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**UNDERSTANDING MALAYSIAN FISHERMEN'S READINESS TO PAY FOR
PROTECTION AND INDEMNITY INSURANCE: A REVIEW OF MARITIME AND
FISHERIES RISK MANAGEMENT**

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ABSTRACT

Despite the vital role of insurance in safeguarding fishermen's livelihoods, marine insurance, particularly fishing insurance has been largely overlooked in Malaysian research, with limited empirical studies examining its demand and significance. This review article adopted a structured review-based approach to examine fisheries and maritime insurance schemes in Malaysia and to identify key determinants influencing fishermen's readiness to pay for Protection and Indemnity insurance, based on existing literature. The findings were as follows. First, maritime insurance in Malaysia follows a structured approach aligned with vessel size, cargo type and operational scope. Second, fisheries insurance programmes provided different coverage and benefits tailored to the diverse needs of fishing communities. A combined strategy may be required to ensure better protection for all fishermen. Lastly, Malaysian fishermen's willingness to pay for P&I insurance is influenced by 5 key variables viz. insurance awareness, government intervention, financial considerations, risk perception and individual attitudes. This research may benefit policymakers, insurance companies and researchers seeking to strengthen risk management in the fisheries sector, particularly in maritime policy, rural development and sustainable livelihood planning.

Keywords: Fishermen, Protection and Indemnity Insurance, Malaysia, Readiness to Pay

INTRODUCTION

The fisheries industry has been increasingly recognized in the twenty-first century for its essential contribution to food security and nutrition (Finegold, 2009). It is generally divided into two main categories: marine capture fisheries (coastal and offshore) and aquaculture (DOF, 2024a). In 2022, global captured fish production reached 101.7×10^6 t (FAO, 2024a), with Malaysia contributing 2.08×10^6 t (DOF, 2024a) to this total. It contributed RM 15.9×10^9 (DOF, 2024a), representing approximately 0.7% of Gross Domestic Product (GDP) of Malaysia's agricultural sector (DSM, 2023). In Malaysia, the fisheries industry plays a crucial role in ensuring food security, supporting economic growth, and expanding trade opportunities. It provides a significant source of animal protein and contributes to cultural and environmental sustainability. The fishing industry supports national development by creating employment opportunities for local communities (SEAFDEC, 2022). Globally, in 2022, the fisheries and aquaculture sector employed approximately 61.8×10^6 people in full-time, part-time, temporary or unspecified roles, of which 33.6×10^6 were engaged directly in fishing activities (FAO, 2024b). The global fishing fleet comprised approximately 4.9×10^6 vessels, with Asia accounting for the largest share, about 3.5×10^6 vessels or 71% of the total (FAO, 2024c). In Malaysia, a total of 116,613 fishermen and 48,605 fishing vessels were registered with the Department of Fisheries Malaysia (DOF) in 2022 (DOF, 2024a).

Fishermen worldwide face substantial risks while at sea (FAO, 2024b), leading to a high number of accidents. The majority of fatalities and injuries occur within small-scale fishing operations, which constitute the primary labour force in global capture fisheries (FAO, 2024b). A research report by the Fish Safety Foundation estimates that over 100,000 deaths occur annually in fishing communities worldwide (Willis & Holliday, 2022). This number is likely underestimated due to significant data limitations. The report highlighted several contributing factors to this underreporting, including inconsistencies in national reporting standards, the exclusion of fatalities involving small-scale fishing vessels and a general lack of transparency within the fishing industry (Willis & Holliday, 2022). Fish Safety Foundation identified several contributing factors to fishermen's fatalities, including poverty, geopolitical conflict, overfishing, unreported, unregulated fishing, climate change and illegal (Horn, 2022).

In Malaysia, search and rescue operations related to the fisheries industry recorded a total of 270 cases in 2022 (MMEA, 2022). These incidents were classified into 2, namely incidents that involved vessels and incidents that involved people. Vessel incidents were attributed to various reasons such as shipwrecks, sinking, structural damages, loss, violations, stranding, leakages, fires and drifting. Incidences that involved people included reasons such as overboard falls, drowning, suicide, loss at sea, diving, body recovery, etc. MMEA (2022) reported about 1,452 people were rescued, 51 were missing and 99 were dead. Deaths in the fisheries industry have marginally increased, as the number of cases was 96 in 2018 and 99 in 2022. Kathleen Magramo (2023) stated that the Portuguese Maritime Authority reported that 3 individuals died off the central Portuguese Atlantic coast following a collision with a foreign vessel in the South China Sea. The Sun (2024) reported that the body of a fisherman who fell overboard at Batu Laut, Malaysia was discovered by local fishermen approximately 6 nm southwest of Tanjung Gabang, four days after the incident.

Another fatal accident occurred on 11 August 2024, when a fishing vessel capsized following a collision with a barge around 7 nm off the Kemaman coastline in Terengganu, Malaysia, resulting in 2 confirmed deaths and 2 individuals still missing (Bernama, 2024). MMEA (2022) reported many of the fatal accidents were attributed to negligence and dereliction of duty by fishermen, particularly the failure to

ensure that vessels and equipment were in proper condition before going out to sea. These results indicated the long-term and complex nature of the risks that fishermen all over the world were exposed to, especially in small-scale fisheries, where mortality tended to be underreported because of the lack of data on the matter. Such factors as poverty, overfishing, climate effects and human error indicated that there was a strong necessity in enhanced safety measures, increased regulatory vigilance and more transparent reporting mechanisms within the fisheries sector.

Insurance is undeniably essential in minimizing risks relating to fishing operations. The United Nations agencies, such as International Maritime Organization (IMO) and International Labour Organization (ILO), have come up with a number of international maritime conventions that require shipowners to secure insurance to cover a number of liabilities (IMO, 2024a). One such convention is Limitation of Liability for Maritime Claims (LLMC), originally established in 1976 and later protocol in 1996. This convention offers an international law on maritime liability which covers the claims made on personal injuries, property damages, cargo delays, non-contractual rights infringement as well as wrecks and cargo removal (IMO, 2024a). It was put into effect internationally on 13 May 2004 and in Malaysia on 10 February 2009 after being ratified on 12 November 2008 (MMD, 2009). Protection and Indemnity (P&I) is central to paying liability costs (MMD, 2023) that occur due to unintentional injuries to people, damage to property or the environment within the limits of the LLMC 1996 (Standard Club, 2024). This type of insurance covers nearly all maritime liability risks outlined in the LLMC 1996, which makes it one of the major insurances that secure the shipowners in a high-risk environment and facilitate the adherence to the international standards of the maritime industry.

Malaysia depends on the fishing industry as one of its core sectors of the national GDP, job creation and supply of raw materials as well as food security (Finegold, 2009). The commercial fishing is one of the most hazardous jobs and is always indicated as one of the deadliest (Drudi, 1998). Fishermen spend most of their time at sea putting their lives at risk and they expose themselves to a high-risk industry where indirect injuries and deaths are high. Since this industry is highly sensitive to natural resources and climatic conditions, it is easily susceptible to numerous risks (Zheng et al. 2018). Seafarers have diverse risks on the sea such as engine failure, unfavorable weather conditions, poor visibility and crashes with other ships or rocks, capsizing and even loss of lives or serious injury on the ship (Zekri et al. 2008). The implementation of P&I insurance is one of the most significant measures that can be taken to reduce these risks as it is essential to protect fishermen in case of any of the liabilities caused by the maritime risks (Standard Club, 2024). The global uptake of such insurance is low despite its availability even in fishing vessels and fishermen (FAO, 2024b), not excluding Malaysian fishermen. This low turn up implied a lack of preparation and willingness to pay (WTP) to get insured by fishermen. The aversion to embracing P&I insurance is a major challenge to the survival and general health of fishermen, and it has important questions concerning the sustainability of the fishing industry in the long term. This scenario demonstrates the pressing necessity of the increased level of awareness, policy interventions aimed at this result, and support mechanisms to promote the expansion of insurance.

Researchers have discovered that the readiness and WTP for insurance among fishermen depend on many factors including sociodemographic factors, insurance awareness and the attitudes of fishermen (Jiang and Faure, 2020; Nguyen et al. 2021; Parappurathu et al. 2017; Xu et al. 2024; Zekri et al. 2008; Zheng et al. 2018). Zheng et al. (2018) carried out survey research in China to investigate the problem of low demand of fishery insurance, namely aquaculture insurance. The study found that income and farming years have negative effects on RTP, whereas knowledge and awareness of fishermen have positively correlated with RTP. Nguyen et al. (2021) examined WTP shrimp insurance among fishermen, were comparable to those of Zheng et al. (2018). The study revealed that low-income fisherman,

high-risk managers and fishermen that attended training programs were inclined to pay high insurance premium. Such results indicated that specific awareness campaigns, capacity-building projects and policy assistance could be used to increase insurance coverage, particularly among the vulnerable population in the fishing industry.

Various studies on fishery insurance have been conducted in different countries viz. China (Jiang and Faure, 2020; Xu et al. 2024; Zheng et al. 2018), Vietnam (Nguyen et al. 2021), Oman (Zekri et al. 2008), Indonesia (Firman et al. 2021) and India (Bakshi et al. 2023; Parappurathu et al. 2017). Despite these studies, fishing insurance in Malaysia has never been given serious consideration and there was a lack of rigorous research to better understand its demand. In current literature, studies on Malaysian fishermen were mainly dedicated to socioeconomic factors (Ahmad et al. 2003; Sanusi et al. 2024; Zainudin et al. 2019) as well as to environmental problems (Zolkaply et al. 2019; Mohamed Shaffril et al. 2017; Shaffril et al. 2011; Idris et al. 2018) and did not pay much attention to marine insurance. Empirical research on fishing insurance in Malaysia remains limited, with only a small number of studies directly examining fishermen's readiness to pay for Protection and Indemnity (P&I) insurance. Chuah et al. (2025) provided empirical evidence from Kuala Kedah, Malaysia, showing that government intervention, financial factors, risk perception, and fishermen's attitudes significantly influence fishermen's readiness to pay for P&I insurance, while insurance awareness may not have a significant effect. The limited availability of Malaysian evidence indicates a persistent knowledge gap, which constrains efforts to strengthen insurance adoption and improve fishermen's financial protection.

This review article aimed to compare fisheries and maritime insurance schemes in Malaysia and to identify the key factors influencing fishermen's readiness to pay (RTP) for P&I insurance based on existing literature. This review article employed a structured literature review methodology, synthesizing findings from previous empirical studies, policy documents and institutional reports related to fisheries insurance, maritime risk management and fishermen's readiness to pay for insurance. It was significant to enhance the welfare and safety of fishermen because it determined the major factors affecting their RTP in insurance schemes. Knowledge of these factors made it possible to come up with specific interventions and policies that would improve insurance coverage, which would eventually protect fishermen against economic losses and maritime risks. This study also shed light on the gaps and best practices in fisheries insurance systems by comparing the Malaysian context with other contexts, which can be used to inform improvements to the current insurance system. This was especially vital in view of increasing pressures such as climate change, overfishing and shipping risks, which predisposed the fisheries sector to greater vulnerability. The review also helped to support long-term industry sustainability by encouraging risk management and financial resilience. Given the limited research on fisheries insurance and RTP in the Malaysian context, the study was relevant in bridging a significant knowledge gap and served as a basis for evidence-based policy formulation and subsequent scholarly research.

The rest of the paper was organized in the following way. The second section was that of fishermen safety and well-being on both local and international scales. The third section provided the institutional structure of the Malaysia's fishing industry. The fourth section provided a comparison of insurances for maritime risk management and fisheries in Malaysia. In the fifth section, the main factors related to the RTP for P&I insurance were pointed out. In the last section, the conclusion was presented.

FISHERMEN'S SAFETY

Commercial fishing is considered as one of the riskiest jobs in the world (ILO, 1999). Fishermen are exposed to various hazards such as bad weather patterns, engine failures, accidents, fires, poor design of vessel, overloading, exhaustion and lack of safety precautions and training (ILO, 1996; Kim et al. 2024). Such hazards are likely to be intensified by the growth of the global seafood demand and evolving climate changes that will change the marine environment (FAO, 2024b). Most of the risks associated with fishing are not necessarily related to the activity itself but are due to the lack of a proper safety protocol (Grybenyuk, 2023).

Several international conventions have been developed to promote sustainable practices and improve the safety and working conditions of fishermen. To ensure better occupational safety, health, medical treatment at sea and equal access to social security benefits comparable to other workers, ILO adopted the Work in Fishing Convention (Convention No. 188). This convention serves as an international safety standard in fishing ships (ITF, 2024). The Code of Safety and Voluntary Guidelines was created by IMO in partnership with the Food and Agriculture Organization and the ILO and it specifies safety issues of fishing vessels that are less than 12 m long and all undecked vessels (IMO, 2024b). National authorities rely mostly on these guidelines to enhance domestic laws and regulatory frameworks (IMO, 2024b).

The fisheries industry in Malaysia has a set of laws and regulations, which are used to promote operational safety and compliance in the industry. The Fisheries Act 1985 controls the industry and is supported by the Legal Unit of the Department of Fisheries (DOF, 2023). This Act includes marine and estuarine fisheries conservation, management and development of marine and estuarine fisheries in Malaysian waters, turtle protection and inland fisheries, to name a few (AGC, 2006). It addresses the most important points like administrative process, license regulations, aquaculture regulations and sanctions against the violations. All individuals and entities involved in the fishing sector, including fishermen and vessel owners, are required to comply with the Fisheries Act 1985.

The Malaysian government provides different types of assistance to the welfare of fishermen, especially in allowances and insurance schemes (Lim, 2023). Subsistence support, diesel and fuel subsidies, relief in case of natural disasters and fishermen welfare schemes are the most widespread forms of allowances (LKIM, 2024a). Eligible fishermen are given a monthly subsistence allowance of RM25.00 (DOF, 2024b). Such types of support play a crucial role in helping employees during crisis periods as the occupation is at high risk. These allowances are only a short-term relief and the cost involved in cases of disasters tends to be higher than the amount of monetary help offered and thus significantly affecting the fishermen's savings. This situation highlighted how vital it is to have blanket insurance to protect fishermen against such economic vulnerabilities.

MALAYSIA'S FISHING SECTOR INSTITUTIONAL FRAMEWORK

MAFS (2024) stated that the fishing industry comes under the jurisdiction of the Ministry of Agriculture and Food Security of Malaysia (MAFS). Under MAFS, the Department of Fisheries (DOF) is the main authority tasked with the administration and development of the fisheries sector in Malaysia (MAFS, 2024). The department is responsible for the efficient, innovative and ecologically sustainable management of the country's fishing resources, grounded on technical and scientific expertise and professional governance (DOF, 2024c). Apart from the DOF, Malaysian Fisheries Development Authority (LKIM) is a statutory body under MAFS that collaborates closely with the DOF to promote and facilitate the effective administration of the fisheries industry and its commercialisation such as marketing (LKIM, 2022a). LKIM is established under the Akta LKIM 1971 (Akta 49) (LKIM, 2024b).

The Director General of LKIM is responsible for the registrar of the NEKMAT, State Fishermen's Association (PNN) and Area Fishermen's Association (PNK) (LKIM, 2024c). Under LKIM, the NEKMAT serves as a progressive body responsible for maintaining the well-being of the fishermen under its association (Nekmat, 2024a). It was established under the act, Akta Persatuan Nelayan 1971 (Akta 44) and was registered with LKIM. In the state level, the state's LKIM director serves as the supervisor of all PNN. All activities and governance of the PNN are under the supervision of the state's LKIM (LKIM, 2024d). PNK is a member of PNN while PNN is a member of NEKMAT (Nekmat 2024a). PNK was established under Akta Persatuan Nelayan 1971 (Akta 44) and it is an association with not less than fifty members established in accordance with the provisions of this Act or any regulations made thereunder for any area in any state (Law of Malaysia, 2011). PNK operates under the supervision of LKIM represent fishermen at the local level and aim to ensure that all fishermen receive protection and advantages from the government through the association (Bernama, 2022).

Apart from that, there are 89 PNK under LKIM in the Malaysian fisheries industry (LKIM, 2024e). A total of 48 LKIM Fisheries Ports functions throughout Malaysia have been established to guarantee that fish harvests are processed more effectively and incorporated with a comprehensive and contemporary operating system (LKIM, 2024f). A total of 372 jetties were constructed around Malaysia for the purposes of unloading marine products and serving as mooring points for vessels (LKIM, 2024g). They also serve as a stimulant for economic activities in the nearby areas, particularly the selling of fresh fish and other seafood. The PNK and diverse infrastructure serve a vital function in delivering vital support for the fishing industry and its workforce.

COMPARISON OF DOMESTIC INSURANCE SCHEMES FOR MARITIME AND FISHERIES RISK MANAGEMENT

Insurance is a risk-transfer mechanism that offers financial compensation for losses or damages resulting from occurrences beyond the insured's control of the insured (FAO, 2019; Thoitys, 2010). Its main aim is to insure risk-averse ones in case of adverse effects of the unexpected natural events (Spence and Zeckhauser, 1978). The use of insurance mechanisms has become very popular in agricultural risk management to curb financial risks and the adverse impacts of natural calamities (Zheng et al. 2020). On the same note, marine insurance plays an important role in the maritime industry in dealing with a diverse scope of risks that are experienced at sea. Marine insurance covers the damage or loss of vessels, cargo or terminals that are used in the exchange, purchase or storage of property under transit between the point of origin and destination (PIAM, 2021).

In Malaysia, multiple types of insurance are available for marine-related activities and certain vessels are legally required to obtain specific insurance coverage. These requirements are particularly enforced under international maritime conventions and domestic regulations, such as those outlined in the Merchant Shipping Ordinance 1952. Vessels engaged in international voyages are generally subject to compulsory insurance provisions, depending on the type and characteristics of the ship. Table 1 presents an overview of the insurance types mandated for different categories of vessels in accordance with these regulatory frameworks.

Table 1

Types of insurance and its coverage

Insurance types	Important date	Requirement and coverage
WRC 2007	Date of entry into force: 14.4.2015 Ratification: 28.11.2013 Malaysia enters into force: 14.4.2015	Ships that have 300 gross tonnage (GT) and above shall uphold the contract of insurance when entering or leaving any part of State Party water (Malaysian waters) to cover the liability under this convention, such as the costs of locating, marking and removing the wreck (MSO, 1952; WRC, 2007).
CLC 1992	Date of entry into force: 30.5.1996 Ratification: 9.6.2004 Malaysia enters into force: 9.6.2005	Ships carry more than 2000 t of oil in bulk as cargo must maintain insurance to cover the liability for oil pollution damage resulting from spills of persistent oil (CLC, 1969; Merchant Shipping (Oil Pollution) Act, 1994)
BCC 2001	Date of entry into force: 21.11.2008 Ratification: 12.11.2008 Malaysia enters into force: 12.2.2009	Registered ship owners who own a ship that has more than 1000 GT shall maintain insurance to cover the liability for pollution damage resulting from spills of bunker oil from the ship (BCC, 2001; MMD, 2019).
MLC 2006	Date of entry into force: 20.8.2013 Ratification: 20.8.2013 Malaysia enters into force: 20.8.2013	Ship owners who own a ship that has 500 GT and above and operated and engaged in international voyages must maintain a contract of insurance to cover the cost of crew repatriation or claims resulting from the death or prolonged disability of seafarers caused by work injuries, illnesses or hazards (MMD, 2016).
LLMC 1996 (P&I Insurance)	Date of entry into force: 13.5.2004 Ratification: 12.11.2008 Malaysia enters into force: 10.2.2009	When a ship enters or exits a port in Malaysia, any area of the Malaysian sea or the exclusive economic zone, it must have a form of insurance to cover the liability (MSO, 1952): <ul style="list-style-type: none"> • Deaths and serious injuries • Property damage, including damage to port infrastructure, basins and waterways, as well as navigational aids • Delays in shipping goods, passengers or their belongings • Violations of rights other than those outlined in contracts • Raising, removing, destroying or rendering harmless wrecks • Removal, destruction or rendering harmless ship cargo

In addition to mandatory insurance, shipowners may also opt for various types of non-compulsory insurance to protect themselves against potential liabilities related to the loss or damage of vessels, cargo or port infrastructure. One such policy is Hull and Machinery (H&M) insurance, which covers physical damage to the vessel, including its machinery and onboard equipment, resulting from maritime or other specific hazards (H&M Insurance, 2024).

Insurance can also be an essential risk management option in the fishing sector where fishers are likely to face many risks related to the sea. There are various insurance policies offered to fishermen in Malaysia, among which are P&I insurance, the Self-Employed Social Security Scheme (SKSPS) managed by the Social Security Organisation (SOCISO) (LKIM, 2022b) and the Fishermen Protection and Welfare Scheme by NEKMAT (Nekmat, 2024b). P&I insurance offers liability coverage for maritime-related risks (Standard Club, 2024).

In August 2020, SOCSO introduced the SKSPS as a replacement for the former Fishermen's Group Insurance Protection Scheme (LKIM, 2022b). SKSPS provides protection for self-employed individuals, including fishermen, against occupational accidents and diseases (The Star, 2023). Annual participation in SKSPS varies based on the number of fishermen eligible for the Fishermen's Subsistence Allowance (ESHN), from which the annual SKSPS contribution is deducted (Awani International, 2020). For those ineligible for ESHN, voluntary enrollment in SKSPS is permitted.

Fishermen who are eligible for consideration to receive ESHN payments fall into three categories. These include owners of fishing vessels operating in Zone A, owners of Zone A's transformation vessels with company status and Malaysian workers on vessels licensed for Zones A, B, C and C2. All of them must be a Malaysian who have a valid fishermen's card, registered as a vessel worker or valid fishing vessel license with active oil subsidy status (LKIM, 2020). Only Malaysian fishermen who own a fishing vessel or work on a licensed vessel, have at least 120 days (about 4 months) of fishing experience and whose main source of income is from fishing activities are eligible to apply for a fishermen's card (MAMPU, 2020). The Malaysian owners of Zone A traditional fishing vessels, Malaysian owners of Zone A vessels with inboard engines and anchovy purse seine equipment, Malaysian owners of Zone B fishing vessels and Malaysian owners of Zone C fishing vessels who hold valid fishing vessels are eligible to apply the Fishermen's Diesel and Petrol Scheme to receive the oil subsidy (LKIM, 2023). As of 2021, only around 40% of licensed fishermen were enrolled in SKSPS.

The Fishermen Protection and Welfare Scheme is a form of insurance provided by the NEKMAT aimed to protect fishermen from accidents while fishing in the sea and on land (Nekmat, 2024b). This scheme covers injury, death and contributions while in hospital and bereavement. Fishermen are covered for 24 h. There are two types of schemes under this program which are free scheme and paid scheme. The free scheme is given to fishermen in zone A or coastal areas and they need to apply for this scheme through the fishing association in their own area. At the same time, the paid scheme is available to all fishermen with payment. The payment rate depends on the category of protection scheme taken (Nekmat, 2024b).

There are also several types of insurance provided by private insurance companies, such as Fishermen's Group Personal Accident Insurance by Allianz Malaysia (Allianz, 2024). This insurance is specifically designed to offer protection for fishermen (not including vessels) when they are operating their fishing boats or vessels. The coverage offers compensation for injuries, incapacity or death resulting exclusively from violent, accidental, external and visible incidents. LKIM has provided a scheme namely Natural Disaster Relief and Fishermen's Welfare Scheme, which seeks to provide support and prompt financial aid to fishermen affected by accidents, property damages and loss of life (LKIM, 2022c). If any incident happens, the victims gain financial support from this scheme to ease the burden. If the incident results from human mistake or negligence, financial support will not be granted under this program.

From a broader maritime liability perspective, Malaysia has ratified the Convention on LLMC, initially adopted in 1976 and revised under the 1996 Protocol on May 2 (IMO, 2024a). LLMC entered into force internationally on 13 May 2004, establishing a unified framework for maritime liability. Malaysia became a party to the convention on 12 November 2008, with enforcement commencing on 10 February 2009 (MMD, 2009). The convention covers several categories of maritime claims related to specific liabilities. These include personal injury and loss of life; damage to or loss of property, including harm to port infrastructure, basins, waterways and navigational aids; losses arising from delays in the

transportation of passengers, cargo or passengers' luggage by sea; damages resulting from infringements of rights other than contractual rights; and costs associated with the raising, removal, destruction or neutralization of shipwrecks and cargo (MMD, 2009).

To protect against liability costs arising from unintentional damages to people, property or the environment in respect of the limits of liability stated in LLMC 1996, P&I insurance is essential for shipowners (MMD, 2023; Standard Club, 2024). (MSO 1952) stated that no ship may enter or exit a Malaysia port or any part of Malaysian waters or the exclusive economic zone without having a valid insurance contract or other financial security that meets the LLMC 1996's liability limit requirement. In Malaysia, vessels are classified under various registries, Certificate of Registry (traditional registry), Malaysia International Ship Registry, Terminable Ship Registry and Boat License (Sg et al., 2025) and are generally required to hold P&I insurance (MMD, 2022). In the fisheries sector specifically, P&I insurance is compulsory for vessels operating in Zone C3 registered under the Certificate of Registry and for vessels carrying up to 12 passengers for recreational fishing, excluding crew (MMD, 2021).

P&I insurance is a type of insurance bought by shipowners to protect themselves against the potentially enormous expenses of any unintentional damage they may inflict on people, property or the environment (Standard Club, 2024). P&I insurance premiums are determined by factors such as vessel size, cargo type, operational region, claims history and coverage scope (Standard Club, 2024). Additional factors include hull material, engine age, running hours and operator experience. Some providers offer tailored policies with optional extended coverage, which may affect premium rates. Local firms, such as Perlindungan and Indemniti Malaysia Sdn. Bhd. (P&I Malaysia), help subsidise premiums to make coverage more affordable (P&I Malaysia, 2024a).

The Malaysia Marine Department maintains a list of recognized insurance service providers or financial security service providers authorized to issue certificates of insurance. For vessels over 300 gross tonnage (GT), this includes both International Group (IG) P&I Clubs, such as Gard P.&I. (Bermuda) Ltd. American Steamship Owners Mutual P&I Association, Inc. and The Japan Ship Owners' Mutual P&I Association, and non-IG clubs, such as Perlindungan and Indemniti Malaysia Sdn. Bhd. (P&I Malaysia), Aurora P&I and China Ship Owner Mutual Assurance Association, listed in Malaysia Shipping Notice (MSN) 01/2024 (MMD, 2024a). For vessels under 300 GT operating exclusively within the waters of Peninsular Malaysia, the waters of the Federal Territory of Labuan and/or the Malaysian Exclusive Economic Zone are allowed to purchase P&I insurance from P&I Malaysia together with collaborated companies as listed in MSN 01/2024 as well as insurance companies recognized by the Central Bank of Malaysia (MMD, 2024a, 2024b). Claims processes typically involve thorough assessments, documentation and compliance with international maritime regulations, often supported by legal and technical professionals. Table 2 below provides a comparative overview of fisheries-related insurance schemes available in Malaysia.

Table 2
Comparison of fisheries insurance in Malaysia

Aspect	SKSPS (Social Security Organisation, 2023)	P&I Insurance (P&I Malaysia, 2024b)	Fishermen Protection and Welfare Scheme (Nekmat, 2024b)	Natural Disaster Relief and Fishermen's Welfare Scheme (LKIM, 2024a)
Coverage	<ul style="list-style-type: none"> - Medical benefit - Temporary disablement benefit - Permanent disablement benefit - Constant attendance allowance - Dependants' benefit - Funeral benefit - Education benefit - Facilities for physical or vocational rehabilitation 	<ul style="list-style-type: none"> - Crew abandonment, repatriation, illness, injury and loss of life - Fixed and floating objects with the exception of ships - Oil pollution liability - Wreck removal liability - Passenger liability 	<ul style="list-style-type: none"> - Death/loss - Permanent disability - Hospital income - Medical expense - Death due to illness 	<ol style="list-style-type: none"> 1. Injury, disability, personal death, damage to houses and fishing equipment caused by natural disasters such as flood, storm/hurricane, tsunami, land collapse/ erosion and earthquake - Injury, disability, personal death, damage to houses and fishing equipment due to fire. - Injury, disability, personal death, damage to houses and fishing equipment due to accidents. - Death such as illness, old age or normal death.
Premium	RM157.20 – - RM592.80	RM890.00 (subject to vessel's characteristic)	Free for Zone A – RM15 – RM70 according to schemes	Qualifications <ul style="list-style-type: none"> - Fishermen who are registered with the Malaysian Fisheries Department or the Sabah Fisheries Department and have a fisherman's card or; - Fishermen who have an e-Diesel card and an e-Petrol card or; - Fishermen who are members of the Area Fishermen's Association

<p>Claim</p> <ul style="list-style-type: none"> - RM 30 – USD 400,000 or MYR 1,600,000 whichever is lesser (Temporary disability) (Any one accident or occurrence, combined single limit.) - Lump sum payment: RM 32,243.40 – RM 121,296.60 (Partial permanent disability) - Lump sum payment: RM 32,243.40 – RM 121,296.60 & Periodical pension: RM 756 – RM 2,844 per month (100% permanent disability) - RM 945 – RM 3,555 per month (Dependent benefit) - RM 3,000 (Funeral benefit) - RM 500 per month (Constant attendance allowance) 	<ul style="list-style-type: none"> - RM 5,000 – RM 30,000 (Death/loss) - RM 100 – RM 30,000 (Permanent disability) - RM 50 – RM 100 / week (Hospital income) - RM 500 – RM 1,000 (Medical expense) - RM 500 – RM 1,000 (Death due to illness) 	<p>Personal accident:</p> <ul style="list-style-type: none"> - Maximum RM 1,500 (Death) - Maximum RM 2,000 (Permanent Blindness) - Maximum RM 5,000 (Fixed) (Permanent Disability) - Maximum RM500 (Ward Admission) (RM50/day) 7 <p>Property damage:</p> <ul style="list-style-type: none"> - Maximum RM 10,000 (Vessel) - Maximum RM 3,000 (Nets and Other Equipment) - Maximum RM 10,000 (Houses) - Maximum Rm 1,000 (Other Home Appliances) <p>Normal Death:</p> <ul style="list-style-type: none"> - Maximum RM1,500 (Charity of Death) <p>Emergency Assistance to Victims' Families:</p> <ul style="list-style-type: none"> - Maximum RM1,000 (Missing Fishermen) (Within 7 days from the date of polis report made) - Maximum RM 1,000 (Fishermen encounter disaster including schooling and related assistance)
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RTP FOR P&I INSURANCE

Wynne et al. (2024) defined readiness as the status of being prepared and competent to participate in activities within a specific field. In this study, RTP is defined as a person's preparedness and willingness to uptake insurance (Ainoo, 2014). RTP was also defined as the monetary amount a person is prepared to spend on acquiring a product, which is affected by many factors, including earnings, perceived risk and degree of uncertainty aversion (Zheng et al. 2018). Similarly, Kalish and Nelson (1991) and Nugraheni et al. (2024) defined RTP as the maximum amount a consumer is prepared to pay for an item or service based on perceived usefulness and value.

RTP is a factor that should be evaluated to measure the effectiveness of an insurance scheme (Omotowo et al. 2016). RTP determination is becoming a more important aspect of decision-making and policy formulation, especially in the estimation of benefits, modeling of demand and planning and imposition of user tax on various services and goods (Onwujekwe & Velényi, 2011).

According to (Breidert et al. 2006) surveys, experiments and estimates based on market data were used to measure RTP of P&I insurance. They categorized the surveys into direct and indirect surveys. The direct surveys will ask the respondents to state the precise price they will pay on a given product. Indirect surveys involve scoring or ranking of different items to come up with a preference framework in which WTP could be deduced. Historical market data was also used in the study on the premise that historical demand could serve as a predictor of consumer behavior in future including being ready.

In line with earlier research, there are numerous results that shows that respondents are ready to pay insurance (Agbekpornu et al. 2014; Ainoo 2014; Nguyen et al. 2021; Zekri et al. 2008; Zheng et al. 2018). A survey of the canoe owners and the crew members in Ghana (Agbekpornu et al. 2014) found out that majority of the canoe owners (69%) and crew participants (89%) were ready to be enrolled in a group insurance program. The key factors that affected WTP to buy insurance were the family size, the number of children and fishing experience. Nguyen et al. (2021) conducted a survey of 315 shrimp growers in Ben Tre and Tra Vinh provinces in Vietnam and stated that almost all shrimp growers were prepared to pay US 0.15/kg shrimps in case of an insurance fee.

In a study conducted by Zekri et al. (2008) on 210 fishermen in Oman to investigate WTP in an insurance plan, 52 percent of the people interviewed claimed WTP meaning that there is a high demand of insurance cover in the area. In China, Zheng et al. (2018) investigated WTP in fishery insurance i.e. aquaculture insurance and discovered that about 63% of the participants were ready to buy insurance. A different study of 457 seawater shrimp farmers in China showed that risk perception, insurance awareness and premium rates had a significant impact on whether shrimp farmers took insurance or not (Han & Jiang, 2019).

Crosson (2016), fishing-related features including fishing region and level of economic involvement, instead of socio-demographic traits, affect readiness of fishermen to acquire health insurance. Parappurathu et al. (2017), the researcher was able to pinpoint a number of challenges that can undermine the development of aquaculture insurance in India as per the responses of the fish farmers. These issues are the insufficient knowledge of insurance, low perception of risk, premium costs that are overpriced, among other reasons that hinder the RTP of fish farmers when it comes to insurance on aquaculture.

In conclusion, the majority of previous research has attested good results, showing that most fishermen are ready to buy insurance as security measure to cover themselves against risks. The RTP of insurance in fisheries sector is influenced by various factors and different findings in the various studies. In this study, insurance awareness, government intervention, financial factors, risk perception and fishermen's attitudes were identified as key factors to investigate their influence on RTP for P&I insurance.

FACTORS ASSOCIATED WITH RTP FOR P&I INSURANCE

Insurance Awareness

Awareness generally refers to the state of being knowledgeable, conscious, informed and attentive to a particular issue or phenomenon. It is the condition or quality of possessing a clear understanding or recognition of something (Gafoor, 2012). Reshmi et al. (2021) define insurance awareness as the extent to which an individual possesses the knowledge, ability and confidence to discover, evaluate and utilize information regarding insurance plans, including after enrolment. Knowledge about particular terms, applicable subsidies and implementation plans of fishery insurance improves the awareness level and the level of awareness, on the other hand, increases the chances of taking an insurance plan (Han & Jiang, 2019). Poor awareness and education, on the contrary, can decrease adoption. Insurance awareness is the key to proper mitigation of risks and minimization of financial vulnerability (Chen et al. 2024), because it allows people to comprehend how insurance can cover them against the eventual financial losses of insured risks.

Some studies have found a positive and significant relationship between insurance awareness and WTP for various types of insurance. Han and Jiang (2019) found that farmers' participation in insurance was significantly influenced by their awareness, particularly among mariculture fishers. Those with a strong understanding of relevant regulations, subsidies and implementation plans were more likely to recognize the benefits of insurance in mitigating business risks, increasing their willingness to participate. Similarly, Nguyen et al. (2021) reported that shrimp grower's awareness and knowledge of insurance significantly and positively affected their decisions to purchase insurance. Brahmantyo, Riaman and Sukono (2021) also concluded that fishermen's knowledge of insurance significantly influenced their WTP, with greater awareness and understanding increasing their willingness to pay. Zheng et al. (2018) further supported this view, showing that both insurance awareness and educational background positively influenced fish growers' WTP for insurance.

In another study, Bakshi et al. (2023) highlighted that limited awareness of insurance options among fishermen significantly contributed to the low uptake of insurance within the fisheries sector. Fishermen who lacked exposure to or understanding of insurance were reluctant to purchase it, often perceiving it as a waste of money. This view is supported by Cai and Song (2017), who argued that individuals with greater understanding and trust in insurance policies are more likely to buy insurance. These findings highlight that increasing insurance awareness and education is crucial to boosting WTP for insurance. A strong understanding of policies and benefits leads to higher participation, while lack of awareness remains a major barrier. Targeted education and outreach efforts are essential to improving insurance uptake in the fisheries sector.

Government Intervention

Duan et al. (2020) defined government intervention as deliberate actions taken by the government to encourage, facilitate or enforce the implementation of specific initiatives by either the private or public sectors. These actions are often aimed at correcting market failures, promoting social welfare or achieving policy objectives. Similarly, government intervention can be broadly understood as the set of policies, regulations and measures introduced by the government to influence economic or social outcomes (Zhou et al. 2022; Zhang et al. 2023). Such interventions can take various forms, including direct financial support (such as subsidies or allowances), regulatory instruments (such as tax incentives or penalties) or administrative directives intended to shape behavior and decision-making (Li & Rao, 2023). These mechanisms are particularly important in sectors like fisheries or agriculture, where external risks and market uncertainties often necessitate public support to ensure stability, sustainability and equitable participation.

In the fisheries sector, fishermen are exposed to numerous risks at sea and purchasing insurance serves as a practical solution to mitigate these risks. Government interventions, such as subsidies, tax exemptions and financial allowances, can significantly influence fishermen's readiness and WTP for

insurance. Many fishermen have limited financial resources, as most lack the skills or opportunities to engage in alternative socioeconomic activities to supplement their fishing-based livelihoods, particularly among small-scale operators (Tikadar et al. 2022). This financial limitation makes it difficult for them to afford insurance premiums. Han and Jiang (2019) found a significant positive correlation between government subsidies and fishermen's willingness to participate in insurance schemes. They indicated that subsidies improved fishermen's ability to pay insurance. Similarly, Jiang and Faure (2020) stated that the development of fishery mutual insurance rose due to the presence of the government subsidies. Zheng et al. (2020) demonstrated that the introduction of fishery insurance subsidies significantly expanded the market share of fishery insurance. The importance of government intervention in enhancing fishermen's readiness and WTP for insurance becomes evident. The inherently risky nature of fishing activities makes insurance a valuable risk mitigation tool, yet financial constraints, especially among small-scale fishermen, often hinder their ability to afford premiums. Many fishermen rely solely on fishing for their livelihood and lack alternative income sources, which limits their financial flexibility. subsidies positively impact participation in insurance schemes and contribute to the growth of the fishery insurance market. These findings suggest that targeted financial support from the government is not only a facilitator for individual insurance uptake but also a strategic driver for the broader development of fishery insurance systems.

Financial Factor

Financial factors are widely recognized as among the primary determinants influencing the RTP for a product or service, including insurance. Consumers compare different insurance schemes by weighing premium costs against their income, savings, affordability and overall cost of living. Numerous studies have studied RTP as an insurance factor, especially health insurance and observed a steady positive correlation between the income levels and insurance WTP (David et al. 2007; Nosratnejad et al. 2016; Shafie and Hassali 2013; Lofgren et al. 2008). In the systematic review study conducted by Nosratnejad et al. (2016) regarding WTP for health insurance in low- and middle-income countries, it is found that higher household income was associated with an increased WTP for insurance. They postulated that higher income would allow households to spend on additional health coverage, thus improving insurance demand. Similarly, Netusil et al. (2021) proved that the increase in WTP with rising income reflected both the respondent's capacity to pay and the marginal utility of income, meaning that higher income levels increase the ability and likelihood to pay for insurance.

It was also determined that there was a positive correlation between WTP to insurance and household wealth, which is quantified by the ownership of different assets (Shimamura et al. 2018). It was, however, observed that the RTP of insurance among the farmers with greater income, who adopted alternative risk management practices like savings, was lower (Ellis, 2016). This was because savings provided a self-insurance mode, limiting the use of formal insurance products. These results were aligned to the results of Ramasubramanian (2012) who also discovered that the higher the savings, the less the chances of farmers to buy insurance. These findings show that income and wealth have a positive impact on the willingness or readiness of people to pay for insurance, mainly by enhancing their financial capacity. The existence of alternative coping mechanisms (like savings) might lead to reduction of insurance necessity, especially among individuals with higher income. The lifestyles of consumers in terms of financial behavior and coping methods are very important in creating effective insurance products and outreach strategies.

A number of studies have investigated financial determinants that have impacts on the WTP of fishermen for insurance in the fishing sector. In this regard, Zheng et al. (2018) examined the influential factors in aquaculture insurance among fish farmers. They found that higher income reduces the willingness to participate. This was attributed to the fact that higher income often correlates with better credit scores, allowing fishermen greater access to financial resources for risk diversification and loss compensation. Likewise, Nguyen et al. (2021) also noted that fishermen income had an adverse influence on their choice of paying a premium on prawn insurance. This argument was endorsed by Ainoo (2014) who argued that increased income avails other financial security or serves as a risk management tool to provide a person with less perceived need to insurance. Contrarily,

Han and Jiang (2019) found a positive correlation between total household income and participation in fishery insurance, which suggests that increased income can also lead to increased insurance uptake in certain situations. Maltby et al. (2022), financial issues, such as affordability, is one of the crucial factors influencing the use of index insurance within the fishing industry. Agbekpornu et al. (2014) found that asset ownership, viz. cars, influenced their WTP for insurance.

It can be implied that the income-WTP correlation for insurance in the fishing industry is complicated and context-specific. Though the increased income will raise the ability to pay, it may also decrease the necessity to insure in case people have alternative financial means or risk management. Ownership of assets and affordability are also factors that are critical to the determination of insurance participation. These results demonstrate that better understanding of broader financial context and coping strategies of fishermen is essential for developing insurance products that can more satisfy the demands and behaviors of this particular group.

Risk Perception

Risk is defined as the product of probability and consequence (Ayeko, 2024; Windle et al. 2007). It is influenced by how individuals perceive and assess potential hazards that may pose direct or long-term threats to their well-being and health (Reis, 2011). People make decisions on whether to accept or reduce the likelihood of present or perceived risks and implement measures to mitigate the consequences of unavoidable hazards (Jain & Singh, 2003). This aligns with the explanation by Xu, Wang and Cao (2024), who described risk perception as a person's subjective feelings and awareness of the likelihood, extent and potential impact of a risk, which influence their decision to take appropriate actions to mitigate or avoid it. From the fishermen's perspective, they evaluate the potential consequences of job-related injuries and consider the trade-offs between expected benefits and personal expenses, both with and without health insurance coverage (Crosson, 2016).

The relationship between risk perception and the purchase of insurance has been explored in several studies. Nguyen et al. (2021) considered risk management while examining the behaviour of shrimp farmers in purchasing agricultural insurance. The study examined farmers' initiatives such as investing in sanitation measures, submitting dead or sick shrimp to laboratories, maintaining chemical usage records, designating a place for sludge disposal and providing information on shrimp stocking rates, collectively viewed as risk management behaviors. It was found that the acceptable premium rate among farmers was positively influenced by these proactive strategies, particularly sanitation efforts and sludge management. Similarly, (Crosson, 2016) found that the perceived risks and consequences of injuries incurred during fishing significantly influenced commercial fishermen's decisions to purchase health insurance. The study analyzed behavior-based variables such as gear type and fishing location, revealing that those who fished with a reel and rod were more likely to purchase insurance compared to users of shrimp trawls, gill nets or crab pots.

Oceanic fishing also played a major role in influencing the likelihood of purchasing insurance. This has indicated that increased perceived risks are the main reason why fishermen buy insurance to help them reduce the impact of potential consequences. Xu, Wang and Cao (2024) observed that the attitude towards risk positively influenced the willingness of fishery producers in the Yangtze River Delta area to purchase aquaculture insurance. The greater the perceived vulnerability of these producers in their businesses, especially in terms of loss of income during adverse events, the higher the chances of them engaging in insurance schemes.

It can be understood that risk perception has an important role in influencing the decision to purchase insurance among individuals involved in fisheries and aquaculture. Individuals who perceive higher risks in their operations, whether due to occupational hazards, environmental threats or economic vulnerability, tend to be more willing to invest in insurance to mitigate potential losses. Proactive risk management behaviours, such as implementing sanitation measures, maintaining proper waste management and documenting operational practices, are positively associated with a greater acceptance of insurance premiums. The type of fishing gear used and the fishing environment also shape

perceptions of risk, with more hazardous practices or locations prompting higher insurance uptake. When individuals perceive their livelihoods as especially vulnerable to disruptions or income loss, they are more inclined to view insurance as a necessary protective measure.

Fisherman's Attitude

Attitude generally refers to how a person views and judges something or someone, indicating a tendency to react either positively or negatively towards a situation, person or item. In the case of fishermen, it is deemed to assist in the decision-making process in their fishing operations (Vargas-Sánchez et al. 2016). Safety measures and precautions are closely linked to fishermen's attitudes, including practices such as heeding weather forecasts, fishing in groups, wearing life jackets and handling dangerous equipment responsibly (Agbekpomu et al. 2014; Ainoo, 2014). Attitude is among the factors measured by previous studies across different domains using different indicators such as listening to weather forecasts, wearing a life jacket or lifebelt, informing family members before departing for fishing and sailing in groups (Zekri et al. 2008).

Among these indicators, listening to weather forecasts reflected fishermen's mindfulness and caution regarding the impact of changing weather conditions on their fishing operations and safety (Agbekpomu et al. 2014). This factor, thus, found to significantly influence the fishermen's decision to pay for insurance. In contrast, carrying a life jacket or lifebelt was associated with a sense of personal security, leading fishermen to perceive insurance as unnecessary, rendering this factor statistically insignificant. Fishermen who had prior experience working in other sectors (referred to as "labours who used to go out to work") demonstrated a higher readiness to participate in insurance schemes (Han & Jiang, 2019). These individuals were more aware of the occupational risks, often influenced by family and friends to consider insurance as a protective measure. The role of factors including education level and insurance awareness have examined in another research. Zheng et al. (2018) found that both factors have positive impact on WTP for insurance. Another factor found to positively influence fishermen's insurance decisions is the number of fishing trips (Suharno et al. 2022), as frequent exposure to operational risks likely heightens the perceived value of insurance coverage.

CONCLUSION

The comparison of the various types of insurance performed in Malaysia reveals a systematic solution to the maritime risk exposures that involve cargo, ship size as well as area of operations. In this respect, the WRC 2007 that addresses ships with 300 GT and more, with insurance that covers the liability that is concerned with the wrecks in Malaysian waters. CLC 1992, which is connected with oil tankers that transport more than 2,000 t of persistent oil, needing the insurance of the damage caused by oil pollution. Similarly, with ships exceeding 1,000 GT, BCC 2001 scheme requires its owners to cover pollution losses due to a bunker oil spill. MLC 2006 also requires the owners of vessels of over 500 GT to provide the coverage of the welfare of the crews during international voyages, a requisite that also encompasses the issue of repatriation in addition to work associated injury or death. Lastly, the LLMC 1996 is an expansion in liability cover, which includes death, injury, property damage, environmental risks and cargo related matters which applies to all ships navigating the Malaysian waters. Analysis of fisheries insurance plans in Malaysia demonstrates a dynamic range of insurance cover, eligibility and coverage benefits such that the specific sub-sectors in the fishing society can be served. The SKSPS scheme of the Social Security Organisation provides the most comprehensive coverage of personal welfare which covers medical, disablement, dependants benefit and rehabilitation support with the structured compensation and premium rates. Crew welfare, wreck and pollution liability are provided in large amounts and premiums are different depending on the nature of the vessel by P&I Insurance which is traditionally aimed at commercial maritime activities. The scheme offered by NEKMAT covers death, illness, disability and medical bills ensuring that the registered fishermen pay no or a low-rate premium and receive moderate financial compensation. In the meantime, the LKIM scheme focuses on the claims that are specific to natural disasters, damages and personal mishaps and it serves more the socio-environmental risks that the coastal fishermen have to deal with. These plans demonstrate the disjointed yet complementary insurance situation in Malaysia, where each of them covers certain dimensions of

risk. One or a concerted effort might be required to afford wider protection by all fishermen. The willingness of Malaysian fishermen to purchase P&I insurance depends on 5 main aspects, which are awareness, governmental support, financial capability, risk perception and individual attitudes. Knowledge is one of the pillars; when people have knowledge and confidence about insurance, they are more likely to embrace it but when their awareness is low, it is a barrier to adoption. The government intervention, particularly in the form of subsidies, is always beneficial in enhancing RTP by dampening the prices of premiums, but in this case, excessive dependence on post-disaster aid can lead to a decrease in this intention. There are both adverse and beneficial effects of financial capability, particularly income and assets on RTP. In this respect, increased income could bring more affordability, but it can also make people less dependent on insurance, since more wealthy people usually resort to other risk management tools. The perception of risk is vital; the higher the perception of the fishermen about their activities being high-risk, the more they are likely to invest in insurance so that in case of any losses, the damage can be less. The findings from the reviewed literature indicate that fishermen's readiness to pay for P&I insurance is influenced by insurance awareness, government intervention, financial capability, risk perception, and individual attitudes. Finally, safety behaviour-influenced attitudes, work experience and social influence are also contributory factors to RTP and positive attitudes of regular weather-checking and increased frequency of fishing are linked to increased insurance enrolment. This review provides insights into the existing insurance landscape and highlight key factors that may influence fishermen's insurance decisions, offering useful implications for policymakers and industry stakeholders. This study is limited by its reliance on secondary data and existing literature. Future research may employ empirical and quantitative approaches to assess fishermen's willingness to pay for P&I insurance and to evaluate the effectiveness of policy interventions in improving insurance uptake.

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REFERENCES

- Agbekpornu, H., Yeboah, D., Quatey, S., Williams, R., Yeboah, R., & Issah, F. (2014). Willingness to participate in life insurance scheme by artisanal fishers in Ghana. *IIFET 2014 Australia Conference Proceedings*, 1–12.
- Ahmad, A. T., Salim, K., Ean, C. P., Maung, B., & Pinang, P. (2003). An overview of the socioeconomic status of fisheries in Malaysia. *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries. WorldFish Center Conference Proceedings 67, 15 611, 517–542.*
- Ainoo, F. (2014). *Fishermen's willingness to pay for insurance in the western region of Ghana.* University of Cape Coast.
- Allianz. (2024). *Fisherman's group personal accident.* Allianz Malaysia Berhad. <https://www.allianz.com.my/corporate/group-protection-and-personal-accident/group-personal-accident/fishermans-group-personal-accident.html#productinfo>
- AGC. (2006). *Act 317 fisheries act 1985.* Department of Fisheries Malaysia. <https://www.dof.gov.my/perkhidmatan/penguatkuasaan-perundangan/akta-peraturan/>
- Awani International. (2020). Over 40,000 fishermen can now enjoy Socso benefits. *Awani International.*
- Ayeko, M. (2024). Causes & contributing factors - analysis of accidents involving fishing vessels in Canada. In J. M. Lincoln, D. S. Hudson, G. A. Conway, & R. Pescatore (Eds.), *Proceedings of the Sixth International Fishing Industry Safety And Health Conference (IFISH 6)* (pp. 197–210). DHHS (NIOSH) Publication. <https://doi.org/10.4060/cd0972en>

- Bakshi, K., Jasrotia, A., Sharma, N., & Tomer, A. (2023). Marine fisheries insurance in India: issues, challenges and future strategies. *Journal of Harbin Engineering*, 44(July), 228–239.
- BCC. (2001). International convention on civil liability for bunker oil pollution damage, 2001. In *The National Archives*.
- Bernama. (2022). *Area fishermen's association told to increase membership*. Bernama. <https://www.bernama.com/en/news.php?id=2097941>
- Bernama. (2024). *Second-day sar op for kemaman boat collision victims postponed*. Bernama.Com. <https://www.bernama.com/en/news.php?id=2328405>
- Brahmantyo, Y.-, Riaman, R., & Sukono, F. (2021). Willingness to pay of fishermen insurance using logistic regression with parameter estimated by maximum likelihood estimation based on Newton Raphson iteration. *Jurnal Matematika Integratif*, 17(1), 15. <https://doi.org/10.24198/jmi.v17.n1.32037.15-21>
- Breidert, C., Hahsler, M., & Reutterer, T. (2006). A review of methods for measuring willingness-to-pay. *Innovative Marketing*, 2(4), 8–26.
- Cai, J., & Song, C. (2017). Do disaster experience and knowledge affect insurance take-up decisions? *Journal of Development Economics*, 124(February 2016), 83–94. <https://doi.org/10.1016/j.jdeveco.2016.08.007>
- Chen, C., Tan, Z., & Liu, S. (2024). How does financial literacy affect households' financial fragility? The role of insurance awareness. *International Review of Economics and Finance*, 95(August), 103518. <https://doi.org/10.1016/j.iref.2024.103518>
- Chuah, L., Kafi, A. Ooi, J.W., Leong, Y.H., Pua, Y.L., Osman, N.H., Marul, M., Mokhtar, K., Jaeh, A.M., Ibrahim, I. (2025). Factors affecting fishermen's readiness to pay for protection and indemnity insurance in Kuala Kedah, Malaysia. *Chemical Engineering Transactions*, 120, 217-222. <https://doi.org.10.3303/CET25120037>
- CLC. (1969). *1969 International convention on civil liability for oil*. November.
- Crosson, S. (2016). The affordable care act and opportunities for change in north carolina's commercial fisheries. *Marine Resource Economics*, 31(2), 121–129. <https://doi.org/10.2307/44011779>
- David Mark, D., Radermacher, R., & Koren, R. (2007). Willingness to pay for health insurance among rural and poor persons: Field evidence from seven micro health insurance units in India. *Health Policy*, 82(1), 12–27. <https://doi.org/10.1016/j.healthpol.2006.07.011>
- DSM. (2023). *Gross Domestic Product (GDP) by state*. Ministry of Economy. <https://www.dosm.gov.my/portal-main/release-content/gross-domestic-product-gdp-by-state->
- DOF. (2023). *Legal office*. Department of Fisheries Malaysia. <https://www.dof.gov.my/en/corporate-info/divisions-units/legal-office/>
- DOF. (2024a). *Fisheries industry scenario*. Department of Fisheries Malaysia. <https://www.dof.gov.my/en/corporate-info/introduction/fisheries-industry-scenario/>
- DOF. (2024b). *Elaun nelayan perikanan darat*. Department of Fisheries Malaysia. <https://www.dof.gov.my/perkhidmatan/perikanan-tangkapan/elaun-nelayan-perikanan-darat/#:~:text=Kadar bayaran elaun sara hidup,nelayan darat tulen yang layak.>
- DOF. (2024c). *Vision, mission & role*. Department of Fisheries Malaysia. <https://www.dof.gov.my/en/corporate-info/introduction/vision-mission-role/#:~:text=Department of Fisheries Malaysia is,scientific knowledge and professional governance.>
- Drudi, D. (1998). Fishing for a living is dangerous work. In *Compensation and Working Conditions*.

- Duan, T., Jiang, H., Deng, X., Zhang, Q., & Wang, F. (2020). Government intervention, risk perception, and the adoption of protective action recommendations: Evidence from the COVID-19 prevention and control experience of China. *International Journal of Environmental Research and Public Health*, 17(10). <https://doi.org/10.3390/ijerph17103387>
- Ellis, E. (2016). Farmers willingness to pay for crop insurance: evidence from eastern by a thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Master of Science in Agricultural Economics. *Department of Agricultural Economics, McGill University*.
- FAO. (2019). Guidelines for increasing access of small-scale fisheries to insurance services in Asia. A handbook for insurance and fisheries stakeholders. In *Food and Agriculture Organization of the United Nations*.
- FAO. (2024a). *Capture fisheries production*. Food and Agriculture Organization (FAO) of the United Nations. [https://openknowledge.fao.org/server/api/core/bitstreams/66538eba-9c85-4504-8438-c1cf0a0a3903/content/sofia/2024/capture-fisheries-production.html#:~:text=In 2022%2C global capture fisheries,%2C pearls%2C shells and sponges](https://openknowledge.fao.org/server/api/core/bitstreams/66538eba-9c85-4504-8438-c1cf0a0a3903/content/sofia/2024/capture-fisheries-production.html#:~:text=In%202022%2C%20global%20capture%20fisheries,%20pearls%20shells%20and%20sponges).
- FAO. (2024b). *The state of world fisheries and aquaculture 2024: Blue transformation in action*.
- FAO. (2024c). *Fishing fleet*. Food and Agriculture Organization (FAO) of the United Nations. [https://openknowledge.fao.org/server/api/core/bitstreams/66538eba-9c85-4504-8438-c1cf0a0a3903/content/sofia/2024/fishing-fleet.html#:~:text=In light of these revisions,5.3 million reported in 2019](https://openknowledge.fao.org/server/api/core/bitstreams/66538eba-9c85-4504-8438-c1cf0a0a3903/content/sofia/2024/fishing-fleet.html#:~:text=In%20light%20of%20these%20revisions,5.3%20million%20reported%20in%202019).
- Finegold, C. (2009). The importance of fisheries and aquaculture to development. In P. Wramner, M. Cullberg, & H. Ackefors (Eds.), *FISHERIES, SUSTAINABILITY AND DEVELOPMENT* (Vol. 9, Issue 3, p. 131). The Royal Swedish Academy of Agriculture and Forestry. [https://doi.org/10.1016/0140-7007\(86\)90060-5](https://doi.org/10.1016/0140-7007(86)90060-5)
- Firman, S., Riaman, Herawati, T., Saputra, J., & Hasbullah, E. S. (2021). Determinant factors of fishermen income and decision-making for providing welfare insurance: an application of multinomial logistic regression. *Decision Science Letters*, 10(2), 175–184. <https://doi.org/10.5267/j.dsl.2020.11.002>
- Gafoor, A. (2012). Considerations in measurement of awareness. *National Seminar on Emerging Trends in Educations, November*, 1–6. <https://doi.org/10.13140/2.1.2109.2643>
- Grybenyuk, A. (2023). *Deadly work: The dangers of fishing and how to make it safer*. Heritage & Education Centre. [https://hec.lrfoundation.org.uk/whats-on/stories/deadly-work-the-dangers-of-fishing-and-how-to-make-it-safer#:~:text=Statistics from the UK show,dangerous jobs in the world](https://hec.lrfoundation.org.uk/whats-on/stories/deadly-work-the-dangers-of-fishing-and-how-to-make-it-safer#:~:text=Statistics%20from%20the%20UK%20show,dangerous%20jobs%20in%20the%20world).
- Han, H., & Jiang, Y. (2019). Systemic risks of climate events and households' participation in mariculture mutual insurance: A case study of shrimp producers in Zhejiang Province. *Sustainability (Switzerland)*, 11(4). <https://doi.org/10.3390/su11041164>
- Horn, P. (2022). *More than 100,000 people die annually across global fishing sector*. The Pew Charitable Trusts. <https://www.pewtrusts.org/en/about/news-room/press-releases-and-statements/2022/11/03/more-than-100000-people-die-annually-across-global-fishing-sector-new-research-shows>
- H&I insurance. (2024). LexisNexis. <https://www.lexisnexis.co.uk/legal/guidance/hull-machinery-insurance>
- Idris, K., Muhammad, M., Samah, A. A., Suandi, T., & Shaffril, H. A. M. (2018). Has the environment changed – what can be done to help the fishermen community? The views of the small scale fishermen in Malaysia. *Journal of Social Scinces & Humanities*, 26.

- ILO. (1996). Accident prevention on board ship at sea and in port. In *ILO Code of Practice* (2nd ed.). International Labour Organization.
- ILO. (1999). *Fishing among the most dangerous of all professions*. International Labour Organization. <https://www.ilo.org/resource/news/fishing-among-most-dangerous-all-professions-says-ilo>
- IMO. (2024a). *Status of IMO treaties*. International Maritime Organization. <https://www.marine.gov.my/jlm/wp-content/uploads/2024/10/Status-2024-LLMC.pdf>
- IMO. (2024b). *Fishing vessel safety*. International Maritime Organization. https://www.imo.org/en/OurWork/Safety/Pages/Fishing_Vessels-Default.aspx
- ITF. (2024). *Fishing convention 188*. International Transport Workers' Federation (ITF). <https://www.itfglobal.org/en/sector/fisheries/ilo-work-in-fishing-convention-188>
- Jain, S. K., & Singh, V. P. (2003). Rational decision making. In *Developments in Water Science* (Vol. 51, Issue C, pp. 459–502). [https://doi.org/10.1016/S0167-5648\(03\)80062-X](https://doi.org/10.1016/S0167-5648(03)80062-X)
- Jiang, M., & Faure, M. (2020). Risk-sharing in the context of fishery mutual insurance: Learning from China. *Marine Policy*, 121(9), 104191. <https://doi.org/10.1016/j.marpol.2020.104191>
- Kalish, S., & Nelson, P. (1991). A comparison of ranking, rating and reservation price measurement in conjoint analysis. *Marketing Letters*, 2(4), 327–335. <https://doi.org/10.1007/BF00664219>
- Kathleen Magramo. (2023). *Philippines says three fishermen killed after boat collides with 'foreign' vessel in South China Sea*. CNN. <https://edition.cnn.com/2023/10/03/asia/philippines-south-china-sea-scarborough-shoal-fishermen-dead-intl-hnk/index.html>
- Kim, S.-H., Lee, S.-H., Ryu, K.-J., & Lee, Y.-W. (2024). Analysis of accidents of fishing vessels caused by human elements in Korean sea area. *Journal of Marine Science and Engineering*, 12(9), 1564. <https://doi.org/10.3390/jmse12091564>
- Law of Malaysia. (2011). *Akta persatuan nelayan 1971*. Percetakan Nasional Malaysia Berhad. <https://www.lkim.gov.my/wp-content/uploads/2019/04/Akta-44-Akta-Persatuan-Nelayan-1971-pindaan-2011.pdf>
- Lim, A. G. (2023). *FAO regional workshop on understanding fisheries support measure in the asian context*. Infofish. <https://v4.infofish.org/index.php/fao-regional-workshop-on-understanding-fisheries-support-measures-in-the-asian-context>
- LKIM. (2020). *User guideline for insuance Malaysian fisheries development board fishermen's subsistence allowance programme 2020*. Malaysian Fisheries Development Authority.
- LKIM. (2022a). *Vision, mission, objective and function*. Fisheries Development Authority of Malaysia. <https://www.lkim.gov.my/en/vision-mission-objectives/#:~:text=LKIM Functions&text=Establish and supervise credit facilities,these facilities are fully utilized.>
- LKIM. (2022b). *Self-employed social security scheme (SKSPS)*. Malaysian Fisheries Development Authority. <https://www.lkim.gov.my/en/the-self-employed-social-security-scheme-sksp/>
- LKIM. (2022c). *Natural disaster relief and fishermen's welfare scheme*. Fisheries Development Authority of Malaysia. <https://www.lkim.gov.my/en/natural-disaster-relief-and-fishermens-welfare-scheme-2/>
- LKIM. (2023). *Fishermen's diesel and petrol scheme*. Malaysian Fisheries Development Authority. <https://www.lkim.gov.my/skim-subsidi-diesel-dan-petrol-nelayan/>
- LKIM. (2024a). *Natural disaster relief and fishermen's welfare scheme*. Malaysian Fisheries Development Authority. <https://www.lkim.gov.my/en/natural-disaster-relief-and-fishermens-welfare-scheme-2/>

- LKIM. (2024b). *Akta 49*. Fisheries Development Authority of Malaysia. <https://www.lkim.gov.my/akta-49/>
- LKIM. (2024c). *Perutusan pendaftar pn*. Fisheries Development Authority of Malaysia. <https://www.lkim.gov.my/perutusan-pendaftar-2/>
- LKIM. (2024d). *LKIM hq organization chart*. Fisheries Development Authority of Malaysia. <https://www.lkim.gov.my/en/carta-organisasi/>
- LKIM. (2024e). *Persatuan nelayan kawasan (PNK)*. Lembaga Kemajuan Ikan Malaysia. <https://www.lkim.gov.my/persatuan-nelayan-kawasan/>
- LKIM. (2024f). *LKIM fisheries complex / port*. Lembaga Kemajuan Ikan Malaysia. <https://www.lkim.gov.my/en/lkim-fisheries-complex-or-port/>
- LKIM. (2024g). *Fish landing jetty*. Lembaga Kemajuan Ikan Malaysia. <https://www.lkim.gov.my/en/fish-landing-jetty/>
- Lofgren, C., Thanh, N. X., Chuc, N. T. K., Emmelin, A., & Lindholm, L. (2008). People's willingness to pay for health insurance in rural Vietnam. *Cost Effectiveness and Resource Allocation*, 6, 1–16. <https://doi.org/10.1186/1478-7547-6-16>
- MAFS. (2024). *Organization chart*. Ministry of Agriculture and Food Security. <https://www.kpkm.gov.my/en/corporate/organisation-chart>
- Maltby, K. M., Acosta, L., Townhill, B., Touza, J., White, P., & Mangi, S. C. (2022). Exploring fishers' perceptions of index insurance and coral reef health in the context of climate-driven changes in extreme events. *ICES Journal of Marine Science*, 80(8), 2210–2221. <https://doi.org/10.1093/icesjms/fsac003>
- MAMPU. (2020). *Fisherman registration card application vessel and equipment license renewal fishing*. Malaysian Administrative Modernisation and Management Planning Unit.
- Merchant Shipping (Oil Pollution) Act. (1994). *Merchant shipping (oil pollution) act 1994*.
- MMD. (2009). *Malaysian Shipping Notice 1/2009*. Malaysia Marine Department. <https://www.marine.gov.my/jlm/wp-content/uploads/2024/10/200901-MSN-012009.pdf>
- MMD. (2016). *Malaysian Shipping Notice 09/2016*. Malaysia Marine Department.
- MMD. (2019). *Malaysian Shipping Notice04/2019*. Malaysia Marine Department. <https://www.marine.gov.my/jlm/wp-content/uploads/2023/03/e7c62-msn042019.pdf>
- MMD. (2021). User guideline for the issuance local fishing vessel authorization letter to carry passenger for recreational fishing activities. In *Malaysia Marine Department* (pp. 1–8).
- MMD. (2022). *User guidelines for Malaysian ship registration and Malaysian international ship registration (traditional/ Egyptian)*. Malaysia Marine Department.
- MMD. (2023). *List of recognised insurance companies for issuance of blue card and/or certificate of insurance (coi)*. Malaysia Marine Department. https://www.marine.gov.my/jlm/admin/assets/uploads/images/contents/20230321050150-c6dd9-msn042023-annex_1-2.pdf
- MMD. (2024a). *Malaysia Shipping Notice 01/2024*. Malaysia Marine Department. <https://www.marine.gov.my/jlm/wp-content/uploads/2024/01/MSN012024.pdf>
- MMD. (2024b). *Senarai syarikat yang dibenarkan menyediakan perkhidmatan insuran untuk bot/kapal dibawah 300GT*. Malaysia Marine Department. <https://www.marine.gov.my/jlm/wp-content/uploads/2024/05/20240523-Senarai-Syarikat-Insuran-Bagi-Bot-Di-Bawah-300GT.pdf>

- MMEA. (2022). *Laporan Tahunan 2022*.
- Mohamed Shaffril, H. A., Hamzah, A., D'Silva, J. L., Abu Samah, B., & Abu Samah, A. (2017). Individual adaptive capacity of small-scale fishermen living in vulnerable areas towards the climate change in Malaysia. *Climate and Development*, 9(4), 313–324. <https://doi.org/10.1080/17565529.2016.1145100>
- MSO. (1952). *Merchant Shipping Ordinance 1952*.
- Nekmat. (2024a). *Latar belakang & tafsiran logo Nekmat*. National Fishermen's Association. <https://www.nekmat.com.my/nekmatweb/tafsiranlogo.html>
- Nekmat. (2024b). *Fishermen protection and welfare scheme*. National Fishermen's Association (NEKMAT). <https://www.nekmat.com.my/nekmatweb/skimperlindungan.html>
- Netusil, N. R., Kousky, C., Neupane, S., Daniel, W., & Kunreuther, H. (2021). The willingness to pay for flood insurance. *Land Economics*, 97(1), 17–38. <https://doi.org/10.3368/WPLE.97.1.110819-0160R1>
- Nguyen, K. A. T., Nguyen, T. A. T., Bui, C. T. P. N., Jolly, C., & Nguelifack, B. M. (2021). Shrimp farmers risk management and demand for insurance in Ben Tre and Tra Vinh Provinces in Vietnam. *Aquaculture Reports*, 19(January). <https://doi.org/10.1016/j.aqrep.2021.100606>
- Nosratnejad, S., Rashidian, A., & Dror, D. M. (2016). Systematic review of willingness to pay for health insurance in low and middle income countries. *PLoS ONE*, 11(6), 1–14. <https://doi.org/10.1371/journal.pone.0157470>
- Nugraheni, D. A., Satibi, Kristina, S. A., & Puspandari, D. A. (2024). Development of willingness-to-pay questionnaire on health insurance cost-sharing for catastrophic prescription drugs: a content validity and reliability assessment. *Indonesian Journal of Pharmacy*, 35(1), 171–184. <https://doi.org/10.22146/ijp.7173>
- Omotowo, I. B., Ezeoke, U. E., Obi, I. E., Uzochukwu, B. S. C., Agunwa, C. C., Eke, C. B., Idoko, C. A., & Umeobieri, A. K. (2016). Household perceptions, willingness to pay, benefit package preferences, health system readiness for national health insurance scheme in southern Nigeria. *Health*, 08(14), 1630–1644. <https://doi.org/10.4236/health.2016.814159>
- Onwujekwe, O., & Velényi, V. (2011). Willingness to pay for private voluntary health insurance in southeast Nigeria. *African Journal of Health Economics*, 1(1), 1–15.
- Parappurathu, S., Ramachandran, C., Gopalakrishnan, A., Kumar, D., Poddar, M. K., Choudhury, M., Geetha, R., Koya, K. M., Kumar, R. N., Salini, K. P., & Sunil, P. V. (2017). What ails fisheries insurance in India? An assessment of issues, challenges and future potential. *Marine Policy*, 86(September), 144–155. <https://doi.org/10.1016/j.marpol.2017.09.023>
- P&I Malaysia. (2024a). *Certificate of insurance: Policy PLSCH101_24010196*.
- P&I Malaysia. (2024b). *Protection and indemnity insurance (P&I)*. PERLINDUNGAN DAN INDEMNITI MALAYSIA. <https://pnimalaysia.my/protection-and-indemnity-insurance/>
- PIAM. (2021). *Marine insurance*. Persatuan Insurans Am Malaysia. <https://piam.org.my/marine-insurance/>
- Ramasubramanian, J. A. (2012). Willingness to pay for index based crop microinsurance in India. *NEUDC, Dartmouth College, USA*.
- Reis, M. F. (2011). Solid waste incinerators: health impacts. In *Encyclopedia of Environmental Health* (pp. 162–217). Elsevier. <https://doi.org/10.1016/B978-0-444-52272-6.00489-X>

- Reshmi, B., Unnikrishnan, B., Parsekar, S. S., Rajwar, E., Vijayamma, R., & Venkatesh, B. T. (2021). Health insurance awareness and its uptake in India: A systematic review protocol. *BMJ Open*, *11*(4), 1–8. <https://doi.org/10.1136/bmjopen-2020-043122>
- Sanusi, N. A., Ghazali, N. A., Alipiah, R. M., Koris, R., & Zakariya, R. (2024). Survey dataset on socioeconomic status and artificial reef fishing activity on Terengganu coastal water. *Data in Brief*, *52*. <https://doi.org/10.1016/j.dib.2024.110028>
- SEAFDEC. (2022). *Fisheries country profile: Malaysia*. Southeast Asian Fisheries Development Center. <http://www.seafdec.org/fisheries-country-profile-malaysia/>
- Sg, F., Mokhtar, K., Chuah, L., Mr Muhamaruesa, N.H., Brahim, M.M., Mobilik, J.M., Saidi. (2025). Assessing Malaysian ship registration and seafarer recruitment for sustainable maritime sector growth. *Chemical Engineering Transactions*, *120*, 235-240. Doi.org. 10.3303/CET25120040
- Shaffril, H. A. M., Samah, B. A., Uli, J., & D'Silva, J. L. D. S. (2011). The potential impact of climate change environmental hazards on quality of life of fishermen community in Malaysia. *Australian Journal of Basic and Applied Sciences*, *5*(7), 507–515.
- Shafie, A. A., & Hassali, M. A. (2013). Willingness to pay for voluntary community-based health insurance: Findings from an exploratory study in the state of Penang, Malaysia. *Social Science and Medicine*, *96*, 272–276. <https://doi.org/10.1016/j.socscimed.2013.02.045>
- Shimamura, Y., Matsushima, M., Yamada, H., & Nguyen, M. T. (2018). Willingness-to-pay for family-based health insurance: findings from household and health facility surveys in central Vietnam. *Global Journal of Health Science*, *10*(7), 24. <https://doi.org/10.5539/gjhs.v10n7p24>
- Social Security Organisation. (2023). *Self-employment social security scheme*.
- Spence, M., & Zeckhauser, R. (1978). Insurance, information, and individual action. In *Uncertainty in Economics* (Vol. 61, Issue 1971). ACADEMIC PRESS, INC. <https://doi.org/10.1016/b978-0-12-214850-7.50027-9>
- Standard Club. (2024). *What is P&I?* <https://www.standard-club.com/about/what-is-pi/>
- Suharno, Arifin, A., & Yunanto, A. (2022). Do fishers need enough insurance to guarantee their business continuity? Evidence from vulnerable small-scale fishers. *Journal of Environmental Management and Tourism*, *13*(1), 107–114. [https://doi.org/10.14505/jemt.v13.1\(57\).09](https://doi.org/10.14505/jemt.v13.1(57).09)
- The Star. (2023). Protection for self-employed and gig workers. *The Star*.
- The Sun. (2024). *Body of fishermen who fell into sea off batu laut waters found*. Sun Media Corporation Sdn. Bhd. <https://thesun.my/malaysia-news/body-of-fisherman-who-fell-into-sea-off-batu-laut-waters-found-KK13083797>
- Thoyts, R. (2010). Insurance theory and practice. In *Insurance Theory and Practice*. <https://doi.org/10.4324/9780203850596>
- Tikadar, K. K., Islam, M. J., Saha, S. M., Alam, M. M., Barman, S. K., & Rahman, M. A. (2022). Livelihood status of small-scale fishermen and determinants of their income: Insights from north-eastern floodplains of Bangladesh. *Geography and Sustainability*, *3*(3), 204–213. <https://doi.org/10.1016/j.geosus.2022.06.002>
- Vargas-Sánchez, A., Plaza-Mejía, M. Á., & Porrás-Bueno, N. (2016). Attitude. In J. Jafari & H. Xiao (Eds.), *Encyclopedia of Tourism* (pp. 58–62). Springer, Cham. https://doi.org/https://doi.org/10.1007/978-3-319-01384-8_11
- Willis, S., & Holliday, E. (2022). *Triggering Death: Quantifying the true human cost of global fishing* (Issue November).

- Windle, M. J. S., Neis, B., Bornstein, S., Binkley, M., & Navarro, P. (2007). Fishing occupational health and safety: A comparison of regulatory regimes and safety outcomes in six countries. *Marine Policy*, 32(4), 701–710. <https://doi.org/10.1016/j.marpol.2007.12.003>
- WRC. (2007). Nairobi international convention on the removal of wrecks, 2007. In *Ocean Yearbook Online* (Vol. 22). TSO (The Stationery Office). <https://doi.org/10.1163/221160008x00271>
- Wynne, K., Mwangi, F., Onifade, O., Abimbola, O., Jones, F., Burrows, J., Lynagh, M., Majeed, T., Sharma, D., Bembridge, E., Stubbs, M., Sunner, C., Bergmann, J., Bagade, T., & Malau-Aduli, B. S. (2024). Readiness for professional practice among health professions education graduates: a systematic review. *Frontiers in Medicine*, 11(November), 1–16. <https://doi.org/10.3389/fmed.2024.1472834>
- Xu, S., Wang, J., & Cao, N. (2024). Study on the influencing factors of fishery producers' willingness to participate in aquaculture insurance-based on the perspective of subjective norms and risk perception. *Aquaculture and Fisheries*, October 2023. <https://doi.org/10.1016/j.aaf.2024.04.002>
- Zainudin, L. M., Zein, A., Idris, M. H., & Luqman, W. (2019). Socio-economic profile comparison of fishermen community in Kuala Marang and Seberang Takir, Terengganu, Malaysia. *Journal of Sustainability Science and Management*, 14(6), 145–157.
- Zekri, S., Daudi, M. M., & Boughanmi, H. (2008). Fishermen willingness to participate in an insurance program in Oman. *Marine Resource Economics*, 23(3), 379–391.
- Zhang, S., Li, J., Jiang, B., & Guo, T. (2023). Government intervention, structural transformation, and carbon emissions: evidence from China. *International Journal of Environmental Research and Public Health*, 20(2). <https://doi.org/10.3390/ijerph20021343>
- Zheng, H., Mu, H., & Zhao, X. (2018). Evaluating the demand for aquaculture insurance: An investigation of fish farmers' willingness to pay in central coastal areas in China. *Marine Policy*, 96(June), 152–162. <https://doi.org/10.1016/j.marpol.2018.08.021>
- Zheng, H., Shang, M., & Zhao, X. (2020). Chinese policy on fishery insurance: Evolution, characteristics and challenges. *Marine Policy*, 119(June), 104099. <https://doi.org/10.1016/j.marpol.2020.104099>
- Zhou, Z. Q., Li, J., Zhang, W., & Xiong, X. (2022). Government intervention model based on behavioral heterogeneity for China's stock market. *Financial Innovation*, 8(1). <https://doi.org/10.1186/s40854-022-00408-8>
- Zolkaply, S. Z. B., Alam, L., Rahman, L. F., Bari, M. A., Halim, S. A., & Okhtar, M. (2019). Climate change impact on fisheries sector in west coast of malaysia: Adaptive strategy and measures to mitigate the environmental issues. *Test Engineering and Management*, 81(11–12), 5747–5755.