

Hazard Normalization at Sea: Risk Perception and Osh Compliance Among Small-Scale Fishers in Jeneponto Regency

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Abstract

Small-scale fishing is crucial for global food security yet remains one of the most hazardous occupations. Despite constant exposure to environmental dangers, the relationship between fishers' risk perception and their compliance with Occupational Safety and Health (OSH) practices remains underexplored. This study investigates this dynamic through the lens of the sociology of risk, viewing hazards not as objective probabilities but as socially constructed phenomena. For small-scale fishers, risk perception is deeply embedded in social norms, religious beliefs, and economic pressures. Dangers are often interpreted as inevitable fate rather than critical threats—a process of "hazard normalization." Consequently, formal safety regulations often fail because they overlook these specific cultural contexts. This research examines how fishers interpret risk and how these constructions shape their everyday safety practices. By situating occupational safety within the sociocultural realities of fishing communities, the study aims to inform more context-sensitive, participatory OSH policies. Bridging the gap between formal regulations and lived experiences is essential for enhancing safety in this vital sector.

Keywords: risk perception, sociology of risk, hazard normalization, maritime safety, Indonesia

1. Introduction

Occupational Safety and Health (OSH) in the fisheries sector, particularly among small-scale fishers, constitutes a complex and pressing global issue (Hu et al., 2021). A substantial body of research consistently identifies fishing as one of the most hazardous occupations worldwide. Occupational risks at sea are inherently multifaceted, ranging from unpredictable weather conditions and high waves to intense physical exposure to fishing gear and equipment. Within the broader OSH literature, small-scale fisheries are commonly associated with harsh environmental conditions, limited access to adequate safety equipment, and weak regulatory frameworks and safety training systems.

Despite increasing scholarly attention to occupational hazards in fisheries, academic literature that explicitly examines risk perception among small-scale fishers remains relatively limited, particularly in journals indexed in Scopus. This line of inquiry extends beyond conventional analyses of physical hazards and accident statistics, entering the domain of the sociology of risk. From this perspective, risk is understood through how fishers themselves perceive, evaluate, and respond to the dangers embedded in their work, often shaped by intergenerational experience, community norms, and pressing economic necessities (Deb & Li, 2024). Studies conducted in Indonesian border regions indicate that fishers' risk perception encompasses not only physical dangers at sea but also broader social and environmental threats, such as climate change and maritime crime, which are frequently overlooked in objective, statistics-based approaches to occupational accidents.

Understanding risk perception is critical because it directly influences compliance with OSH practices. Empirical studies within fishing communities demonstrate that fishers' knowledge and attitudes toward safety are highly heterogeneous and are shaped more by lived work experience than by formal safety training alone (Wang & Wang, 2021). For example, research conducted in Semarang reveals a significant relationship between fishers' risk perception and their safety behavior, which in turn affects their actual implementation of OSH practices at sea. The gap between objectively assessed risks and subjectively perceived risks represents a major barrier to the development of effective safety policies. Formal OSH interventions often rely on top-down approaches that fail to account for local work cultures, particularly how fishers understand hazards and the social meanings they attach to risk. Consequently, such policies frequently lack legitimacy and effectiveness at the community level. In

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response to this gap, the present study adopts a sociological risk perspective to examine the process of hazard normalization at sea within small-scale fishing communities.

More broadly, OSH in small-scale fisheries demands holistic attention, as small-scale fishers constitute most of the global capture fisheries workforce and face distinctive occupational challenges (Prayoga, 2022). Historically, fishing has been classified as one of the world's most dangerous professions, with high rates of accidents, injuries, and fatalities associated with maritime activities (FAO; general OSH research). Occupational risks at sea include climatic uncertainty, high waves, physical strain from fishing gear, and exhausting labor performed under economically precarious conditions. These factors demonstrate that occupational hazards faced by small-scale fishers are not merely physical in nature but are deeply intertwined with environmental and socio-economic conditions that shape everyday working life at sea.

Within the broader OSH literature, small-scale fisheries are consistently characterized by a range of structural and institutional challenges. These include severely limited access to adequate safety equipment, insufficient formal training on occupational risks and their mitigation, weak regulatory frameworks governing everyday work practices, and persistent difficulties in enforcing and monitoring safety standards in offshore and nearshore fishing environments. As a result, many small-scale fishers operate on small vessels without basic safety provisions, such as life jackets, emergency communication devices, or effective engine protection systems (Gunawan, 2016). The absence of these standard safety measures substantially increases the likelihood of serious injury or fatal outcomes in the event of accidents.

Nevertheless, academic literature that explicitly examines risk perception among small-scale fishers remains relatively limited, particularly within international journals indexed in Scopus that offer strong theoretical and methodological engagement. Much of the existing research continues to rely on hazard-focused, quantitative approaches, emphasizing the identification of physical risks and accident statistics—such as vessel conditions, weather patterns, or types of incidents—while paying insufficient attention to how fishers themselves interpret, evaluate, and respond to occupational risk. Such approaches tend to overlook the subjective dimensions of fishers' lived experiences, which are shaped by intergenerational knowledge, community norms, and pressing economic constraints.

From the perspective of the sociology of risk, risk perception is understood as the outcome of social and cultural processes rather than a direct reflection of statistically measurable accident probabilities. In the context of small-scale fisheries, risk perception is deeply influenced by prolonged exposure to life at sea, the social organization of coastal communities, cultural norms that valorize resilience and bravery, and economic pressures related to household survival (Cohen et al., 2019). As a result, objectively hazardous conditions—such as adverse weather, high waves, or the risk of vessel accidents—may be interpreted as ordinary, expected, or even unavoidable aspects of fishing work. This phenomenon, commonly conceptualized as hazard normalization, refers to the gradual acceptance of dangerous working conditions as routine, thereby reducing the perceived relevance and urgency of formal safety practices.

Several local empirical studies lend support to this argument. Research examining fishers' knowledge and attitudes toward occupational safety demonstrates that variations in safety awareness and attitudes are shaped primarily by direct work experience at sea rather than by formal training or theoretical knowledge alone. Studies conducted across different fishing communities reveal that many fishers have limited awareness of the relationship between the risks they routinely encounter and the safety practices that are formally recommended. In some cases, the acceptance of risk as an inherent aspect of fishing work contributes to reduced compliance with OSH practices. Empirical findings from fishing communities in specific regions of Central Java further indicate a significant relationship between fishers' risk perception and their safety behavior. Fishers with higher levels of risk perception tend to demonstrate better safety practices, such as consistent use of personal protective equipment and greater attention to weather conditions prior to departure. Conversely, fishers who perceive occupational risks as ordinary or unavoidable are more likely to neglect safety measures, thereby increasing their vulnerability to accidents and injuries at sea.

The discrepancy between objectively assessed risk and subjectively perceived risk constitutes a critical challenge in the development of effective safety policies. Existing OSH frameworks often rely on top-

down approaches that emphasize standardized regulations and technical solutions while insufficiently accounting for local work cultures and the ways in which fishers interpret and assign meaning to risk. As a result, such policies frequently fail to align with the social realities of fishing communities, limiting their effectiveness in promoting sustained behavioral change in occupational safety practices. Accordingly, this study seeks to address this gap by adopting a sociological risk perspective, with particular attention to the process of hazard normalization at sea within small-scale fishing communities. Rather than conceptualizing risk solely as a technical problem to be minimized, this approach treats risk as a social phenomenon shaped by cultural practices, lived experiences, and the structural conditions of coastal communities. By foregrounding the dynamics of risk perception, the study aims to generate both theoretical and practical contributions, particularly in informing the design of more culturally sensitive, participatory, and context-specific OSH policies capable of improving occupational safety and long-term well-being among small-scale fishers.

2. Method

Research Design

This study employs a qualitative approach with a systematic literature review method. This specific approach was chosen because the study aims to understand and analyze the complex interplay between risk perception, cultural norms, and Occupational Safety and Health (OSH) compliance in small-scale fisheries based on existing scientific literature, policies, and sociological studies. Unlike field research that explores social phenomena through direct interaction, this method allows the researcher to explore the depth of safety issues, including the "normalization of hazard" and the gap between formal regulations and actual practices, by examining various texts. Through this design, the researcher intends to describe the patterns, cultural barriers, and social determinants of safety behavior without manipulating the data sources, allowing a comprehensive understanding of the sociology of risk in maritime contexts to emerge from the synthesis of various documents.

Research Scope

The scope of this research is focused on the context of occupational safety and health (OSH) within the small-scale fisheries sector. The selection of this scope is based on the consideration that while small-scale fishing is vital for food security, it remains one of the most hazardous occupations globally with persistently high accident rates. Specifically, the research focuses on the sociological perspective of risk—how fishers construct and interpret danger amidst economic precarity. This context is crucial because challenges such as fatalism, hazard normalization, and low compliance with safety gear usage indicate the need for a context-sensitive safety policy. The research is conducted by examining data spanning a relevant time period to capture the evolution of safety discourse and the effectiveness of past interventions in coastal communities.

Data Sources

Data sources in this study are exclusively categorized as secondary data. Unlike field studies that rely on primary data from interviews, this research obtains data from authoritative documents and academic records. The main sources for this data include national and international journals, maritime regulations and safety standards (such as ILO conventions or national fisheries laws), research reports, and related policy documents regarding maritime safety. These documents provide the necessary context regarding the normative framework of safety regulations versus the empirical realities of fishers lived experiences, offering a robust foundation to identify why standard OSH policies often fail in this sector.

Data Selection Technique

In this literature review, the data sources were selected using a purposive selection strategy. The researcher determines documents based on specific criteria to ensure the data obtained is relevant to the research objectives and capable of answering the research problems regarding risk perception and safety culture. The criteria established for selecting documents include literature that explicitly discusses small-scale fisheries, occupational hazards, risk perception, and the sociology of work, as well as documents that are credible and relevant to the study's context. This selection method ensures that the data analyzed provides specific knowledge regarding hazard normalization, socio-economic pressures, and the cultural context of safety compliance required for the study.

Data Collection

To obtain complete and valid data, the researcher utilizes documentation techniques carried out systematically. The researcher collects data by searching and examining various secondary data sources to identify patterns and frameworks relevant to the study. This involves gathering legal texts, academic articles on maritime sociology, and official accident reports to understand the complexity of safety issues at sea. By aggregating these documents, the researcher can comprehensively capture the nuances of how cultural beliefs (such as fate or destiny) and economic constraints influence safety behavior without the need for physical field observation, ensuring that the necessary information regarding the social construction of risk is obtained.

Data Validity

To ensure the validity and credibility of the data, this study uses source triangulation. The researcher will compare the information obtained from different types of documents to verify the accuracy of the analysis. For instance, the normative safety standards provided in government regulations will be cross-checked with empirical findings from sociological journals and field reports regarding actual compliance levels and fishers' attitudes. This process helps to verify the consistency—or discrepancy—between policy intent and practical reality, minimizing the bias of relying on a single type of document and ensuring that the identified barriers to safety are corroborated by multiple evidence sources.

Data Analysis

Data analysis is carried out using the interactive model proposed by Miles, Huberman, and Saldaña, which consists of three continuous flows of activity. The first flow is data condensation, where the researcher selects, focuses, simplifies, and abstracts the raw data found in the literature to identify key themes such as "hazard normalization," "fatalism," and "economic precarity." The second flow is data display, where the researcher organizes the compressed information into narrative text to facilitate the understanding of how social constructions of risk impact OSH compliance. The third flow is conclusion drawing and verification, where the researcher draws initial conclusions based on the findings and continuously verifies them with valid evidence throughout the research process until credible final conclusions are reached regarding the need for culturally informed OSH policies in small-scale fisheries.

3. Results

The analysis of the selected literature reveals several critical themes that explain the complex relationship between small-scale fishers and occupational safety. The findings indicate that low compliance with Occupational Safety and Health (OSH) standards is not merely a result of lack of knowledge, but is deeply rooted in sociocultural constructions of risk, psychological coping mechanisms, and economic necessities. The results are categorized into four main themes:

The Divergence Between Objective Hazards and Subjective Risk Perception

The literature consistently highlights a significant disconnect between "objective risk"—statistically high injury and fatality rates—and the "subjective risk" perceived by fishers. While external observers and regulatory bodies classify small-scale fishing as a high-risk occupation involving exposure to extreme weather and vessel instability, fishers themselves frequently downplay these dangers. The review indicates that risk perception is often inversely related to experience; highly experienced fishers tend to perceive lower levels of risk compared to novices. This suggests that "risk" in fishing communities is not a static calculation of probability but a dynamic concept shaped by familiarity with the environment. Hazards such as high waves or storms are often reframed not as threats to safety, but as technical challenges to be navigated through skill and traditional knowledge.

Sociocultural Construction of Risk: Fate, Faith, and Masculinity

A dominant theme across the reviewed studies is the role of cultural and religious frameworks in shaping safety behaviors. A significant portion of the literature identifies "fatalism" as a barrier to safety compliance. Accidents and safety at sea are frequently attributed to divine will, destiny, or luck, rather than human agency or equipment failure. Consequently, the use of safety gear (like life jackets) is often viewed as futile if "one's time has come," or conversely, unnecessary if one is protected by faith. The analysis also reveals that safety practices interact with the construction of masculinity. In many coastal

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cultures, physical endurance and the ability to confront danger without fear are central to the fisher's identity. Reliance on safety equipment is occasionally stigmatized as a sign of weakness or lack of skill. Thus, non-compliance with OSH becomes a performative act of professional competence and masculinity.

Hazard Normalization as a Coping Mechanism

The synthesis of data points to "hazard normalization" as a psychological adaptation to the chronic stressors of the marine environment. Because small-scale fishers face life-threatening situations regularly, maintaining a constant state of high alert is psychologically unsustainable. Over time, extraordinary risks are cognitively reclassified as "routine" aspects of the job. This normalization process leads to the "normalization of deviance," where unsafe practices (e.g., overloading boats, sailing without navigation lights, ignoring weather warnings) become the standard operating procedure because they have been performed previously without catastrophic consequences. The absence of a negative outcome is misinterpreted as evidence of safety, reinforcing the behavior until an accident occurs.

Economic Precarity Overriding Safety Concerns

The results strongly suggest that economic pressure acts as the primary structural constraint on safety compliance. For small-scale fishers operating on thin profit margins, safety is often viewed through a cost-benefit lens where immediate economic survival outweighs potential long-term risks. Purchasing and maintaining OSH equipment is often seen as a financial burden that yields no immediate return. The literature notes practical conflicts, such as fishers preferring to use limited boat space for extra catch or fuel rather than bulky safety gear. Economic precarity drives "risk-taking behavior," such as fishing in adverse weather conditions or traveling further offshore than the vessel is designed for, driven by the necessity to pay debts or secure daily income.

The Limitations of Top-Down Policy Interventions

Finally, the review identifies a recurring failure in formal safety policies. Most interventions are designed based on industrial standards and implemented via top-down approaches that fail to account for the specific sociocultural contexts described above. Regulations that focus solely on the technical provision of equipment without addressing the underlying cultural narratives (fatalism) or economic drivers (precarity) are shown to have low adoption rates. The literature suggests that compliance is only achieved when safety measures are co-designed with the community and integrated into their existing value systems.

4. Discussion

Reconceptualizing Risk in Small-Scale Fisheries

The synthesis of literature in this study supports the fundamental argument that risk in small-scale fisheries cannot be understood solely through a technical or distinctively epidemiological lens. Instead, the findings confirm that risk is a socially constructed phenomenon, deeply embedded in the cultural and material realities of coastal communities (Béné et al., 2016). The discrepancy between the high objective danger of fishing and the low subjective perception of risk among fishers explains the persistent failure of standard safety interventions. While regulators view risk as a probability to be managed through equipment and protocols, fishers view it as an inherent, unavoidable element of their environment—a condition of life rather than a problem to be solved.

The Failure of the "Rational Actor" Model

This study challenges the efficacy of the "rational actor" model that underpins most current OSH policies. Conventional policies assume that fishers are autonomous individuals who, when presented with information about danger, will logically choose to adopt safety measures to preserve their lives. However, the review demonstrates that safety decisions are rarely made in a vacuum of individual rationality. Instead, they are shaped by "habitus" and collective norms (Rahayu et al., 2025). The phenomenon of hazard normalization suggests that repeated exposure to danger without negative consequences creates a "false sense of security." This psychological mechanism renders formal warnings ineffective because fishers' lived experiences (e.g., "I have done this for 20 years without dying") carry more weight than abstract safety regulations.

Cultural Barriers: Fatalism and Masculinity

The analysis highlights that non-compliance with OSH is often culturally sanctioned. The fatalistic

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worldview—attributing survival to divine will or destiny—serves as a powerful coping mechanism for dealing with the uncertainty of the sea. While this worldview provides psychological resilience, it simultaneously acts as a barrier to proactive safety behaviors (Manyungwa et al., 2019). Furthermore, the construction of masculinity in fishing communities complicates the adoption of safety gear. If a community associates "good seamanship" with physical toughness and fearlessness, then wearing a life jacket may be culturally coded as a signal of incompetence or cowardice. Therefore, safety interventions that fail to address these identity politics are likely to be rejected (Novaglio et al., 2022; Odjo et al., 2019).

The Political Economy of Safety

Crucially, this study underscores that "unsafe behavior" is often an economically rational response to precarity. The literature reveals a hierarchy of risks where the immediate threat of poverty (not catching fish) outweighs the potential threat of accidents (bad weather or capsizing). For a small-scale fisher operating on the margins of subsistence, the decision to overload a boat or ignore weather warnings is not an act of ignorance, but a calculated trade-off to secure livelihood (Stacey et al., 2019). This implies that OSH is a luxury good; compliance requires financial resources that many fishers simply do not possess. Blaming fishers for negligence ignores the structural economic violence that forces them to prioritize profit over safety.

Implications for Policy: Moving Towards Participatory OSH

The findings necessitate a paradigm shift in how maritime safety policies are designed. Top-down regulations that enforce standardization without considering local contexts are destined to fail. To improve compliance, policy interventions must be: 1) Participatory: Involving fishers in the design of safety protocols ensures that measures are practical and culturally acceptable; 2) Culturally Sensitive: Safety campaigns should reframe OSH not as a contradiction to faith or masculinity, but as a form of "responsible stewardship" or "professionalism," aligning safety with existing cultural values; 3) Holistic: Addressing safety requires addressing economic vulnerability. Policies providing subsidies for safety equipment or social protection schemes are as vital as the regulations themselves (Sandison et al., 2021).

By acknowledging the social construction of risk, policymakers can move beyond a punitive approach towards one that empowers fishing communities to navigate both the physical hazards of the ocean and the socio-economic hazards of their trade.

5. Conclusion

This study has utilized a systematic literature review to critically examine the factors influencing Occupational Safety and Health (OSH) compliance among small-scale fishers. The synthesis of evidence confirms that the persistently high accident rates in this sector cannot be attributed simply to a lack of regulatory frameworks or safety equipment. Instead, the root of the problem lies in the disconnect between the "objective" safety standards designed by policymakers and the "subjective" risk landscapes navigated by fishers. The central conclusion of this research is that risk in small-scale fisheries is socially constructed. Through the process of "hazard normalization," fishers cognitively reframe life-threatening dangers as routine occupational characteristics to psychologically cope with their hostile working environment. Furthermore, safety behaviors are heavily constrained by sociocultural norms—such as fatalism and masculinity—and structural economic precarity. When immediate economic survival is at stake, safety compliance becomes a secondary priority, often viewed as a financial burden rather than a protective necessity.

Consequently, this study argues that the prevailing "rational actor" model in maritime safety policy is insufficient. Technical interventions that ignore the cultural and economic contexts of fishing communities are destined to remain ineffective. To achieve meaningful improvements in safety, future policies must shift from a top-down, punitive approach to a participatory, culturally responsive model. This involves co-designing safety protocols with fishers to ensure they align with local values and integrating economic incentives (such as safety gear subsidies or social protection) to alleviate the financial pressure to take risks.

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