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Fishermen's Perception of the Readiness of Safety Equipment in Supporting Navigation Safety on Tanakeke Island

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Abstract

Background: Sailing safety is a crucial aspect of maritime activities, especially for fishermen who face a high risk of accidents at sea. The problems encountered in the Tanakeke Islands demonstrate a low level of attention to the availability of safety equipment on board vessels, which has resulted in a high number of accidents.
Objective: This study aims to determine fishermen's perceptions of the availability of safety equipment and its impact on navigation safety.
Methods: The research method used was a descriptive mixed-methods design (combining qualitative descriptive and quantitative descriptive approaches), with data collected through observation, interviews, documentation, and questionnaires from 29 fishermen selected through purposive sampling.
Results: The study showed that most fishermen had a positive perception of the importance of safety equipment, with an average score of 79.34 (on a scale of 20–100, converted from a 4-point Likert scale), although cultural beliefs persist that the provision of safety equipment is considered taboo (*pamali*), as fishermen believe that preparing safety equipment implies expecting an accident. The main factors contributing to accidents include extreme weather conditions and technical damage to vessels. Efforts to improve safety are being carried out through outreach programs, vessel repairs, and increased awareness among fishermen.
Conclusion: The study indicates that the availability of safety equipment plays a crucial role in supporting navigation safety, but increased awareness and adequate facilities are still needed. This study uniquely identifies the role of local cultural beliefs (*pamali*) as a barrier to safety equipment adoption among traditional fishermen in Tanakeke Island.

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INTRODUCTION

Navigation safety is a crucial concern in supporting the smooth operation of shipping activities and safeguarding life at sea. This is a key focus for various stakeholders, including the government, private sector, and the international community. Fishermen, whose daily activities involve operating at sea for fishing purposes, are not exempt from navigation safety regulations. However, fishermen's awareness of vessel safety remains very low, and many captains and crew

members tend to underestimate operational risks, including compliance with safety training requirements such as fishery safety certification. Therefore, safety equipment is essential to minimize the occurrence of occupational accidents on board vessels.

Safety equipment refers to standardized tools and structural components designed in accordance with applicable specifications to protect personnel, prevent incidents, and reduce the risk of occupational accidents on ships. The use of safety equipment on fishing vessels depends on vessel size and operational characteristics, particularly in terms of quantity, type, and suitability of equipment. The provision and proper use of compliant occupational safety equipment can significantly reduce the risk of accidents and prevent unwanted or fatal consequences.

The causes of fishing vessel accidents at sea can be categorized into three main factors: human error, environmental conditions, and technical failures. Based on accident types occurring on fishing vessels (such as collisions, capsizing, grounding, and fires) the most frequently reported incident is sinking (Al-Mamun et al., 2023; Rahman et al., 2017). These contributing factors are interrelated and collectively increase the potential for losses in the fisheries sector. Nevertheless, fishing remains a high-risk occupation, and fishermen continue their activities despite facing substantial uncertainty and occupational hazards.

A fishing vessel accident in 2017 in the waters of Tanakeke Island resulted in the deaths of two passengers after the vessel was struck by high waves. According to Antara News (https://www.antaranews.com/berita/610542), the vessel was initially a fishing boat that was later used for passenger transport before ultimately sinking. A similar incident occurred in 2019 when a Jolloro boat carrying four fishermen sank in the waters of the Tanakeke Islands after being hit by strong waves (https://sulselberita.com/2019/03/27/). In 2020, another accident involving a Jolloro boat in the Tanakeke Islands was reported, involving a collision between fishing vessels caused by strong ocean currents (https://berita.news/2020/08/05/).

These incidents demonstrate that fishermen often misjudge and underestimate operational risks (Lindawati & Rahadian, 2016; Sari, 2026). Safety equipment refers to all protective devices intended for emergency use to ensure the safety of individuals and vessels; therefore, it must be properly provided and utilized to ensure maritime safety. Fishermen's attention to safety equipment remains low, as many captains and crew members continue to ignore onboard risks, including failing to use available safety equipment even after receiving specific training (Wulandari et al., 2022). Maritime safety equipment is regulated under international safety standards, particularly those issued by the International Maritime Organization (IMO) through the Safety of Life at Sea (SOLAS) Convention 1974, which applies to all vessels.

The problem formulation in this study is based on the background described above, namely the high incidence of fishing vessel accidents in the Tanakeke Islands and the limited attention to navigation safety aspects. Therefore, this research focuses on several key issues: identifying the factors contributing to frequent fishing vessel accidents in the Tanakeke Islands, understanding fishermen's perceptions of the readiness of safety equipment on board, and examining efforts undertaken to improve navigation safety for fishermen in the area. In relation to this, the study of Fishermen's Perception of the Readiness of Safety Equipment in Supporting Navigation Safety on Tanakeke Island becomes highly relevant in capturing both technical and behavioral dimensions of safety practices.

Previous research on maritime safety in Indonesia has largely focused on technical vessel standards, crew competency, and regulatory compliance (Indrayani et al., 2023; Sunardi et al., 2024). Studies involving small-scale fishing communities have examined safety equipment availability and basic safety training (Katiandagho et al., 2023; Santara et al., 2014). However, a significant research gap remains regarding the influence of local cultural beliefs on fishermen's willingness to adopt safety equipment. In particular, the role of the pamali taboo system in shaping safety behavior among traditional fishermen in Eastern Indonesia has not been sufficiently explored. The novelty of this research lies in its socio-cultural approach, integrating fishermen's perceptions with traditional belief systems to provide a more comprehensive understanding of barriers to navigation safety in a specific island context, namely Tanakeke

Island, South Sulawesi. This approach complements existing quantitative maritime safety studies (Domeh et al., 2021; Obeng et al., 2022) by incorporating qualitative and cultural dimensions of safety behavior.

The research objectives are aligned with the identified problems. This study aims to comprehensively understand the main factors causing fishing vessel accidents in the Tanakeke Islands, examine fishermen's perceptions regarding the readiness of safety equipment on board, and identify efforts undertaken to improve navigation safety among fishermen. Thus, this research is expected to provide a holistic overview of maritime safety conditions in local fishing communities.

The benefits of this research are expected to contribute to multiple stakeholders. For researchers, this study supports the implementation of the higher education tridharma, enhances knowledge and experience for future research, and provides a platform to develop ideas based on academic inquiry. For academics, the findings are expected to serve as a reference for knowledge development, particularly regarding the importance of navigation safety equipment on fishing vessels. Meanwhile, for general readers, this research is expected to broaden understanding of the importance of safety equipment usage in supporting maritime navigation safety.

METHOD

The research used descriptive qualitative research. According to Sugiyono (2015), descriptive is an explanation from people about what is happening at the time, and qualitative is a conclusion from these people's explanations describing what is happening in the field (Balaka, 2022). Therefore, descriptive qualitative research explains field events concluded by adding supporting literature from data collection. Descriptive research aims to present a complete picture of activities or relationships between tested phenomena. This research seeks to obtain a complete and accurate description of a situation.

This research was conducted in the Tanakeke Islands, Takalar Regency and was conducted from May to June 2024. The data sources used were primary data and secondary data. For primary data sources, data directly collected by the researcher from the primary source. The primary data source in this study comes directly from fishermen on Tanakeke Island. While secondary data sources were collected by the researcher to support the primary source. These are data arranged in document form. The secondary data source in this study includes documents related to the availability of safety equipment on fishing vessels on Tanakeke Island. The respondents in this study were the fishermen in the Tanakeke Islands.

The following data collection techniques used to gather data related to fishermen's perceptions of the availability of safety equipment on vessels; (1) Observation Method, a data collection method by conducting direct field observations of fishermen on Tanakeke Island. (2) Interview Method, a data collection method by conducting direct interviews with fishermen who own vessels or work on fishing vessels. (3) Documentation Method, adata collection method by gathering data from the research location, collecting information from various sources, photos, documents, and notes regarding the availability of safety equipment on fishing vessels. (4) Questionnaire, this study used questionnaire to obtain data related to fishermen's perceptions of the availability of safety equipment on vessels in supporting navigation safety.

Qualitative data analysis is the process of systematically searching and organizing data obtained from interviews, field notes, documentation, then the data obtained through questionnaires will be processed quantitatively to draw conclusions by organizing data into categories, describing them into units, performing synthesis, arranging them into patterns, selecting important information to study, and making conclusions that are easily understood by oneself and others (Balaka, 2022; Sugiyono, 2015).

RESULTS AND DISCUSSION

Research Results

Factors causing fishing vessel accidents in the Tanakeke Islands

Tanakeke is a group of mangrove-rich islands on the western doorstep of Takalar Regency, South Sulawesi. The mangrove area it contains is reported to be up to 1,700 hectares, although some sources mention that up to 70% has been destroyed. Tanakeke in the south is part of the Makassar Strait. It is called an island group because it includes Bauluang Island and Satangnga Island. Tanakeke Island itself has an irregular shape with coves filled with mangrove trees.

Several villages are located on Tanakeke, such as Tompotika, Cambang-cambang, and Balangdatu. The waters of Tanakeke are known to have strong currents and powerful waves every year, both in the dry and west seasons. Its location in the curve of Takalar waters, where western and eastern currents meet, makes it a menace for Nusantara sailors. Consequently, many shipping accidents have occurred around it. In the 1980s, an iron ship sank and was washed ashore on Galesong Beach. Several ships carrying rice and cement from Selayar have been reported sunk or hitting rocks around Tanakeke. Until now, residents of Tanakeke traveling to the mainland of Takalar choose to dock at the Old Takalar Pier, a pier located on the bank of a river leading to the doorstep of Tanakeke. Several data on ship accident cases in Tanakeke waters can be seen below:

1) In February 2017, a ship sinking accident occurred in the waters of Tanakeke Island, with 34 victims. The ship was a fishing vessel later used as a passenger boat, which eventually sank.
2) In July 2020, another ship accident occurred, where a Jolloro boat was reported to have sunk in the waters of Tanakeke Island. The boat, carrying 9 tons of cargo, was transporting 13 passengers. The boat was crossing from Takalar Pier to Tanakeke Island when it was hit by waves twice until it eventually sank.
3) In July 2020, another ship accident occurred, where an official boat belonging to the Head of Rewataya Tallasa Bombong Village sank in the waters of Tanakeke Island.
4) In August 2020, another ship accident occurred: the personal boat of the Head of Rewataya Village collided with a Jolloro boat, resulting in 3 passengers from the Jolloro boat being taken to the hospital. The cause of the accident was strong winds, which made the Jolloro boat operator unable to control the boat's speed.
5) In October 2020, a Jolloro boat experienced an accident in the waters of Tanakeke Island. The accident began when a Jolloro boat belonging to Buleng Dg. Mangka sailed from Takalar Pier to Tanakeke Island. While sailing, the steering rope suddenly broke, causing the boat to capsize.
6) In July 2022, a ship collision occurred in the waters of Tanakeke Island, where a fishing boat was hit by a cargo ship, causing the fishing boat to sink. 15 crew members of the fishing boat survived.

Fishermen's perception of the readiness of safety equipment on board

Perception is an individual's assessment of an object or situation experienced according to their circumstances, behavior, and needs within their environment. The readiness of safety equipment on board is an effort to overcome ship accidents while sailing. This applies to all vessels, including the fishing boats in the Tanakeke Islands. To anticipate casualties in the event of a ship accident, safety equipment on board is certainly needed. Each fisherman naturally has a personal view regarding the existence of such safety equipment.

Respondents' perceptions in this study were measured using a Likert scale with the options: (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly Agree, regarding the readiness of safety equipment on board.

Based on the data collected by the author using questionnaires distributed to 29 fishermen respondents on Tanakeke Island, the data regarding fishermen's perceptions of safety equipment on board can be seen in table 1 and 2.

Table 1. Descriptive Statistics on Fishermen's Perceptions of Equipment Safety on Tanakeke Island

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Perception	29	76	81	79.34	1.717
Valid N (listwise)	29				

Source: Research data

Table 2. Results of the Normality Test (Skewness and Kurtosis) of Fishermen's Perceptions of Equipment Safety on Tanakeke Island

Descriptive Statistics								
	N	Range	Mean	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Perception	29	5	.319	2.948	-.535	.434	-.825	.845
Valid N (listwise)	29							

Source: Research data

Based on the descriptive statistical analysis in Table 2, the 29 respondents have a minimum value of 76 and a maximum value of 81. The average value of the 29 respondents is 79.34 with a standard deviation of 1.717. To determine whether the data on fishermen's perceptions of the readiness of safety equipment on board is normally distributed or not, we can look at the Kurtosis and Skewness values.

From Table 2, the Skewness value is -0.535, and the Kurtosis value is -0.825. It can be concluded that the data on fishermen's perceptions of the readiness of safety equipment on board is normally distributed. Based on the data above, it can be concluded that fishermen agree with the presence of safety equipment on board to support navigation safety.

The results of interviews with several fishermen encountered revealed that they have a perception that preparing safety equipment on board is actually *pamali* (disallowed) based on the customs of the Tanakeke community, because it is considered as if one is expecting undesirable events, namely accidents while sailing. Nevertheless, they still agree that the existence of such equipment is very helpful in reducing casualties when accidents occur while sailing. Therefore, on average, they only bring items such as jerry cans, cork, and tires for fishing purposes, but these can also be used as flotation devices in the event of a ship accident.

Efforts made to improve navigation safety for fishermen on Tanakeke Island

Navigation safety is a very important aspect to be considered by all parties, both the government and the community themselves (Bandauko & Arku, 2025; Skewes et al., 2025; Sohrabi & Lord, 2022). The implementation of shipping regulations is crucial to improving navigation safety. Fishermen, as shipping actors who frequently carry out activities at sea catching fish using relatively small vessels, are certainly at high risk of ship accidents, especially if not supported by adequate facilities.

Several cases of fishing vessel accidents around Tanakeke Island in recent years indicate that there are still shortcomings in shipping security and safety. To address this issue, various efforts are needed to improve shipping safety specifically for fishermen on Tanakeke Island.

Results from interviews with fishermen on Tanakeke Island indicate that to support navigation safety, both the government and various shipping educational institutions continuously hold socialization activities about the importance of navigation safety, both in terms of vessel equipment and life safety, such as the importance of life jackets, first aid kits, and other items to be prepared on board when sailing. Meanwhile, the fishermen themselves continuously make repairs to the vessels used for fishing activities.

Discussion

Factors causing fishing vessel accidents in the Tanakeke Islands

From several cases of fishing vessel accidents around Tanakeke Island, incidents are generally caused by adverse weather conditions and damage to fishing vessels' steering gear. Weather factors such as high waves pose significant challenges for fishermen operating relatively small vessels with inadequate safety equipment. Incidents such as sinking, capsizing, and collisions are commonly triggered by severe weather, particularly wave impacts. According to Sunardi et al. (2024), the majority of fishing vessel accidents in Indonesia during 2018–2021 were caused by weather conditions, particularly capsizing and sinking incidents, which accounted for approximately 60% of all recorded cases. Weather phenomena such as high waves, strong winds, and monsoon effects are especially hazardous for small-scale fishing vessels that lack adequate navigation and safety equipment. Air temperature, wind speed, and sea current conditions are highly dynamic and difficult to predict, creating substantial risks for traditional fishermen with limited access to early-warning systems.

The findings above indicate that natural factors are the dominant cause of maritime accidents around the waters of Tanakeke Island, with adverse weather being the most prevalent factor. The next most significant causes are technical factors related to vessel condition and equipment failure. These technical factors are diverse in nature, indicating that multiple aspects of vessel maintenance and operational readiness contribute to accident risk. Human negligence factors also contribute and are generally associated with a lack of caution and inadequate safety awareness. When these three categories of contributing factors are aligned with the 16 safety elements outlined in the International Safety Management (ISM) Code, it can be concluded that they relate to 12 key elements associated with onboard safety and seaworthiness compliance.

These findings are consistent with previous research conducted at the national level. Sunardi et al. (2024), in a study of fishing vessel accidents in Indonesia from 2018 to 2021, confirmed that weather conditions particularly capsizing and sinking events account for approximately 60% of all incidents. The KNKT data cited in their study further identifies fishing vessels as representing 31% of total maritime accidents in Indonesia, making them the most vulnerable category. This confirms that the accident pattern observed in Tanakeke waters is not an isolated phenomenon but reflects a broader national risk pattern affecting small-scale fishing communities. Furthermore, Obeng et al. (2022) identified machinery failure, adverse environmental conditions, vessel-related factors, and unsafe operator actions as the four most critical contributing factors in small fishing vessel accidents, findings that are consistent with the weather impacts and steering gear damage identified in this study. Indrayani et al. (2023), in their study of small-scale fishermen in Jember Regency, similarly found that incomplete safety equipment and lack of navigational aids were major risk factors, reinforcing that the safety challenges observed in Tanakeke are common across Indonesian fishing communities.

Fishermen's perception of the readiness of safety equipment on board

Fishermen have different perceptions when viewing the same object. Factors influencing these perceptions include interpretation, which is shaped by experience, learning processes, and prior knowledge of the object (Faisal & Carabella, 2023).

Basically, fishermen on Tanakeke Island already understand the importance of safety equipment onboard, such as life jackets, first aid kits, and other essential navigation safety tools. This is inseparable from outreach activities conducted by the government to enhance fishermen's understanding of the importance of navigation safety. According to Suwardjo (2010), human resource development among fishery seafarers is a dominant factor in establishing a safety culture in fishing operations (Firdaus, 2026).

The respondent fishermen stated that providing safety equipment onboard is often considered contrary to local customs, as it is regarded as *pamali* (taboo or prohibited). Nevertheless, many fishermen are already aware of the importance of carrying such equipment, even if it is limited to traditional items such as jerry cans, cork, or car tires, because modern safety equipment is considered too expensive to purchase. This finding aligns with the work of Katiandagho et al. (2023), who found that fishermen in Cilincing, North Jakarta, while possessing

a relatively good level of knowledge about life safety, still relied on traditional knowledge passed down through generations. Similarly, documented that many crew members underestimated occupational risks despite receiving safety training, a behavioral pattern consistent with the pamali belief system observed in Tanakeke. Theoretical support from Obeng et al. (2022) further confirms that human factors, including cultural attitudes, beliefs, and crew behavior, are among the most critical determinants of safety outcomes in small fishing vessel operations. These findings extend the existing literature by demonstrating that sociocultural norms can override rational safety knowledge, underscoring the need for culturally sensitive safety outreach programs tailored to local belief systems.

Efforts made to improve navigation safety for fishermen on Tanakeke Island

Improving knowledge of navigation safety among fishermen is expected to reduce accidents and ensure fishermen's safety. This enhancement of knowledge can be achieved through maritime safety outreach activities.

Such outreach activities have been carried out by local government agencies, including the Ministry of Transportation, and educational institutions through community service (*Pengabdian kepada Masyarakat*, PKM) programs conducted by the Barombong Shipping Polytechnic campus, as well as by the Merchant Marine Polytechnic campus as part of its community engagement activities. According to Kadhafi et al. (2019), one of the most important aspects is occupational safety, which can be implemented through socialization programs for fishing communities, including presentations, discussions, the provision of safety equipment such as life jackets, and direct field simulations to assess whether fishermen effectively apply the knowledge provided. Lack of awareness, combined with inadequate workforce skills and competencies, leads many crew members to underestimate occupational risks, such as failing to use safety equipment (Hariyanti et al., 2025). In addition, strong coordination between port authorities and the Meteorology, Climatology, and Geophysical Agency (*BMKG*) is also necessary to promote awareness of weather conditions before conducting maritime activities.

CONCLUSION

Fishermen on Tanakeke Island already understand the importance of navigation safety, although they still use traditional equipment in their fishing activities. Regarding the readiness of safety equipment on board, the fishermen consider it *pamali* (forbidden according to customary beliefs) based on hereditary traditions; as a result, they only carry equipment such as jerry cans, tires, and cork, which primarily serve fishing purposes but can also function as emergency flotation or improvised safety equipment in critical situations. Frequent fishing vessel accidents in the area are generally caused by adverse weather conditions or rough seas, leading to collisions, capsizing, or sinking, as well as damage to the steering system.

To address this issue, it is important for the government (specifically the Meteorology, Climatology, and Geophysics Agency (BMKG) and relevant stakeholders) to coordinate with fishermen and provide timely weather information for fishing areas so that they can anticipate sea and weather conditions before conducting fishing activities. Fishermen are also advised to pay greater attention to safety aspects while at sea, including ensuring the readiness of onboard safety equipment and maintaining components that support navigation control, such as the steering line (tiller rope), which, if damaged, may pose significant risks during operations at sea.

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AUTHOR CONTRIBUTION STATEMENT

All authors contributed substantially to the completion of this research. The first author was responsible for conceptualizing the study, conducting field data collection, analyzing the data, and preparing the initial manuscript draft. The second author contributed to research design refinement, data interpretation, manuscript review, and overall supervision of the study. All authors discussed the results, contributed to manuscript revisions, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

REFERENCES

Al-Mamun, M., Alam, M., Hossain, M. J., Khatun, M. R., Das, P. K., Alam, F., Islam, M. R., Ahmmed, F., & Islam, M. M. (2023). Child Drowning And Associated Risk Factors: Findings From A Qualitative Study In Bangladesh. *Health Science Reports*, *6*(7), E1380.

Balaka, M. Y. (2022). *Metodologi Penelitian Kuantitatif*.

Bandauko, E., & Arku, G. (2025). Navigating Political Opportunity Structures: Street Traders' Associations And Collective Action In Politically Volatile Urban Environments. *Political Geography*, *118*, 103292.

Domeh, V., Obeng, F., Khan, F., Bose, N., & Sanli, E. (2021). Risk Analysis Of Man Overboard Scenario In A Small Fishing Vessel. *Ocean Engineering*, *229*, 108979. https://doi.org/10.1016/J.Oceaneng.2021.108979

Faisal, F., & Carabella, P. A. (2023). Utilizing Grammarly In An Academic Writing Process: Higher-Education Students' Perceived Views. *Journal Of English Language Teaching And Linguistics*, *8*(1), 23–42.

Firdaus, F. (2026). *Perlindungan Hukum Terhadap Awak Kapal Perikanan Migran Indonesia Yang Bekerja Di Kapal Penangkap Ikan Asing (Studi Kasus Putusan Mahkamah Konstitusi Nomor 127/Puu-Xxi/2023*. Universitas Jambi.

Hariyanti, C. O., Budiono, N. D. P., Inayah, Z., & Mindiharto, S. (2025). The Relationship Between Knowledge, Attitude, And Experience With Behaviour Of Personal Protective Equipment (PPE) Use Among Fishermen. *Ahmar Metastasis Health Journal*, *5*(1), 54–63.

Indrayani, R., Syamila, A. I., Hartanti, R. I., & Sujoso, A. D. P. (2023). Work Safety Aspects On The Sea On Small-Scale Fishermen In Jember Regency, Indonesia. *The Indonesian Journal Of Occupational Safety And Health*, *12*(3), 337–348. https://doi.org/10.20473/Ijosh.V12i3.2023.337-348

Kadhafi, M., Ramadhan, M. E., & Arbiantara, H. (2019). Mitigasi Kecelakaan Kapal Di Pelawangan Pantai Pancer Kecamatan Pfluger Kabupaten Jember. *Jurnal Warta Pengabdian*, *13*(1).

Katiandagho, S., Mariah, Y., Nuradi, & Kartini, E. (2023). Overview Of Life Safety Of Fishing Fishermen In Cilincing North Jakarta. *Jurnal Sains Teknologi Transportasi Maritim*, *5*(2), 90–95. https://doi.org/10.51578/J.Sitektransmar.V5i2.77

Lindawati, L., & Rahadian, R. (2016). Identifikasi Faktor Dan Penilaian Risiko Pada Usaha Perikanan Tangkap Di Kabupaten Sambas. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, *11*(1), 99–107.

Obeng, F., Domeh, V., Khan, F., Bose, N., & Sanli, E. (2022). Analyzing Operational Risk For Small Fishing Vessels Considering Crew Effectiveness. *Ocean Engineering*, *249*, 110512. https://doi.org/10.1016/J.Oceaneng.2021.110512

Rahman, A., Alonge, O., Bhuiyan, A.-A., Agrawal, P., Salam, S. S., Talab, A., Rahman, Q. S., & Hyder, A. A. (2017). Epidemiology Of Drowning In Bangladesh: An Update. *International Journal Of Environmental Research And Public Health*, *14*(5), 488.

Santara, A. G., Purwangka, F., & Hascaryo Iskandar, B. (2014). Peralatan Keselamatan Kerja Pada Perahu Slerek Di PPN Pengambengan, Kabupaten Jembrana, Bali Safety Equipment On Slerek In Pengambengan Nusantara Fishing Port, Jembrana, Regency, Bali. In *Jurnal Ipteks PSP*. 1(1).

Sari, S. K. (2026). Analisis Manajemen Risiko Bisnis Penjual Ikan Di Pelelangan Ikan Pelabuhan Perikanan Pantai Tegal Sari Kota Tegal. *Journal Of Multidisciplinary Inquiry In Science, Technology And Educational Research*, *3*(1), 363–375.

Skewes, F., Guzmán, Ó., Cortés, J., & Rivera, M. (2025). Navigating The Energy Transition In South

America: Regulatory Challenges And Trends In Chile's Evolving Energy Legal Landscape. *Energy Research & Social Science*, *121*, 103957.

Sohrabi, S., & Lord, D. (2022). Navigating To Safety: Necessity, Requirements, And Barriers To Considering Safety In Route Finding. *Transportation Research Part C: Emerging Technologies*, *137*, 103542.

Sugiyono, P. D. (2015). Metode Penelitian Dan Pengembangan. *Res. Dev. D*, *2015*, 39–41.

Sunardi, E. F., Choiron, M. A., Sugiarto, A. W. M., Setyarini, P. H., & Nurwahyudi, A. (2024). Fishing Vessel Safety In Indonesia: A Study Of Accident Characteristics And Prevention Strategies. *International Journal Of Safety And Security Engineering*, *14*(2), 499–511. https://doi.org/10.18280/Ijsse.140217

Suwardjo, D., Haluan, J., Jaya, I., & Poernomo, S. H. (2010). Keselamatan Kapal Penangkap Ikan, Tinjauan Dari Aspek Regulasi Nasional Dan Internasional. *Jurnal Teknologi Perikanan Dan Kelautan*, *1*(2), 1–13.

Wulandari, S., Rapi, N. L., & Putra, D. P. (2022). Analisis Kelengkapan Alat Keselamatan pada Kapal Perikanan di Pangkalan Pendaratan Ikan Beba. *Lutjanus*, *27*(2), 71–83.