





Identification of the effective components in liability and compensation for marine pollution in the light of international law

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The current work aimed to identify factors affecting liability and compensation for marine pollution in Iran. This applied research was conducted using a grounded theory and descriptive-analytical method. Following an in-depth survey and extraction of an initial list, 20 relevant experts selected by a snowball sampling method were interviewed to complete and validate the research process. The research findings revealed 60 open codes and 21 axial codes in a paradigm model. Five components identified as causal conditions included severity of environmental pollution, type of environmental damage, source of pollution, insurer conditions, and nature of the insured. Four components of contextual conditions involved type of environmental risks, level of risk, theoretical foundations, and national and cross-border cooperation. Five intervening factors were national laws and regulations, international environmental law and international treaties, international sanctions and restrictions, governance approach and government policies, and arbitration conditions. Interactional strategies consisted of facilitation, risk management and awareness raising. Consequences were found to be compensation for environmental damage, mechanism to prevent recurrence of similar incidents, and increasing trust and willingness to fulfill environmental commitments. To conclude, stressing and paying attention to international environmental laws can pave the way for environmental insurance activities in the country. Stressing and paying attention to international environmental laws can pave the way for environmental insurance activities in the country.

Keywords: Liability insurance; Compensation for Marine Pollution; Environmental damage; International law

1. Introduction

Environmental pollution, as a potentially serious threat, can impose irreparable harm to humans and the environment in the long term (Hankin, 2003). In this regard, legal documents pursue two main goals: “preventing pollution” and “facilitating the handling of claims for compensation and redress for victims.” Currently, the method of compensation for environmental damage is among the important issues of international law, which is one of the guarantees of compen-

sation for damage in the insurance system at the national, international and regional levels. Undoubtedly, as countries gradually become more aware of their environment, the prevention of such incidents will be intensified many times over. Therefore, different countries use a variety of methods and tools, such as the conclusion of regional or international treaties, negotiations, and controversies, to convert the so-called *Lex Ferenda* to *Lex Lata* (Lynch et al., 2015). In international environmental law, there is no institution that can cover all the damages caused by pollution, where it can

be practically institutionalized on a global level; insurance organizations can take responsibility for covering the damages caused by pollution units.

The present study attempted to identify and evaluate the factors affecting liability insurance and compensation for environmental pollution in line with international law. To this end, the marine pollution was specifically investigated. Today, enjoying a healthy environment has become one of the main concerns of human society. From the perspective of the International Court of Justice, the environment is a space in which humans and other creatures live together and their quality of life and health, including for future generations, depends on that space (Cochran et al., 2016).

Environmental and natural resource law is closely related to sciences and technologies; hence, understanding its issues requires basic environmental knowledge (Mirkamali and Hajivand, 2017).

Marine pollution is the direct or indirect introduction of substances or energy into the marine environment by humans, which leads to deleterious effects such as harm to human health, prevention of marine activities such as fishing, reduction of seawater quality for use, and reduction of amenities. To prevent these unfortunate events, it is wise not to discharge any waste into the sea. Even if this theory were accepted, it would require a distinction between inputs and emissions, and pollution would still not be eliminated. Many inlets to the sea are not intentional and occur as a result of atmospheric deposition, land runoff, or accidental spills. Some of the reasons for marine pollution can be attributed to human activities, pollution from mines and ships, and other sources. Today, many human activities leave irreparable consequences on the marine environment, such that the destruction of the marine environment threatens many marine areas. This degradation comes from a number of sources, with pollution being one of the most important. The London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter defines marine pollution as: “*Any substance introduced into the marine environment by human activity that has measurable and often destructive effects on the marine environment.*” In the 1972 United Nations Conference on the Human Environment in Stockholm, pollution of the marine environment was defined as: “*The direct or indirect introduction of substances or energy into the marine environment that results in harmful effects on living resources or creates hazards to human health and hinders marine activities including fishing, impairs the quality of water use and changes the natural characteristics of water.*” (Habibnezhad and nari, 2021).

The marine pollution is potentially a major hazard and can cause irreparable damage to humans and the environment in the long term. One of the major sources of this pollution is from ships, which occurs as a result of oil spills, discharges and outflows of bilge water, or as a result of their collision with sea dunes, collisions between ships, or fires and explosions of their cargo (Poorhashemi and Tayebi, 2022). The main questions are who is responsible for covering marine damage caused by such incidents, and what mechanisms are in place to protect the environment and

compensate for the damage? To answer these questions, the International Maritime Organization (IMO), in complementing customary international law, concluded the 1969 International Convention on Civil Liability for Oil Pollution Damage (as amended by the Protocol signed in London on 27 November 1992) and the 1969 International Convention Relating to Intervention on the High Seas in Case of Oil Pollution Casualties. Following these programs, the International Convention on Civil Liability for Bunker Oil Pollution Damage 2001 were prepared (Boyle and Brinie, 2005).

In environmental law, emphasis is placed on preventing pollution and destruction of ecosystems, as well as common global standards for regulating or prohibiting certain practices and activities (Heydarzadeh and Mozafarizadeh, 2014). However, this alone is not enough. The important point is the guarantee of implementation and the mechanism for compensating for violations of environmental laws, or in other words, the liability resulting from the violation of those laws. The first paragraph of Principle 2 of the 2006 International Law Commission defines damage as follows: Damage is significant harm to person, property or environment, including the following: A) Loss of life or physical injury; B) Loss or damage to property, including cultural heritage; C) Loss or damage through disturbance of the environment; D) Costs of routine measures to restore the property or environment, including natural resources; and E) Costs of routine response measures (Zhang et al., 2016). As can be seen, Part C of the first paragraph explicitly refers to environmental damage. It should be noted that this environmental damage is caused by hazardous practices, whether or not this damage is accompanied by damage to persons and property. Therefore, the environmental damage, according to these principles, is independent of any damage to persons or property. Regarding the concept of environmental damage, the European Commission has had different tendencies in its documents, so that the 2000 bill had foreseen two types of damages that could be claimed: 1) Environmental damage, which included damage to biodiversity, water and polluted areas; 2) Traditional damage, which meant the same damage to persons and property (Poorhashemi and Tayebi, 2022).

There have been numerous studies on the basis of liability for environmental pollution. Shafer and Prieur (2004) and also Ott (2004) concluded that the general theory of fault is not effective in addressing environmental damage and that a theory of strict liability is more appropriate. Viney does not consider environmental loss as a damage to a person or society, but rather considers the natural world to be the common property of nations and likens the environment to property and an entity that belongs to society. Clarke, Flour & Aubert reviewed the approach of the law of European countries in marine pollution and stated that the law of the European Union and most European countries, such as Germany, Sweden, France, Finland, Norway and Switzerland, consider civil liability arising from pollution to be absolute liability. Despite these studies, there has been little research on compulsory liability insurance. According to Mans and Bennett, compensation for pollution

damage is based on “1971 Fund Convention”, meaning the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971. The Civil Liability Convention, a system of limited liability for shipowners, mandates the establishment and insurance of liability, but the Fund envisages a supplementary compensation system - established by an intergovernmental organization - for damages. The Fund only compensates pollution victims in Fund member countries who were unable to recover their full losses from the insurance company or shipowner (Boyle and Brinie, 2005). According to the findings of Yan Feng et al., two main patterns of pollution insurance practices can be identified in the world and China: voluntary insurance and compulsory insurance. In order to evaluate the efficiency of environmental pollution liability insurance practices, they conducted comparative studies between voluntary insurance in Chongqing and compulsory insurance in Wuxi, Jiangsu Province. Based on data analysis, there were differences between the two in local policies, the degree of government intervention, and the attitudes of stakeholders, and differences in the development of the pollution insurance market. The results also showed that the promotion of compulsory pollution insurance in contemporary China has helped local governments build a relatively mature pollution insurance system and reduce environmental risks (Hajivand et al., 2018).

Insurance contracts, like other laws, are based on principles that form the basis of the contract. There are no fixed and uniform principles defined for insurance principles, so that in some cases a series of concepts are referred to as insurance principles and in other cases not as principles but as concepts, but there is no doubt about the nature of the existence and stability of insurance contracts. The principles of insurance presented have been viewed as principles from a maximal perspective. Insurance is a contract whose subject matter may be property, whether it is real property or benefit or any financial right or any type of liability of the insured. The insurer is obligated to compensate for the damage caused and, due to the principle of indemnity, to compensate for the damage and eliminate the imbalance that appears in the financial situation of the insured following the insured event. Therefore, compensation for damage to the insured or the victim(s) should not place the insured in a more favorable position than before the accident. If this principle is not the criterion for action in compensation for damage and insurance becomes a source of use for the insured, it paves the way for corruption, disrupts public order, and encourages individuals to intentionally cause damage. The principle of actual compensation does not apply to personal insurance, because in personal insurance, firstly, there is no concern about intentional damages such as death or disability, and secondly, insurance does not take the form of betting, and in principle, the life of individuals is not convertible into a specific amount of money (Javadinejad et al., 2014).

Although the pollution knows no boundaries, there is still no international legal framework governing liability for pollution, and only national laws are in force. Risks are divided into two categories in terms of insurance: insurable risks

and uninsurable risks. If a risk is not economically insurable, then it is not insurable. Therefore, the criteria for insurable risk are:

1. The damage must be entirely accidental and unintended. If it is not accidental, it does not involve uncertainty, in which case insurance does not serve a useful purpose, and since insurance is used to reduce risk, then there is no reduction in risk.
2. The damage must be inherently measurable and predictable.
3. The damage should not be catastrophic in nature, meaning it should not be of a very high magnitude, such as an explosion in nuclear power, which is difficult to cover under insurance because the possible damages are a reflection of such unpredictable risks, which should be economic in nature.
4. The risk must be distributed among a sufficient number of similar broad cases.
5. The risk of damage must be low. The cost of damage must be acceptable. If the risk of damage is higher than 40 percent, the cost of the insurance policy will be higher than the amount the insurer pays under the insurance policy (Izanloo and Nazeri, 2022).

From a consensual perspective, civil liability insurance is the basis of a contract due to which the insurer undertakes, in return for a premium, to compensate for the damages caused by the insured or the damages caused to the insured in the event that the insured's liability is realized (Mohseni et al., 2021). In other words, the two parties do not intend to obligate the insurer to a third party and to benefit the third party, except in exceptional cases, and the insurer is obligated to compensate the insured for the damage caused by the insured. On the other hand, as soon as the liability is realized, the insured suffers damage because the negative debt increases, but the compensation for this damage is based on the insurance contract through the elimination of the liability debt and the insurer's obligation to compensate the injured party (Izanloo and Nazeri, 2022).

Based on the principle of compensation, the purpose of this insurance is to maintain the level of the damaged property, and to cover the damage, and does not increase the property of the insured. This principle, on the other hand, limits the insurer's obligations up to the amount of the damage. Agreements of the parties can also limit the obligations of the insurer (Rahimi and Anjedani, 2021).

Accordingly, the present work aimed to identify the effective components in liability and compensation for marine pollution in the light of international law in Iran.

In essence, the purpose of this research is to identify the effective components in liability insurance and compensation for marine environmental pollution in line with international law.

2. Materials and methods

This is an applied research that was conducted using a qualitative descriptive survey approach. To this end, the method

of grounded theory (Strauss and Corbin, 1998) was used to understand, interpret, and analyze the opinions of experts. A grounded theory research strategy is a systematic and qualitative method to create a theory that explains the process of action or interaction of a subject with a specific identity on a broad level (Creswell, 2002). In the grounded theory approach, the sampling frame is purposeful and theoretical rather than being statistically representative; the sampling frame is closed at the end rather than being closed at the beginning. During the interviews, since the researcher notices new dimensions and positions, or participants point to individuals and discover other informants in a snowball fashion, the sampling frame in grounded theory is an empirical and inductive framework (Farasatkah, 2016). In the present study, interviews and theoretical saturation were achieved with 20 experts related to the research topic using the sampling frame and the snowball method.

The experts' profiles are listed in Table 1.

The research paradigm model, presented in figure 1, consists of six main elements (dimensions), which were:

1. Focal variable: A central phenomenon that exists in the situation and context of exploration (Majd et al., 2019). In the present study, the focal phenomenon was the concept of compensation for environmental damage through liability insurance.
2. Causal condition: The main causes and reasons from which the phenomenon under investigation (compensation for environmental damage through liability insurance) arises. The causal conditions include the set of factors that influence the focal variable, and are events that create situations, issues, and problems related to the phenomenon and explain to some extent why and how individuals and groups engage in this phenomenon. In fact, the causal conditions refer to events and occurrences that influence this phenomenon and lead to its occurrence (Neck et al., 2017).
3. Contextual condition: a condition in which the causes and contexts influence the main phenomenon (Zhang et al., 2014).
4. Intervening condition: By which general environmental factors are the effects of specific causal and contextual causes moderated? Intervening conditions are broad and general conditions, such as culture and space that act as facilitators or constraints on strategies. These conditions facilitate and accelerate the implementation of strategies and act as an obstacle, delaying them (Valentova et al., 2018).
5. Interactional strategy: What behavioral strategies and tactics do actors choose as a result of causal conditions? What actions and methods do they undertake? What strategies, tricks, and techniques do they adopt in response to the contexts and conditions in which they find themselves? (Farasatkah, 2016).
6. Consequences: What effects and results will the totality of causal conditions and adopted strategies lead to? (Farasatkah, 2016).

In the first step, a list of factors and components affecting the research topic was prepared by examining the theoretical foundations and research background. Then, the selected experts were asked to review (confirm or reject) the extracted components and to provide feedback on the completion of the items through interviews (in person or by sending an audio file). The interviews lasted between 45 and 80 minutes. The themes of the interviews were fully recorded and transcribed. After reviewing the text of each interview several times and extracting codes that were conceptually similar to each other, the codes were grouped into categories, and then the initial categories were compared with each other and similar items were merged around a common axis. Finally, the documents and background of the studies were also reviewed. In the next step, the data were categorized, coded,

Table 1. Profile of experts participating in the research.

Row	Education level	Specialized field	Number
1	Ph.D.	Environmental Law	6
2	Ph.D.	Marine pollution control	2
3	Ph.D.	Environmental Management	5
4	Ph.D.	Insurance Management	4
5	M.Sc.	Risk Assessment	3

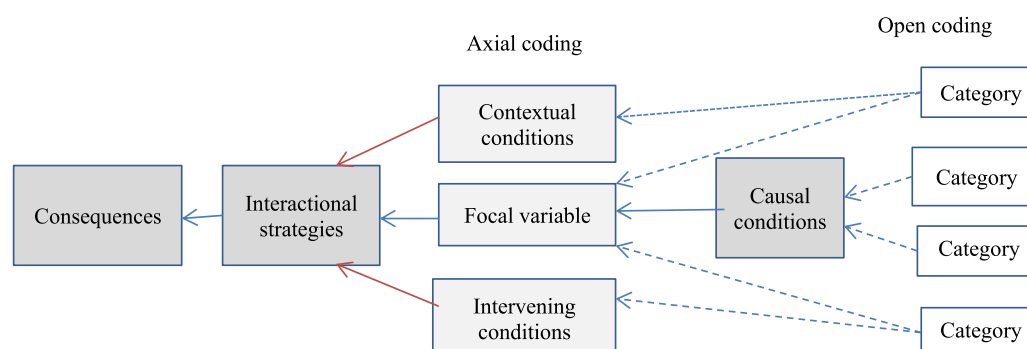


Figure 1. Research paradigm model.

and compared. In order to strengthen the internal validity of the data, open coding was used to develop concepts, categories, and their characteristics, axial coding was used to develop relationships between categories and subcategories, and finally, selective coding was used to integrate the categories to build a theoretical framework. The findings and analysis were validated and legitimized using credibility, transferability, dependability, conformability, a holistic approach, respondent validation, and triangulation, resulting in validity confirmation. In order to ensure credibility in the qualitative stage, the method of repetition and checking by researcher colleagues, checking by research participants, and checking by scientific peers who were experts in the subject and situation of the research was used to determine whether there was reliable consistency in repeated data collection (Majd et al., 2019). Regarding the reliability of the research findings, an attempt was made to select a specific number of experts for interviews using a purposeful and snowball method, considering the literature and different perspectives on sampling and the number of participants.

3. Results

In the first stage of open coding, which was conducted line by line, approximately 170 meaningful primary codes were extracted, which were reduced to 80 conceptual codes after combining and eliminating duplicates with similar conceptual space. It is worth noting that the criterion for selecting codes was their degree of coherence with the concept of liability insurance and compensation for environmental damage; the components that did not match the intended themes were modified and equated in the first stage by the researcher and in the second stage by experts. After repeated review and comparison, the codes were reduced to 60 open codes and 21 axial codes, presented in the paradigm model. After open coding, the axial coding stage was performed and the obtained components were placed in three major axes of conditions (causal, contextual, and intervening), interactional strategies, and consequences. The final stage was the selective coding of the core research categories (Table 2).

As can be seen in Table 1, five components were identified as causal conditions, including severity of environmental pollution, type of environmental damage, source of pollution, insurer conditions, and nature of the insured. The contextual conditions included four components, including type of environmental risks, level of risk, theoretical foundations, and national and cross-border cooperation. There were also five intervening factors, including national laws and regulations, international environmental law and international treaties, international sanctions and restrictions, governance approach and government policies, and arbitration conditions. The interactional strategies consisted of facilitation, risk management and awareness raising. The consequences included compensation for environmental damage, mechanism to prevent recurrence of similar incidents, and increasing trust and willingness to fulfill environmental commitments. Figure 2 illustrates the final conceptual model of the research

As shown in the figure, three background, causal and inter-

vention factors play a role in the emergence of the central phenomenon (liability insurance and compensation for marine pollution). Among them, the severity of pollution, the type of environmental damage, the source of pollution, the conditions of the insurer and the nature of the insured are among the causal conditions. Also, the type of environmental risk, the level of risk, theoretical foundations and national and cross-border cooperation are among the background conditions. And finally, national laws and regulations and international environmental law and international treaties as well as sanctions and restrictions are among the intervention conditions. On the other hand, the strategies envisaged for the issue include: granting responsibility for risk management and awareness, which will lead to consequences. Among the conceivable consequences, compensation for environmental damage and loss, as well as the development of a mechanism to prevent similar incidents from recurring, as well as increasing trust and willingness to fulfill environmental obligations can be mentioned.

4. Discussion

The aim of the present study was to identify the effective components in liability insurance and compensation for marine pollution in the light of international law. Therefore, no specific solution was considered. The aim was to present a conceptual model of the effective components, which is what this study has achieved. Today, the majority of human societies understand the problems of environmental pollution and its adverse effects more than ever before, and this issue has also been taken into consideration in the insurance industry. Although damages caused by environmental pollution are related to many insurance fields, they are placed in a special category in the field of "general liability insurance" in terms of risk classification. The concept of liability in relation to pollution is somewhat different, so it is important to consider the following points (Dabiri et al., 2016):

- The nature of pollution risks
- How insurers cover such risks
- Existing approaches and future developments

Among the challenges of establishing an insurance system for environmental damage compensation in Iran, the following can be mentioned:

- The absence of binding national laws and regulations
- The lack of belief and commitment of project owners and capital holders
- Iran's lack of membership in international financial structures and obligations
- The cost of project risk assessment studies
- The low financial capacity of insurance companies
- The lack of interaction in the field of international politics between Iran and other countries

Table 2. Three steps of data coding.

Selective codes	Axial codes	Open codes
Causal conditions	Severity of environmental pollution	Low Moderate High
	Type of environmental damage	Compensable damage Irreversible damage
	Source of pollution	Oil and gas platforms Ships and boats Coasts Accidental/deliberate accidents
	Insurer's conditions	Insurer expertise and experience Payment and service terms Communications and advertising Commitments and guarantees Cost-benefit ratio for the insurer
	Nature of the insured	Willingness to pay premiums Motivation and knowledge for membership Cost-benefit ratio for the insured Transparency in tax self-declaration
Contextual conditions	Type of environmental risks	Pure or static risks Speculative or dynamic risks Specific risks General risks
	Level of risk	Acceptable risk Unacceptable risk
	Theoretical foundations	Civil laws Jurisprudential rules
	National and cross-border cooperation	Co-insurance Specialized assessments
Intervening conditions	National laws and regulations	Articles 30, 190 and 439 of the civil laws Environmental protection and improvement laws
	International environmental law and international treaties	Draft report of the International Law Commission 2006 Compensation Funds European Union Bill (2000) 1998 United Nations Program Act Global Environment Facility Lugano Convention and Bunker Convention (2001)
	International sanctions and restrictions	Non-membership in the Financial Action Task Force (FATF) Non-commitment to regional and cross-border cooperation
	Governance approach and government policies	Legal and governmental support Government subsidies
	Arbitration conditions	Unbiased assessment Fair judgment Universal feedback and widespread awareness
Focal variable	Liability and Compensation for Marine Pollution	Environmental compensation Liability insurance Process assurance
Interactional strategies	Facilitation	Tax exemptions Government and sovereign support Technical support
	Risk management	Avoidance Transfer Mitigation Acceptance
	Awareness raising	Advertising and promotion Documentation and knowledge promotion
Consequences	Compensation for environmental damage	Legal action against violators and criminals
	Mechanism to prevent recurrence of similar incidents	Identification and elimination of structural and process errors
	Increasing trust and willingness to fulfill environmental commitments	Gaining user trust and satisfaction

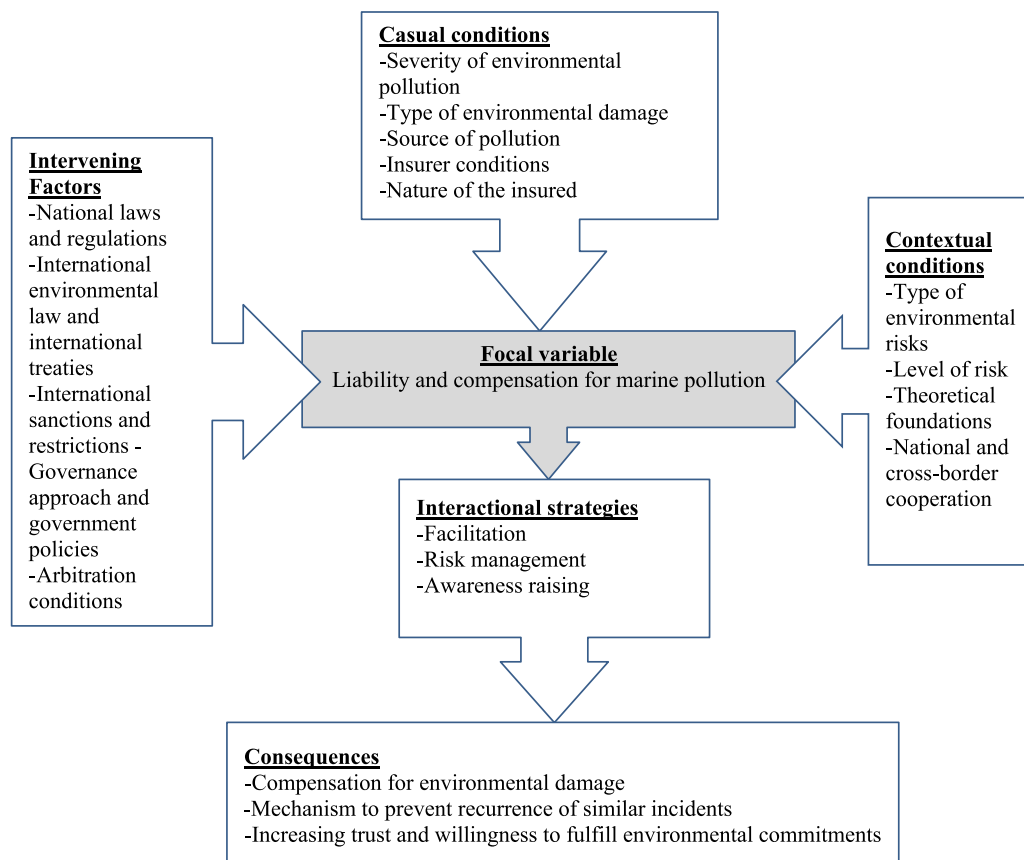


Figure 2. Final conceptual model based on identified components.

Risks and dangers arising from environmental pollution are considered emerging risks. As a rule, insurers seek to cover emerging risks that they can compensate for. The results of the studies show that environmental pollution risks can be covered by commercial insurance, relying on international law, in the form of a domestic, regional, or global insurance contract, in compliance with the principles governing insurance contracts. Accidental, involuntary, and unexpected environmental pollution risks are covered in the form of compulsory (such as in China) or voluntary insurance. The insurer accepts the risk after examining and predicting the probability of a risk occurring and examining and estimating the extent of possible damage, taking into account its financial solvency ratio. In explaining some of the main components of the final model of the present study, it could be stated that static risks were related to losses arising from human errors and wrongdoings. The damage and destruction of a building due to a fire is an example of pure risk, as a result of which only two states are possible: the building either catches fire and suffers damage, or remains intact and no fire occurs. One of the characteristics of such risks is that they have two states of loss and no loss, and the owner can be in two states (Moghofei et al., 2021).

On the other hand, speculative or dynamic risks arise from changes, especially changes in human desires. The situation of merchants who, in the hope of making a profit from their trade, purchase goods in bulk and sell them to retailers at a higher price; the job of these merchants is to seek profit. Such risks can have three states: profit - no profit - loss.

It should be noted that speculative risks are not desirable insurance risks (Moradzadeh et al., 2022).

The specific risks specifically affect an individual or a small group at the same time. The specific risks can cause large losses, but generally the losses resulting from such incidents are of such a magnitude that the insurance industry can insure and assume the obligation to compensate for the losses resulting from them.

The general risks have adverse effects on a large group of people, sometimes even an entire country. To circumvent these bottlenecks, governments and international organizations often take action and devise solutions.

It is important to note that once risks have been identified and assessed, all risk management techniques (such as FMEA) fall into one or more of four main categories:

- Transfer (or Sharing)
- Avoidance (or Elimination)
- Reduction (or Mitigation)
- Acceptance (or Retention)

Optimal use of these strategies may not be possible. Some of them may require trade-offs that are not acceptable to the individual or organization making risk management decisions (Chenari et al., 2022).

The avoidance strategy means not taking action that poses a risk. For example, an asset may not be purchased or a business venture may be foregone in order to avoid the

associated problems and hassles. The avoidance strategy seems to be a solution to all risks. On the other hand, avoiding risk means losing out on the potential profits that could have been obtained by accepting that risk. Not entering a market in order to avoid risk forgoes the possibility of making a profit.

The mitigation strategies involve employing methods that reduce the severity of damage. For example, fire extinguishers designed to extinguish fires can reduce the risk of damage from fire. This approach may result in additional losses due to water damage and may therefore not be appropriate. Halogenated flame retardants may reduce the risk, but the cost may be a deterrent to choosing that strategy.

The acceptance strategy is accepting a loss when it occurs. Self-insurance or personal guarantee insurance falls into this category. Risk acceptance is an acceptable strategy for small risks where the cost of protecting against the risk may be greater than the total loss over time. All risks that cannot be avoided or transferred are necessarily acceptable. These include risks that are too large to protect against or that it may not be practical to pay for insurance. War is a good example in this regard because of its characteristics and the lack of guarantees regarding its risks. Furthermore, any amount of potential loss beyond the guaranteed amount is considered an accepted risk. This may also be acceptable if the possibility of large losses is low or the cost of insuring for a higher amount of coverage is so high that it would be a major obstacle to organizational goals.

The transfer strategy is to cause another party to accept the risk, usually by entering into a contract or taking precautionary measures. Insurance is a type of risk transfer strategy using a contract. In other cases, this is done through verbal contracts that transfer the risk to other parties without paying a premium. Usually, the burden of liability is transferred among the building builders or other contractors in this way. On the other hand, the use of position adjustments in financial investments is an example of how companies take precautionary measures to manage risk financially.

5. Conclusion

According to our research findings, stressing and paying attention to international environmental laws can pave the way for environmental insurance activities in the country. Meanwhile, it was found that the insurer and the insured must identify the type of activities, accidents, and the aspects arising from them based on detailed and comprehensive studies so that they can take action regarding the possibility or impossibility of insuring the desired activity. The use of the proposed model in this research can reduce the amount of error in decision making.

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Authors contributions

The First Author conceived of the presented idea. The Second Author developed the theory and performed the computations also; The third author verified the analytical methods. And the fourth author supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Availability of data and materials

All data generated or analysed during this study are available from the corresponding author upon reasonable request.

Conflict of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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