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Digital Seaworthiness and Silent Cyber: Rethinking Marine Insurance Liability under Indian Marine Law

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Abstract

The current research considers the Marine Insurance Act, 1963, and the Merchant Shipping Act, 2025, to assess nations' responses to cyber threats for assessing the liability in marine contracts. Both statutes are the primary legislation defining seaworthiness, proximate cause, perils of the sea, and warranties. Today's marine business is highly influenced by technological advancements in the form of CPPS, sensor-based navigation, satellite-based communication and the internet. However, adoption of cyber perils per se, as per technological advancement, is completely absent under current Indian legislation, leaving a grey area in the statutory framework. As a methodology, a thematic doctrinal approach is employed in the current work. A comparison of old and new statutes has paved the way for digitisation, but cyber threats remain a common lacuna in the Indian legal framework. Reforms are the only suggested measure that can provide safeguards for cyber perils. From expressed clause to the disclosure of digital dependency and technology-based losses being calculated as part of warranties are the only possible solutions for the insurance sector to enhance its capacity for advancement integration in its sphere.

Keywords: *Marine Insurance, Cyber Perils, Digital threats, Warranties, Vessel, Shipping sector.*

1. Introduction

The Marine Insurance Act, 1963, along with the Merchant Shipping Act, 2025, are the two major laws that govern the marine business in India, with the former being the sole legislation regulating the marine insurance sector. The Statement of Objective and reason attached to The Marine Insurance Act, 1963 makes a clear remark on regulation being the first Indian law to govern insurance contracts for ships as per Indian conditions to promote efficacious development of marine insurance [1].

The Merchant Shipping Act, 2025 is a newly enacted law to ensure India's compliance with international instruments, thereby promoting the growth of the marine business for the nation's prosperity and interests [2].

In the Marine Insurance Act, 1963, two sections, namely Section 2 (e) and 3, need a synchronised reading to establish the real understanding of Marine Insurance, including the perils covered under it. As per Section 3, marine insurance is an agreement to indemnify a party against all marine losses, including instances of loss occurring by marine adventure [3]. The term marine perils finds its place under Section 2 (e) to include a list of perils which fall within the ambit of insurance and are compensated. These losses include harms by fire, war, restraints, pirates, seizures and captures, along with all losses as covered under the policy, in addition to harms incurred by marine adventures [4]. The practicality attached to the list of perils is that any new incident of peril, by the rule of ejusdem generis, is always covered under marine insurance policies [5].

Present-day transportation is highly influenced by cyber-physical power systems (CPPS) integrating sensors, satellites and software-driven control systems for operations [6]. In the maritime sector, everything from marine transportation to cargo management and infrastructure control is carried out by online internet-based systems [7]. The last decade has proven the maritime business to be an easy target for cyber-attacks, damaging the financial interests of stakeholders in the sector [8]. A 2017 loss of 300 m US dollars by an attack on AP Moller-Maersk through system failure is a known example to the world of cyber-attacks in the marine business [9]. The heavy investment by shipping companies and cargo transportation makes the industry more prone to system failures through cyber perils. An HFW Cyberowl 2025 global report on shipowners shows that 55% of stakeholders of vessels consider cyber threats seriously, while 36% of them make it a priority. Ransom is also part of cyberattacks, with shipowners paying it to save themselves from exposure to such threats. The most shocking part of the survey was that 52% OEM's admitting their system to cyber-attack in the past 12 months [10].

In the Indian academic arena, marine insurance to protect against cyber threats is a new and fresh discipline that is evolving [11]. The continued presence of attacks on vessels in international seas demands brainstorming to ease the problem of cyber and maritime security hindering the operations and economic activities of the shipping business. The silence of 1963 legislation is an alarming signal, as the act needs amendments as per modern times. Further, the newly enacted law, the Merchant Shipping Act, 2025, also fails to address the cyber exposure of marine vessels, thereby exposing a grey area for discussion and clarity.

There are two main objectives behind the current study: firstly, to analyse the maximum limit of the current Indian legal framework on marine insurance to cover cyber maritime threats and secondly, to suggest a response to tackle matters of indemnifying the losses and damages caused by cyber-attacks.

2. Methodology

The current framework employs a thematic doctrinal approach to analyse the law and concepts available under The Marine Insurance Act, 1963, and The Merchant Shipping Act, 2025 to learn about key concepts like seaworthiness, proximate cause, perils, marine business, warranties, utmost good faith and insurable interests to acknowledge their application in matters of cyber-attacks on vessels in both land and sea. Furthermore, the international scenario is considered to absorb the world response to cyber threats in matters of compensation by the insurance business. Lastly, the comprehensive study attempts to draw a parallel line between digital attacks, viz-a-viz the Indian legal landscape, to add academic resources for society for future discussion and research.

3. Warranties, Marine Perils, Utmost Good Faith, Proximate Cause under Marine Insurance Policy.

To unfold the nature of a contract of marine insurance and its associated risks, a clear understanding of the basics of marine insurance is required. All the essentials of a general contract duly apply to a contract of marine insurance. An insurance company considers the nature of voyage, route, dangers, pirates, seizures, mutiny of crew and weather conditions to analyse the risk associated with vessels during transportation. A contract of marine insurance is purely a contract of indemnity whereby the insurer promises to save the insured against marine losses and incidental losses from marine adventures [3]. All such provisions are duly applicable to both sea and land risks. By virtue of Section 4 of the Marine Insurance Act, 1963, a contract of insurance, either expressly or through trade practices, considers the safeguarding of vessels against both inland waters and land risks related to sea voyage. Thus, every possibility is provided by statute to protect the vessels against all possible damage that may be incurred at sea or on land [12].

The heart and soul of an insurance contract is insurable interest. An equitable interest in the subject matter highlights the relationship between the insured and the insurer. For understanding insurable interests, three categories of people are deemed to have such interests. First, the owner of the ship has the full interest in the vessel based on the purchase and investment made in the subject matter; second in line is the owner of cargo who has paid freight and is transporting goods, and last are the underwriters, crew members and lenders who are involved in the loan, liabilities and salaries [5].

To get an insight into the scope, coverage, limit and extent of a marine insurance policy in the country, the following concepts need a strict interpretation.

3.1 Perils of Sea and Proximate Cause:

As per Section 2 (e) of the Marine Insurance Act, 1963, perils of the sea are all combinations related to navigation of the sea as covered under the policy. The definition sets down a series of perils; however, it is not a strict, watertight definition, allowing scope for new perils, as coming from time to time, to be included in the list. The only condition for extending the statutory clause is by expressly including new perils under the policy cover, with no implied acceptance of new perils. Thus, law has a wider meaning, but an express condition is a must for adding any recent peril.

Under the proximate cause doctrine as applicable to marine insurance, an immediate, not a remote, cause falls within its ambit. A proximate cause is an active and efficient cause that sets the chain of motion causing loss. As per Section 55 of the Marine Insurance Act, 1963, an insurer is liable for proximate causes caused by perils covered by the policy, with no onus on the insured for instances which are not covered within the policy. Further, normal wear and tear, delays, leakage, breakage and wilful misconduct are expressly outside the scope of perils as enshrined by sub- clause 2 of the provision [13]. Thus, the maxim includes the loss caused by perils of the sea, which are immediate and covered under a policy; all loss not caused by perils of the sea or far or distant in chain is outside the purview of marine insurance.

For claiming the insurance amount as per the marine policy, the foremost condition is to check the proximate cause of the event and then analyse whether the cause falls within the ambit of perils as expressly covered under the policy or not. All causes covered under the policy mandate indemnification of loss; perils not falling under the policy have no compensation attached. Thus, both proximate cause and marine perils are the essentials under the marine policy.

3.2 Seaworthiness and utmost good faith

A contract of marine insurance is not based on the general principle of caveat emptor; rather, such contracts fall under the uberrimae fides, meaning the principle of utmost good faith. As per the mandate of Section 19 of the Marine Insurance Act, 1963, contracts are based on good faith by all the parties, and any concealment or misinformation gives an option to other party to avoid the contract. A marine insurance contract includes material facts related to both perils and vessels. All proposals should make complete, transparent communication of marine perils attached to the voyage. The duty of disclosure of material facts rests on the insurer [14]. The insured must accept that such perils are shared through the proposal for bringing an insurance contract into effect.

In marine insurance, a presumption of implied warranty on seaworthiness of the ship, legality of the purpose of the voyage, and delay and deviation in voyage are some of the key concepts that make the insurance policy function as per the statutory mandates. As provided by Section 41, an implied condition on the ship related to its seaworthiness exists. A ship should be fit to face perils is a mandatory norm which forms part of every marine insurance contract [15]. By seaworthiness of ship, an extension of cargo- worthiness also persists, promising suitability of ship to carry cargo during journey. Next in the chain is Section 43, adding legality and valid purpose of marine adventure. Any illegality as per public policy and bar on adventures as per foreign law defeats an insurance contract [16]. Thus, for lawful purposes and in a lawful manner only, marine adventures are allowed as per statute. The last implied warranties are attached with no change, delay or deviation in voyage. The vessel should move in the direction as mentioned under the contract. A breach of an implied warranty ends the liability of the insurer in a contract of marine insurance.

The transparency in communication of material facts and warranties is another set of important terms of a contract that should be considered while forming a marine insurance contract. Non-disclosure and non-fulfilment of implied terms add another ground for violation of the marine insurance policy [5].

4. The Merchant Shipping Act, 2025

The newest law in the shipping sector is the Merchant Shipping Act, 2025, which was enacted on 18th August 2025 as India's commitment to its marine treaties, with the sole purpose of amending the legal framework of merchant shipping in the country [17]. The sole aim of including the recent legislation in the current research is to understand the intent of legislators after seven decades of the Marine Insurance Act, 1963. Both laws operate in different domains, but the new law tries to give an extended and modern sense to seaworthiness, with a specific part on safety and security in terms of digital transformation. Thus, an understanding of the Merchant Shipping Act, 2025 will give better clarity over the treatment of cyber-attacks and their perils as per the newly enacted contemporary law on shipping.

For getting the meaning of seaworthiness under the Act, a combined reading of Sections 3 (69), 127 and 128 is required. The former defines unseaworthy vessels as those concerning the material, construction, description or qualification of any officer or cargo, machinery or hull or equipment employed that are not fit for voyage [18]. The latter bans unseaworthy vessels from voyage and imposes a liability on the owner, master or agent of a vessel to guarantee the seaworthiness of the vessel at the time of voyage [19].

As per section 3 (58), security includes maritime security applicable both on vessels and maritime navigation against perils like piracy, terrorism, hostile influences, along with traditional practices of robbery, seizures and illegal migrants [20]. Part VI of the statute, titled "Safety and Security", through section 116, makes compliance with all the international treaties of merchant shipping applicable to vessels [21], with section 120 obligating Indian vessels to use radio communication and distress equipment for safety concerns [22].

To boost the digital administration of vessels, the central government exercises the power as enshrined in Section 315 to prescribe the forms and manner by which electronic records, licenses, certificates and receipts of vessels shall be maintained [23].

Lastly, for insurance coverage, which is the baseline of research, express provisions are in Sections 172 and 229. As per Section 172, the owner of vessels entering or departing from Indian ports shall maintain compulsory insurance [24]. Further, Section 229 covers shipyards, offshore areas, and coastal waters of India, directing insurance cover for vessels to safeguard against maritime incidents [25]. In addition to all these measures, compulsory insurance for pollution damage, wreck and salvage is also a statutory mandate as per the modern legislation.

The Merchant Shipping Act, 2025 covers insurance and extends the meaning of seaworthiness to encompass maximum safety and security measures. The Act covers all recent scenarios as per international mandates over merchant shipping.

5. Discussion

The present-day marine industry works on IT and digital control as a part of operational management of ships, which has exposed ships to chances of cyber threats [26]. Taken together, the Marine Insurance Act, 1963, and the Merchant Shipping Act, 2025, provide broad scope for marine perils, allowing diversified risks to be treated as proximate causes for insurance claims. However, adoption of cyber perils per se, as per technological advancement, is completely absent under current Indian legislation, leaving a grey area in the statutory framework. In addition to this, the transition from old to new regulation has widened the scope of digitisation by specific provisions on security and safety, including piracy as a cause and radio communication as a part of distress equipment, along with the statute working in electronic record keeping of shipping documents, giving maximum scope to new-age technology to be integrated into shipping legislation, but silence on “cyber threats” makes a clear footing of the same as excluded from the regulatory framework. Mandatory insurance cover of the vessel in transit, along with fitness of the ship in the form of seaworthiness and good faith, makes the essence of any contract of insurance, which requires transparency between insurer and insured. The statutory mandates put in place for all forms of marine adventures, causes, voyage and risk assessments cover all possibilities of loss on ship, but the absence of cyber harms under the purview of law creates jurisdictional issues over the subject matter. Thus, technical vulnerabilities lag behind the country's standards and regulatory shipping processes.

6. Conclusion

The Marine Insurance Act, 1963, a specific insurance-dedicated statute, covers physical perils with an absence of coverage for software, digital and network harms, while the newest line of law has reference to the inclusion of modern equipment but is silent on cyber liabilities with respect to insurance coverage. The current work strongly argues in favour of the integration of cyber-resilience, digital seaworthiness and technological advancements as part of proximate cause for assessing insurance liability. Reforms are the only suggested measure that can provide safeguards against cyber perils. The first in the line could be utmost good faith while disclosing the digital dependency and equipment employed in the vessel by the insured to the insurance company. This will be the baseline for transparency to check the digital seaworthiness of the ship in case of loss. The next in line must be expressed clause to include or exclude cyber harms, digital attacks and online failures. Lastly, technology-based losses should be treated on par with other ordinary losses in the shipping business while checking the warranties attached to normal contracts of insurance. A cumulative change in these aspects is the only possible and most amicable solution to the problem of cyber losses in the present times. To gain better insights into the use of digital technologies in the shipping sector, reference to the issue can be made to international standards. In China, a specific statute, the CCS Rules for Intelligent Ships [27], duly works to regulate intelligent shipping and radio communication in the shipping industry, along with CCS Guidelines for Ship Cyber Security [28] to combat cyber threats. The most recent development in this direction relates to the 111th session of the Maritime Safety Committee in London under the International Maritime Organisation in 2026, which adopted the International

Code of Safety for Maritime Autonomous Surface Ships (MASS Code), working in the direction of AI-enabled and self-driven ships in the cargo sector [29]. Thus, through international learning, India can adopt better norms for integrating new technologies in the sector, thereby advancing the business and addressing the perils attached to the shipping industry. The adoption of new ways will pave the way for the insurance sector to enhance its capacity for advanced integration in its sphere. Some new terms are emerging; however, special attention to rapid technological changes is a necessity of the time for the insurance sector to openly accept cyber perils as a part of the shipping business.

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