilidade objetiva em casos específicos, por exemplo, poluição por petróleo e outros danos ambientais. Além desses, a Suprema Corte da Noruega considera também objetiva a responsabilidade, quando os danos causados decorrem de falhas tecnológicas em alguns casos; e os tribunais do Reino Unido adotam o princípio do dever de diligência como orientação para as suas decisões sobre responsabilidade objetiva, excetuando casos de falhas decorrentes de serviços terceirizados extremamente especializados, que eximiriam de responsabilidade o proprietário do navio.

Palavras-chave: MASS, Navegação autônoma, Obrigações, Responsabilidade civil, Responsabilidade objetiva.

Introduction

Lack of regulation is frequently appointed as one of the barriers to develop autonomous ships (Munim *et al.*, 2023). In Norway the specific maritime law is the Norwegian Maritime Code (NMC 1994/2020), focused on conventional ships.

Standards on autonomous navigation are issued by the Norwegian Maritime Authority (NMA) in Circular Series V/2020, which is the "Guidance in connection with the construction or installation of automated functionality aimed at performing unmanned or partially unmanned operations" (NMA, 2020).

It is observed that Norway currently has automated cargo ships operating in its jurisdictional waters, such as ASKO and Yara Birkeland. The development of the correspondent regulation requires greater agility in delimiting the main tasks of its respective agents, clearly outlining their responsibility and liability, among others.

In the United Kingdom, the Merchant Shipping Act (MSA) is the law that regulates conventional navigation. For autonomous ships, on 13th December 2023 entered into force the 3rd. edition of the Workboat Code, published by the Maritime & Coastguard Agency (MCA). The new version is applicable to working vessels, pilot vessels and remotely operated unmanned vessels whose keels are laid or are in a similar construction phase (MCA, 2023).

The standard applies to vessels under 24 metres in English waters or in international operations with a UK flag. The development of the Workboat aligns with the advancements made in the MASS Code, reflecting the ongoing efforts in the UK to modernize the Maritime Shipping Act for autonomous navigation.

The IMO's Maritime Safety Committee aims for the goal-based MASS Code to come into force in 2025 in a discretionary version, progressing to the mandatory edition in 2030, and coming into force in 2032. The MASS Code will be supplementary to IMO treaties, providing a regulatory framework for member states that intend to operate key functions of autonomous cargo ships or control them remotely.

While monitoring the deliberations concerning the development of the MASS Code within the IMO, member states may concurrently formulate their domestic regulatory instruments. This endeavor should be directed towards employing precise technical and legal language and providing guidance to autonomous navigation entities in their commercial and legal engagements.

In the Norwegian legal system, liability rules are based on fault, which means that people involved in the ship's operations will be considered negligent if they commit a breach of statutory rules. There are exceptions for cases involving oil pollution and environmental damage, which are irrespective of fault. It is worth noting that the doctrine of the Norwegian Supreme Court also considers the strict liability of the shipowner in cases involving technical faults in a ship that collides with a structure, such as a bridge or a dock, applying the ordinary tort rules.

In the English legal system, common law embodies a combination of precedents and judicial decisions, well-known as case laws. Concerning the notion of fault, it aligns with Norway, where fault and negligence are generally regarded as the norm. However, in certain instances such as those related to oil pollution and other environmental harm, strict liability is established.

In an effort to ascertain how Norway and the UK are addressing their domestic regulation on autonomous navigation, the content analysis carried out from each country's sources considered the question: how do these countries attribute tort, i.e., extracontractual liability, to the agents involved in the event of damage committed against third parties?

Providing an answer to this question holds significance for various stakeholders. The industrial sector stands out as a major beneficiary of the forthcoming formalization of regulatory pragmatism. This development will enable industries to rely on established criteria for conducting operations involving MASS and obtaining authorization for navigation within their jurisdictional waters.

Equally noteworthy is the fact that autonomy has created opportunities to enhance the qualifications of seafarers through training courses. These courses enable them to oversee and manage autonomous navigation, as well as engage in activities aboard conventional ships that follow routes coinciding with those designated for MASS.

Investigation process

The content analysis conducted in Norway and the United Kingdom highlights the challenging process of integrating existing provisions with agility into the contemporary reality of autonomous navigation. This article demonstrates that both countries are making progress in adapting their regulations to the new challenges presented by autonomous functions on cargo ships, regarding liability and responsibility questions.

Specifically, this study focuses on how Norway and the UK are addressing extracontractual liability in the context of autonomous navigation, assessing the implications for maritime law, with the overall aim of increasing safety and efficiency in maritime logistics. Through this investigation, the article aims to envisage perspectives on forthcoming regulatory developments in this dynamic progressing field.

This research has the goal to compare and analyze domestic maritime rules, i.e., laws and guidelines, from Norway and the United Kingdom, issued respectively by the Norwegian Maritime Authority and the UK Maritime & Cost Guard Agency, through websites and books, searching the terms "liabilit" and "responsib" (Jensen, 2021).

The research aims to identify how these countries deal with those terms in their rules, regarding the main stakeholders involved in the cargo ship maritime operations, as the owner, operator, charterer, master, pilot, and crew.

The countries were chosen based on their maritime vanguards, both being member states of the United Nations Convention on the Law of the Sea (UNCLOS), and of relevant treaties before the IMO, also they are active participants in the regulatory working group and meetings before the IMO/MSC in developing the MASS Code.

For a broader search, the terms "liabilit" and "responsib" were chosen to capture the variations of the terms. Adobe software was used to select these keywords from the legal documents analyzed.

Also, both words can, at times, be employed interchangeably, highlighting their potential for similar meanings. As defined by the Cambridge dictionary, liability refers to "the fact that someone is legally responsible for something"; and responsibility can be "something that it is your job or duty to deal with", "blame for something that has happened".

The Norwegian rules studied in this research were the Excerpts from the NMC, of 24th June 1994 n. 39, with later amendments up to and including 20th May 2020 n. 42; Act of 16th February 2007 n. 9, amended by Act of 19th June 2015 n. 65, relating to Ship Safety and Security (Ship Safety and Security Act-SSSA); Regulations of 18th June 2009 n. 666, concerning the Manning of Norwegian Ships (Manning Regulations) amended in 2011; and Circular Series V-RSV 12-2020, the guidelines and interpretation issued by the Norwegian Maritime Authority (Norway).

The English rules investigated were the MSA 1995/2023; Guidance MGN 664 (M+F) 2023 Amendment1: certification process for vessels using innovative technology, for vessels remotely operated or fully autonomous, with or without persons on board wanting to operate in UK waters or out of UK ports; Guidance MGN 676 (M) 2023, unmanned non-self-propelled barges – MARPOL Annexes I and IV Exemptions; and The Workboat Code Edition 3, the safety of small workboats and pilot boats, a code of practice, published in 27th November 2023 (United Kingdom).

It is noteworthy that the inclusion of the UK's guidelines MGN 664 (M+F) 2023 and MGN 676 (M) 2023 in this context is solely due to their specific relevance to autonomous vessels. However, no correspondent information was yielded when employing the specified search terms (MCA, 2023).

After searching for the most relevant norms in the maritime area about civil liability, a search was made for the number of times the terms "liabilit" and "responsib" appeared. Excel spreadsheets were then created, one for each country, listing the laws and regulations searched, with their titles, responsible body, year of publication, the number of pages of each regulation; and the paragraphs containing these terms were copied into the respective spreadsheet.

The content analysis was conducted employing the qualitative research method. This approach involved scrutinizing selected paragraphs to identify key words and examine their associations with references to the owner, operator, charterer, master, pilot, and crew. The contents were then analysed again and another excel spreadsheet was filled in with the results.

Considering the variations in the legal systems of the countries under examination, the research was further reinforced through taking part

in IMO meetings regarding the MASS Code as a listener, informal academic interviews, along with doctrinal and jurisprudential investigations (IMO, 2023/2024).

It is worth noting that the present research considers the need of the embarked worker, both in the autonomous ship and in a remote operations center, in which case the MSC/IMO is in the process of discussing whether the remote operator needs to be a seafarer or not.

Results

A synthesis of the main results is presented in Table 1, where it can be seen that the legislation from both countries, the Norwegian Maritime Code and the Merchant Shipping Act mention liability much more than responsibility. On the other hand, the guidelines present more responsibility than liability predictions, especially considering those in which autonomous navigation is the subject.

It should be noted that these pieces of legislation have gone through the domestic due legal process, presenting rights and obligations in the field of navigation carried out by conventional cargo ships, being possible to the individuals and institutions to be punished as a result of a non compliance with it. Guidelines, in contrast, do not require the entire legislative procedure that laws must go through, being simpler. When faced with the practical needs of a sector, specialised professionals come together in a multidisciplinary way to draw up these regulations.

Guidelines can be issued more quickly than a law, as was the case of Circular Series V and the Workboat Code 3, which reflect the latest in terms of autonomous navigation regulations in each country. Given the importance and quality of their content, they have been endorsed by the domestic maritime authorities, generating credibility in the maritime industry.

Table I. Summary of the first research findings

	References	
Rules titles	**"liabilit"**	**"responsib"**
Noruega		
[4]	99	12
[5]	4	4
[6]	0	1
[7]	0	9
United Kingdom		
[8]	524	46
[9]	0	0
[10]	0	0
[11]	5	43

Chart created by the author with research data.

Starting by analysing Norway's maritime rules, the distribution of terms within the rules reveals the main subjects of the liabilities relating to maritime traffic as far as the ship is concerned.

The term "liabilit" appeared 99 times in the Excerpts from the Norwegian Maritime Code, distributed across 42 paragraphs. As shown in graph I, within the sections, there were mentions of the owner (35), operator (1), charterer (0), master (7), pilot (1), and crew (4). The term "responsib" occurred 12 times, spread across 7 paragraphs, mentioning the owner (4), operator (0), charterer (1), master (6), pilot (0), and crew (1).

The 4 mentions of "liabilit" in the Ship Safety and Security Act were distributed in 2 paragraphs, in whose there were no mentions to the correlated words. The 4 mentions of "responsib" were distributed in 3 paragraphs, being mentioned owner (3), operator (0), charterer (0), master (0), pilot (0), and crew (0).

There was 1 mention of "responsib", related to the crew (1), in the Manning Regulations.

The 9 mentions of "responsib" in the Circular Series V were distributed in 7 paragraphs, being mentioned owner (2), operator (1), charterer (1), master (0), pilot (0), and crew (0).

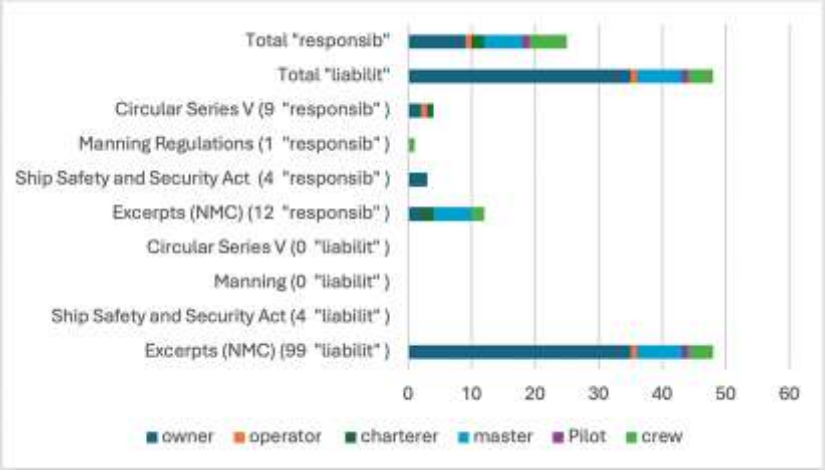

Figure 1. Summary of the research findings in norway

Chart created by the author with research data.

Regarding to the United Kingdom´s rules, the graph II depicts that the 524 mentions of "liabilit" in the Merchant Shipping Act 1995/2023 were distributed in 182 paragraphs, in whose there were mentions to owner (88), operator (0), charterer (0), master (7), pilot (1), and crew (4). The 46 mentions of "responsib" were distributed in 35 paragraphs, being mentioned, owner (24), operator (2), charterer (2), master (1), pilot (0), and crew (0).

The 5 mentions of "liabilit" in The Workboat Code Edition 3 were distributed in 4 paragraphs, being mentioned, owner (8), operator (2), charterer (0), master (1), pilot (0), and crew (4). The 43 mentions of "responsib" were distributed in 39 paragraphs, being mentioned, owner (25), operator (25), charterer (0), master (10), pilot (1), and crew (5).

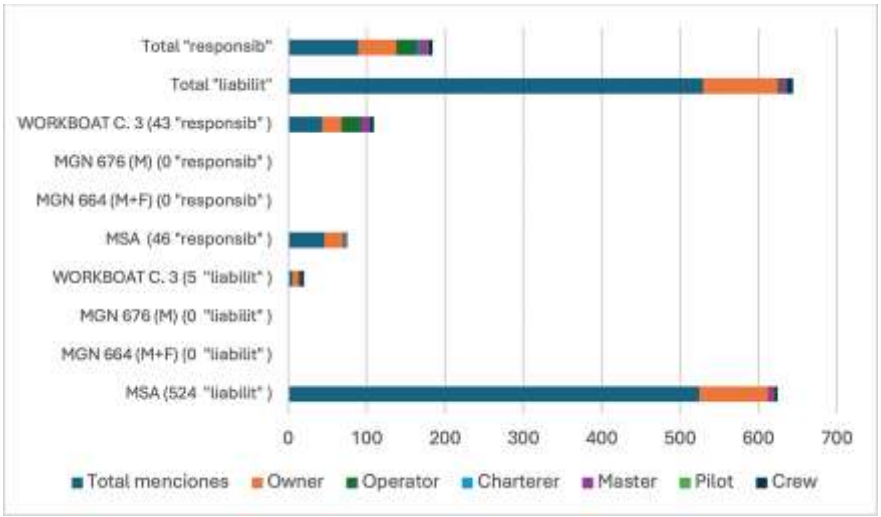

Figure 2. Summary of the research findings in United Kingdom

Chart created by the author with research data

Bearing in mind that the data above was taken from the main maritime regulations in force in each country, the research reveals that the responsibility and liability provisions does not always refer to the main agents of the ship, as the owner, operator, charterer, master, pilot and crew. On the other hand, in both Norway and the UK, liability and responsibility are more focused on the ship's owner. Masters are in the second place in Norway, and operators are in the second place in the UK.

Examining the latest regulations concerning autonomous navigation, the UK's Workboat Code Edition 3/2023 delineates a comprehensive range of responsibilities and liabilities for individuals engaged in this domain. In

contrast, Norway's Circular Series V/2020, which was written three years before, predominantly concentrates on technical and operational matters. This technical characteristic is expressed in practice by the ships that are currently in operation like ASKO and Yara Birkeland.

Progress in the development of the MASS Code in the international maritime community contributes to the domestic regulatory landscape of the States Parties, as happened in the UK with the Workboat Code Edition 3. At the same time, Norway, a pioneer in the field of autonomous navigation, should develop comprehensive legal studies pertinent to this field, focused on harmonized approach since its last Circular Series V edition.

Discussion and comparison

The study identified the prevalence of mentions of liabilities over responsibilities in the provisions of maritime law from each country. This finding draws attention to the terms used in the regulatory scope, which as guidelines, define more responsibilities than liabilities to the agents.

Further, it concerns the borderline of the Norwegian standard to autonomous ships only with the technical and operational aspect, but the English standard takes also liability aspects regarding the content.

First point of agreement is liability as a fault-based principle, where the focus is on individuals who are responsible for causing damage, made explicit in the Collision Convention 1910. Besides, where there is negligence, the concept of vicarious liability is likely to be applicable, something that will be examined hereinafter.

Second, as updated by IMO on 1st January 2024, both countries signed many treaties, as COLLISION 1910, IMO 1948, SOLAS 1974, Protocol 1978 and 1988, MARPOL 1973/1978, Annexes I to V, and Protocol 1997, Annex VI, STCW 1978, COLREG 1972, LLMC Protocol 1996, CLC FUND 1992 and 2003, OPRC 1990 and BUNKER 2001. When ratified and internalized by the countries, the terms of these international treaties become part of their domestic legislation.

Diversely, the Civil Law in Norway and Common Law in the UK is a distinction for the liability legal system. It is thus further implied that in Norway, conflicts are resolved by the way of written laws and jurispruden-

tial doctrine. In the United Kingdom, decisions are made by judges who interpret the law, and prior cases can set precedent. If so, these precedents are typically binding on the lower courts but may be overturned by the UK Supreme Court. Lower courts, as well, can set precedents that control the law in their jurisdiction, subject of the case and often the relevant standing in the hierarchy.

Further, the legal system from Norway and the UK consider maritime accidents involving oil pollution and environmental demages as of strict liability. But Norway also applies it in cases of accidents caused by technical failure of a ship that collides with other structures (Solvang, 2021).

The UK applies the principle of entrepreneurial risk to some cases. It is based on the activity in which a company decides to take the risk to make profit. Through this principle, operating in a dangerous activity implies that any harm or loss caused by the company must be covered by it, without it being necessary to prove fault or negligence (Solvvang, 1990).

Strict liability in the Norwegian perspective

An overview of strict liability in Norway can start with the adherence to international conventions that establish clear grounds for strict liability in specific cases. This includes oil pollution as defined in Chapter 10 of the NMC, the principle of necessity under the Torts Act (sections 1-4), and scenarios involving dangerous activities. Additionally, article 151 of the NMC addresses risk activities linked to damages caused by the shipowner's employees and contractors.

(Svendsen, 2023, pp. 457-458), outlines four criteria for establishing strict liability: (i) damage resulting from a risk, (ii) originating from entrepreneurial activities or objects, (iii) a strong connection between the claimed harm and the associated risk, and (iv) the risk being steady, conventional, and exceptional. However, the significance of each criterion and the possibility of exemptions are determined on a case-by-case basis.

Article 151 of the NMC establishes provisions for vicarious liability. It holds the owner or the demise charterer vicariously liable for "damage caused in the service by the fault or neglect of the master, crew, pilot, tug, or others performing work in the service of the ship". The word "others"

indicates that the shipowner may also be liable for damages caused by the faults of outsourced service providers.

The Torts Act is an ordinary rule not specifically targeted at maritime relations but rather at onshore situations. In this scenario, business owners may face vicarious liability only when damage results from an employee's fault under a contract. Consequently, attributing vicarious liability to the owner for damages caused onshore by non-employee contractors represents a challenge.

Article 151 of the NMC extends vicarious liability to cases involving employees and outsourced service providers, reflecting a broader interpretation of liability within maritime operations, compared to Torts Act, which applies vicarious liability only for harm or losses caused by employees. Also, although the Torts Act primarily applies to onshore situations, it occasionally influences maritime contexts when structures onshore are involved.

The Norwegian Supreme Court decides on the strict liability of shipowners in cases of collision with other structures (Falkanger *et al.*, 2017):

> In two cases the Supreme Court has imposed strict liability on shipowners whose ships collided with a bridge and a dock respectively, following technical problems with the reverse engines, see ND 1921.401 NSC NEPTUN and ND 1952.320 NSC SOKRATES. The courts, however, have not been willing to impose strict liability in cases where docks, bridges, etc., have been damaged by ships without there having been technical failure, see as an example ND 1958.587 NCA LEDA .

Røsæg (2021), on the other hand, supports the applicability of the enterprise liability to address vicarious liability in autonomous ships. He suggests that only a few adjustments would be required in relation to the Collision Convention 1910, and concludes:

> For liability law, this means that liability should be attached to the reasonable expectations to the safety of a shipping enterprise rather than to the internal causes of an accident (see section 3). There is already a tradition for this called enterprise liability, relating to the rules of vicarious liability. However, an alternative would also be to take advantage of recognized rationales for strict liability. If the courts do not develop the liability law in this direction, the legislator should intervene (p. 140).

Therefore, in Norway, strict liability is shaped by international conventions, the NMC, the Tort Act and court decisions, giving effect to liability in maritime operations. However, there is still a need to effectively balance emerging technologies and the complex risks of autonomous navigation within this legal framework.

Strict liability in the english perspective

Strict liability in the English perspective focuses primarily on international conventions and in business activities that generate risks, firmed in precedents standards. Unlike Norway, the UK does not have a specific criteria for strict liability, necessitating a case-by-case approach. This form of liability is particularly applied in scenarios involving dangerous activities, environmental protection, noise control, and product defects.

In the context of business activities, if an enterprise causes damage through an employee's error, the company's owner is held vicariously liable for the damage, independent of the owner's direct fault. The potential claim requires revealing the damage, the causal correlation between it and the harmful activity or product, and a breach of the law or precedents.

In maritime field, it is necessary to the shipowners to exercise and demonstrate adherence to duty of care principle, which cannot be hired from third-party contractors. This principle represents a higher pattern of care than mere seaworthiness, that includes proper crewing, adequate equipment, and safe operation to prevent harm or losses to any concerned parties. In addition to these, it aims to guarantee safety of the crew, cargo, environment, and other ships. The MSC/IMO established as a condition for MASS traffic that technological infrastructures must provide safety and security at least equivalent of conventional ships.

Solvang (2021, p. 9) highlights some principles in the MSA that share similarities with Norwegian practices. Vicarious liability in tort requires that the damage is caused by negligence, not being necessary to prove fault. This mode of liability blends elements of fault-based and strict liability, as the shipowner is strictly liable for faults committed by their employees. Consequently, shipowners have the obligation to maintain their ships and also have a strong incentive to employ and provide competent seafarers, training them in distinguished work practices.

Judicial interpretations indicate that if some harmful task requires a qualified professional, and the work to be done is beyond the common scope of maritime transport, it is not possible to demand the shipowner's duty of diligence, because it is considered to be exceeded. In other words, there is no expectation that the shipowner can supervise specialized services of a third-party, that fall outside the usual functions of maritime shipping (Solvang, 2021).

Thus, in the English legal system, strict liability in maritime transport advocates the principle of duty of care by the shipowner, and the impossibility to delegate it to a third-party. All the framework of due diligence does not extend to highly specialized services that are not considered the scope of the maritime transport.

Limitation of liability

The system of limitation of liability is known to have been established in stimulating maritime trade. This framework allows shipowners, charterers, demise charterers, managers, or salvors to limit indemnity sum in specific situations and under certain conditions, as outlined in article 1, LLMC. However, article 3, LLMC excludes some situations from this possibility, such as the case of oil pollution and nuclear ships, among others (IMO 1948).

Both Norway and the UK ratified the LLMC 1996 amended Protocol and denounced the LLMC 1976 Convention. The instrument has defined limits for claims related to death or injury to persons, and to assets. The International Convention on Tonnage Measurement of Ships considers a limiter system of a monetary amount, which is determined by the size or cargo capacity, known as tonnage limitation.

Conventions employ the Special Drawing Rights (SDR), as defined by the International Monetary Fund (IMF). The value of the SDR is based on a set of main international currencies, being the US dollar, Japanese yen, British pound, and euro. The intention was that the SDR could cover the amounts involved in a claim. However, it has been realized that the SDR cannot counteract the effects of inflation that occur in each country of the world (Falkanger *et al.*, 2017).

Predicting how limitation will apply to MASS poses a challenge still unanswered. If autonomous ships are excluded from limitation of liability system, it could lead to a diverging in treatment comparing MASS to conventional ships. On the other hand, the potential unknown risks associated with the use of artificial intelligence in autonomous navigation may justify exceptional treatment under these legal provisions, making it another exception to the article 3, LLMC.

FINAL CONSIDERATIONS

Reflecting the content presented in this article, a comparative study has been conducted in the legalframeworks from Norway and the United Kingdom, envisaging to access documentary information regarding autonomous navigation, focused on strict liability. For this goal, research encompasses legislations and regulations from both countries, being the regulations specifically related to autonomous ships.

A content analysis has been done focused on the terms “liabilit” and “responsib”, supplemented by a literature review to understand jurisprudential interpretations.

The findings retracted greater emphasis on establishing liability in legislations, and responsibility in regulations. Notably, the owner, master, and operator are most frequently linked to liability in the documents analyzed. Moreover, only regulations deal with autonomous navigation so far.

Despite regulatory updates in the United Kingdom, and the practical operations of autonomous ships Asko and Yara Birkeland in Norway, no new legislation has been identified addressing liability and responsibility issues in autonomous navigation in these jurisdictions.

Both countries’ regulations reflect the commitment to safety, security, and the environment protection, being aligned with the principles of the MASS Code.

This research, however, is not without limitations. One of them is the expectation from the states to use the definitions that will come with the conclusion of the non-mandatory MASS Code in 2025 to make their own internal rules. Additionally, a more detailed examination of judicial decisions

in the UK, particularly relevant due to its common law system, was beyond the scope of this study.

The study suggests that alternatives to strict liability could be explored, drawing analogies with existing rules. In both Norway and the United Kingdom, there appears to be potential for establishing strict liability based on the inherent entrepreneurial risks, independent of fault or negligence.

Although the doctrine also presents the indirect liability of the shipowner as a viable option to be applied in autonomous navigation, albeit with adjustments to the Collision Convention, this path is challenging, as it would require the existence of a human being acting with fault in the cause of any accident.

Therefore, while this research provides insights into the current state of maritime law concerning autonomous navigation in Norway and the UK, it also underscores the need for ongoing discussion and legal development. Particularly, there are barriers, such as how to integrate MASS into existing frameworks for limiting liability or determining exceptions, which require further exploration and clarification, as well as other.

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