

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL FOR SAFETY AND SECURITY ISSUES FOR QUALITY FISHERY ACTIVITIES AT LKIM KUALA BESUT

Mohd Saiful Izwaan Saadon^{a,b,d}, Nur Liyana Mohammad^a, Mohamad Rosni Othman^a,
Dina Azleema Mohamed Nor^f, Norshahrizan Nordin^{d,e}, Tan Owee Kowang^f, Latipah Nordin^g

^aFakulti Pengajian Maritim, Universiti Malaysia Terengganu, Malaysia

^bInstitut Biodivesiti Tropika & Pembangunan Lestari, Universiti Malaysia Terengganu, Malaysia

^cFakulti Perniagaan, Ekonomi dan Pembangunan Sosial, Universiti Malaysia Terengganu, Malaysia

^dCenter of Excellence Geopolymer & Green Technology, Universiti Malaysia Perlis, Malaysia

^eSchool of Business Innovation & Technopreneurship, Universiti Malaysia Perlis, Malaysia

^fAzman Hashim International Business School, Universiti Teknologi Malaysia, Malaysia,

Universiti Kuala Lumpur – Malaysian Institute of Industrial Technology

E-mail: saiful.izwaan@umt.edu.my, rosni@umt.edu.my, dina@utm.my

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Abstract

Marine fisheries are very important industry for the Malaysian economy and a major source of world fish supply. Fishing has a long history in Malaysia and it is very important for coastal fishing communities to feed their families and supply fish to domestic and foreign markets. Fisheries have a reputation as a dangerous work on the sea. Fishermen at sea face a lot of security risks due to their working nature. Although many equipment are supplied to the fishermen during the cruise but the fishermen still stumbled on many workplace accidents. The purpose of this study is to identify and assess safety and security factors that could impact fishermen in Kuala Besut based on the HIRARC (Hazard Identification, Risk Assessment and Risk Control) process. Observation was conducted at LKIM Kuala Besut. The findings of the study identify hazards and assess the risks associated with the ongoing hazard to the fisherman. Research findings develop and introduce preventive measures to minimize safety and security issues at LKIM Kuala Besut. This study uses qualitative and quantitative approach to obtain more information about HIRARC for safety and security of fisherman through interviews and survey.

Keywords--Fisherman, Safety, Security

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INTRODUCTION

Fisheries work is one of the high-risk jobs for work accidents in many countries. It is necessary to understand the potential hazard to avoid them. A survey of work injury claims by fishermen workers were made to the fisherman at LKIM Kuala Besut. The survey will focus on the injury time, type of injury, part of the affected body, injury and cost incidents. The highest incidence rate of injury is among young fisheries workers and during winter.

Bruises and fractures are the most common types of injuries, and the fingers and hands are most often affected, while falling and accidents related to machines are the most common cause. Safety measures should be taken on board to prevent fall injuries while operating machineries, and young fisheries workers should have better on-the-job training. The purpose of hazard identification and risk assessment in this study is to highlight critical task operations that pose significant risks to the health and safety of employees and highlight the dangers associated with certain equipment caused by energy sources, working conditions or activities performed.

LITERATURE REVIEW

Fisherman

Fishermen refer to those who seek income by fishing or sea life including snails and sea grasses. Their income from fishing activities is more than any other activity. In developing countries such as in Southeast Asia or in Africa, there are still many fishermen who use simple equipment in fishing. Fishermen in developed countries like Japan usually use modern equipment and large ships equipped with state-of-the-art technology.

HIRARC

Recently, Hazard Introduction, Risk Assessment and Risk Control (HIRARC) is the cornerstones of business planning, management and business practices as the basis of risk management. Hazard identification and risk assessment are the processes used to identify and assess the dangers and potential of existing sites and methods used to control or eliminate identified hazards (Asmalia Che Ahmad et. al, 2016). Organizations carrying out risk assessment at work have recorded a lot of changes in their work. Those who carry out risk assessment in their work, have reported positive changes in their work, they acknowledge legal action and working conditions when they build and take necessary action. Legislation requires this process to be systematic and recorded so that the results are reliable and the analysis is complete.

Safety

"First Safety" is a slogan that crew members of any fishing vessel need to be remembered. "Safety" must be given priority. Safety at sea is a serious issue for the commercial fishing industry (Kaplan, I. M. Kite-Powell, H. L., 2002). Appropriate security measures will save lives, protect vessels from damage, prevent serious injuries, protect the environment, and help sustain the fishing industry in a favorable way. Safety is a situation where hazards and conditions that lead to physical, psychological or material hazards are controlled to maintain the safety and well-being of individuals and communities. This is an important source for everyday life, which is needed by individuals and communities to realize their aspirations. Fishermen's safety should not only need Holistic approaches that are addressed through government activities, such as rules and guidelines, but also through grassroots activities using a holistic approach. Fishermen's safety needs to be managed from government level and grassroots

level. There should be a holistic approach where governments and regional bodies coordinate their activities with activities among fishermen. Fishermen's safety and fishing vessels should always be an integral part of any project livelihood fisheries, coastal weakness of the project, project climate change and integrated coastal zone management. Fisherman safety is a cross-cutting issue and should always be seen in a holistic perspective.

Security

Security may be regarded as safe freedom from poverty or want, while preventive measures are taken to ascertain from the theft, snooping or the person or thing that guarantees or guarantees (Collins English Dictionary and Thesaurus, 1992). Security reminds a stable and predictable environment where individuals or groups can pursue non-stop or non-hazardous and without fear of such interference or injury. The traditional security details are the provision of private services in the protection of persons, information and assets for individual security or community well-being (Craighead, 2003); (Ghani et al., 2019).

METHODOLOGY

This research is an exploration as it attempts to explore the experience of fishermen who survived the event. Their subjective perceptions form the core of this research data. Therefore, it requires a method that will address this topic in the type of exploration. There are 6 elements in research design which are research problem, research objective, research question, data collection, and data analysis. These elements will

play an important role to determine the result of this research and help researchers to achieve the objective of this research (Hussain et al., 2018). This study uses both qualitative and quantitative approach to obtain more information about HIRARC for safety and security fisherman through interviews and survey.

RESULTS AND DISCUSSION

Safety and security are essential for every workplace. Therefore, observation and questioning session with local fishermen registered at LKIM Kuala Besut were conducted. The research has shown that many activities by fishermen can be hazardous to them and can harm them. In the meantime, some suggestions have been suggested to reduce the risk of accidents to fishermen during fishery activities.

HIRARC for Safety

There are several approaches used in hazard identification. Hazardous elements and Component checklist based on previous experience and analysis are one of the approaches used to identify hazards (Ericson, 2005). Hence, a hazard identification checklist was used in this study to identify and understand all the unexpected and unfortunate dangers that occurred to fishermen registered at LKIM Kuala Besut. A hazard identification checklist is used to evaluate each of the parameters involved in the process, reviewing the effectiveness of current security measures and introducing better control measures to achieve tolerance risk levels.

Table 1. Expert Opinion for Safety

Hazard identification					Risk analysis				Risk control
No	Type of hazard	Work Activity	Hazard	Which can cause/effect	Existing Risk Control	Likelihood (A)	Severity (B)	Risk (axb)	Recommended Control Measures
1	Physical hazard	The passage on the ship	Slippery floor	Falling	None	4	2	8	Wear the shoe boots
			The floors are narrow	Collide with each	None	4	3	12	Expand the route on the
		Catching the fishes	Draw nets	Hand injuries	Wear PPE (glove)	5	3	15	Using Machinery
2	Chemical hazard	Ship oil (diesel)	Oil tank leaked or broken	Burn, explode	None	3	1	3	Always do the maintenance
		On the ship	Oil spillage	Falling	None	3	2	6	Place the liquid in the right place and cover neatly
3	Biological hazard	Put the fishes in boxes	Fish bones, poison from fish	Hand injuries	None	5	3	15	Using rubber glove
		Ingestion	Eating or swallowing contaminated food or liquids or not washing hands prior to eating or smoking	Food poisoning, diarrhea	None	4	3	12	Always cover exposed foods and wash hands first before eat
4	Ergonomic hazard	After catching	Lifting the basket on the trolley	Waist pain	None	5	4	20	Use the forklift
		At the jetty	Move the fishes to the jetty repeatedly	Fatigue	None	4	3	12	Use the crane

PHYSICAL HAZARD

Slippery Floor

There are several types of hazards that can be observed during this study, including physical hazards. Work activity that causes physical hazard is slippery floor. This slippery floor will cause the fisherman to fall. There is no existing risk control to address this problem. Based on the observed observation the likelihood is 4 while the severity is 2. The risk analysis based on the identification of these hazards is a moderate risk that requires a planned approach to hazard control and to take temporary measures if necessary. The control measures recommended is wearing the shoe boots.

Narrow and Uneven Paths

In addition, narrow and uneven paths are also a work activity that will cause physical hazards. This situation will cause fishermen to collide with each other. The risk that is found to be moderate is 12 because the probability of the occurrence is 4 and the severity is 3. This situation is still uncontrollable. Therefore, the recommended suggestion to control this risk is to expand the route and to ensure no object in the area can prevent the route.

Trawl lifting

During fishing activities, trawl lifting activities were also carried out. According to the study, this may cause fishermen to injure their hands like wounds. This has been resolved by ensuring that fishermen wear gloves during the activity. However for fishermen, wearing gloves is uncomfortable to do this activity. Studies have shown that the likelihood is 5 and the severity is 3. This risk is at a high level. Hence, this situation needs to be dealt with promptly to avoid injury to fishermen. To control this risk, the recommended backup is to use the machinery.

CHEMICAL HAZARD

Oil Tank Leakage

Chemical hazards are also found in this study. Among them is oil tank leakage. This is due to the activity of the ship's oil work. This is likely the occurrence of a fire or explosion. This matter is still uncontrollable. The possibility for this activity too occurs 1 and the severity is 3. The risk for this situation is very low. Among the suggestions for addressing this problem is always to do the maintenance.

Oil spill

The study found that there was a barrel of oil on board and there was also an oil spill. In this case, the fisherman will fall and may have injuries like fractures and so on. This matter still has not been controlled by any party. The study estimates the probability of occurring is 3 and the severity is 2. This is a moderate level of risk requires a planned approach in controlling the hazard and applies temporary measure if required. To avoid the risk, the study suggested to place the liquid in the right place and cover neatly.

HIRARC for Security

Table 2. Expert Opinion for Security

1. Hazard Identification			2. Risk Analysis				3. Risk Control
No	Hazard Space / Work Conditions (Inappropriate Condition / Action)	Which can cause/effect	Existing Risk Control	Likelihood (A)	Severity (B)	Risk (axb)	Recommended Control Measures
1	The door without grill	Broken in	None	4	2	8	Place the grill on each doors and windows
2	Illegal fishing	Threatens marine ecosystem, harmful to the seafood industry	MMEA monitored	4	3	12	Tighten laws

BIOLOGICAL HAZARD

Fish Bones, Poison from Fish

Activity that can cause biological hazards shall be put into a box. This activity can be said to be very risky to fishermen. Because the fish they caught are venomous fish. This is likely to cause injury to the fishermen who manage it. The results obtained the likelihood of occurrence is 5 while the severity is 3. The risk that occurs is at a high level. Therefore, this should be dealt with promptly. The studies suggesting fishermen who manage the fish, should wear rubber gloves to avoid being exposed to the venomous fish.

Not Washing Hands Prior to Eating or Smoking

Ingestion is also a work activity that causes biological hazards. The hazard found is eating or swallowing contaminated food or liquids or not washing hands prior to eating or smoking. This can cause the fisherman to be exposed to food poisoning. The study has found that possibilities are 4 and the severity is 3. The risk analysis based on the identification of these hazards is a moderate risk that requires a planned approach to hazard control and to take temporary measures if necessary. For now, there is no risk control. Therefore, studying fishermen's recommendations should always cover exposed foods and wash hands first before they eat.

ERGONOMIC HAZARD

Lifting the Basket on the Trolley

Ergonomic hazards were also found during the study. Ergonomic hazards often occur anywhere in the workplace. At LKIM Kuala Besut the fishermen did other activities after fishing activities. The hazard found during the activity of lifting the basket on the trolley. Hazard can cause pain and waist problems. At LKIM Kuala Besut there is still no risk control. A study found that it was possible 5 and severity was 4. The risk was high at 20. A high risk requires immediate action to control the hazard as detailed in the hierarchy of control. Actions taken must be documented on the risk assessment form including date for completion. Studies suggest that in reducing this risk, forklifts should be employed.

Move the Fishes to the Jetty Repeatedly

After arriving at the jetty, the fishermen brought the fishes that had been captured to the jetty. They do this process repeatedly. This situation leads to the occurrence of hazard to fishermen. They will feel tired. At present there is no risk control by the management to reduce the fatigue of the fisherman. Observation found that the possibility of this happening was 4 and the severity was 3. Risk was found at moderate level. The study suggested that responsible parties should use cranes to bring the fishes to the jetty.

The door Without Grill

Based on observations conducted at LKIM Kuala Besut, the doors are without grill. This situation is very dangerous to the safety of fishermen. The breakers are easy to break into. The probability of occurrence is 4 and the severity it receives 2. The possible risk is 8. It is at a moderate level. If it happens, the responsible party should take action. The suggestion to prevent this is to place a grill on the door that is available and always locked if it does not operate.

Illegal Fishing

Illegal fishing is very dangerous to fishermen. The entry of foreign fishermen into Malaysia waters can affect the safety of fishermen. Besides, it can also threaten marine ecosystem and endanger the seafood industry. Existing risk control measures have been made by the MMEA. The probability of this happening is 4 and the severity is 3. The risk of this happening to local fishermen is 12. The recommended suggestion is that the responsible party on this matter should tighten the law.

The Equipment in the Boat is Not Stored in a Safe Place

During the observation, there are items which are not stored in the correct place. This can cause the thief to easily take it. When there are missing items it will be a problem for fishermen to do the work. The study also found that this possibility is 5 and the severity is 2. The risk is also moderate. Therefore, the study suggests that the items should be stored in the box and placed at a safe place.

CONCLUSION

There are many suggestions in reducing safety and security issues to fishermen. Based on the suggestion, the LKIM Kuala Besut management should take immediate action to ensure that it will not happen again. The responsible party should always keep track of where fishermen are working to ensure that fishermen do so in accordance with the regulations set by the LKIM. The parties need to know the zones of each of the registered fishermen. Any information about the fisherman should be recorded and stored properly. Before fishing activities, fishing vessels should be checked beforehand and make sure that all safety devices are on board and rescue equipment should be available for preparation in case of minor injuries occurring to fishermen.

Fisheries Development Authority of Malaysia (LKIM) should check the workplace of fisherman regularly and plays an important role in ensuring the proper administration of Occupational Safety and Health. Checklist is used to make sure important elements are not neglected. It helps to control the activity and provide reports. Regular workplace inspections are practiced as a precautionary measure for occupational safety and health matters, as it enables hazard identification at work for further control measures, in different operation stages such as planning, operating, monitoring and reporting. Examinations at work can be done by security committee member.

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