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Fishing Technology and Fisherman Community: A Narrative Review

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Abstract

The limited number of existing studies on the use of fishing technologies among fishermen community has driven this narrative review article to discuss the matter within the Malaysian context. Four social sources, namely family members, fishermen colleagues, agencies, and village administration members are found to have influence on fishermen's behaviour and decision towards fishing technology usage. Later in the article, the benefits and obstacles of using fishing technology usage are discussed. This paper offers insights and recommendations such as restructuring fishermen's allowance, providing fishing equipment (technology), and providing training funds to attend workshops or programs on how to use and handle fishing technology tools. These suggestions will encourage the fishermen community to utilize fishing technology in their fishing routines.

Keywords: Fishing Technology, Fishermen, Rural Community.

Introduction

In Malaysia, fishing technology have been used for decades, and have been effectively replaced the traditional means of fishing habits. It can be said that evolution of technology has changed the way the fishermen conduct their fishing routine. In this modern day it is not surprising that new models of fishing technology are launched every month. Fishing technology according to Musa (2010) is a tool or software used to do or construct something, it will ease people who use it; save time and cost; efficient and; secured. Research with regard to fishing technology has been conducted by scholars across the globe, with a focus having been placed specifically on the fishermen's attitude, social environment, socio-economic benefits, and perceived ease of use of technology (Venkatesh & Morris, 2000; Aziz & Mamat, 2018; Okwuraiwe, Ezenwaka, Mojekeh, Chiyem, 2018).

Although there is some studies by Noor et al. (2010) and Jensen (2007) that try to focused on technology usage among fishermen in Malaysia, the numbers of published articles or studies that focus on this particular issue within the context of Malaysian fishermen are nonetheless lacking. This article try to close that gap by discussing about fishing technology such as GPS, echo sounder, sonar, wireless set and mobile phones upon their effect on fisherman in Malaysia. This effort to try enriched the literature regarding fishing technology and fisherman in Malaysia. This fact have driven the development of this article to be narrative article, this article aims to review the use of fishing technology tools among fishermen communities in Malaysia. This article use narrative literature review method to get the suitable article to be reviewed. This method start with describing the state of the specific topic or theme that regards to fishing technology that been used among fisherman community from a theoretical and contextual point of view. There is no limitation or list that been used to retrieved the suitable article during database search. Focus of this article are upon critical analysis of the literature published in books and electronic or paper-based journal articles, report or seminar paper. The article starts with the background of the Malaysian fishermen, followed by the development of fishing technologies in Malaysia, the role of social support system in influencing the Malaysian fishermen's decision to utilize fishing technologies in their fishing operations, followed by the benefits and obstacles of using these tools. This article will help to developed the studies on the fishermen's use of fishing technology which in the end provide outlooks on their income generations, social relationships and knowledge.

Fishermen in Malaysia

Drawing on statistics by the Department of Fishery (DOF), there are a total of 74 fisheries districts in Malaysia; 42 districts are located in the Peninsular Zone while the remaining 32 districts are located in East Malaysia. Between each state, Sabah has the highest number of fisheries districts (16 districts), followed by Sarawak (15 districts), and Johor (8 districts). There are two government agencies accountable for developing the fisheries industry in Malaysia are the Department of Fishery (DOF) and Malaysian Fisheries Development Authority (LKIM). Both managements are responsible in ensuring the growth of the fisheries sector and enhancing the socio-economic level of the fishermen community. Records prepared by the Department of Fisheries Malaysia (2015) show that the registered number of fisherman in Malaysia are 140,949. The fishermen in Malaysia are given a monthly allowance of Ringgit Malaysia 300 (roughly equal to USD75) and subsidized petrol of 65 cents cheaper than the current petrol price. Several local studies concluded that the average Malaysian fishermen age was 40 years old and above, by which more than 95% are males, had more than 20 years of fishing experience and earned more than Ringgit Malaysia RM700 per month (roughly equal to USD167 per month) (Abu Samah et al., 2019, Ramli et al., 2013; Mazuki et al., 2013; Bolong et al., 2013).

Fishing Technology Development

The government has been supporting the development of fishing technologies in Malaysia by introducing new and upgraded initiatives throughout the 6th until 11th Malaysian Plan. Among the ICT development initiatives are Multimedia Super Corridor (MSC), Multimedia University (MMU), e-Government Services, Rural Internet Center, Rural Info Center, Smart School, e-

Integration, and ehome-stay (Omar et al., 2011). These projects have benefitted the community, especially for the rural communities as the programs provide them with better access to advanced technology and are encouraged to embrace it in their lives. One rural community group that has benefited immensely from technology development is the fishermen community. Within the scope of fisheries related activities, technologies such as sonar, echo sounders, geographical positioning systems (GPS), and radar assist the fishermen communities in their daily work (Osman et al., 2014; Bolong et al., 2013; Ramli et al., 2013). The GPS for example, is considered as the most preferred and operated fishing technology among the fishermen community due to its reasonable price and useful functions, which helps them navigate to their fishing locations and to return to the jetty safely. Echo sounder and sonar on the other hand, assisted the fishermen community by reducing their operation cost, and increase their income. Meanwhile, a wireless set and mobile phones have eased the communication process between fishermen while they are at sea (near shore) and on land (Bolong et al., 2013).

Social Support System in Influencing the Use of Fishing Technology

The influence of social support system can be the main factor in gearing the fishermen to use fishing technology during their fishing operations. Interaction within their social surroundings like family and friends may influence these fishermen's beliefs, feelings, attitudes or behaviour towards fishing technology usage (Rashotte, 2006). A study by Mazuki et al. (2013) have mentioned that a prominent social support system for the fishermen community are their family members, fishermen colleagues, agency officers and village administration members (which known as JKKK). Out of the four social support system, Mazuki et al. (2013) concluded that it was the fishermen's colleagues to be a major influence in their decision to utilize fishing technology. This was due to them spending more time together conducting daily routines at sea or on land. This mingling situation provides them with more opportunities to share and learn new things with regards to fishing technology usage.

Family members are another main social influence regarding fishing technology usage among fishermen (Mazuki et al., 2013). It is common for a fisherman to keep in contact with their family members using a mobile phone while at sea (near shore) because it allows them to keep the people on land alert in case of emergencies. Village administrators or JKKK are the third major influence in a fisherman's decision to use fishing technology. Within the scope of rural community, in which the fishermen community usually reside in, the JKKK are considered as a reliable and trusted source (Abu Hassan et al., 2011). Additionally, agency officers (public servant) also have a say in a fisherman's decision to use fishing technology. They act as a facilitator who are supposed to encourage and motivate the fishermen community towards utilizing fishing technology tools while at the same time offer training or workshops to help enhance the fishermen community's compatibility and skills in applying technology (Omar et al., 2011).

The Benefits of Utilizing Fishing Technology during Fishing Operations

The use of fishing technology increases the productivity and income of fishermen (Bolong et al., 2013). Fishing technologies such as sonar and echo sounder allow fishermen to locate the exact location of fish, as opposed to traditional methods that rely much on weather stability and luck. Specifically, advanced technologies such as the echo sounder and sonar allow fishermen to accurately pinpoint the location of potential catches and detect the movements of potential catches, these functions ease the catching process and enable the fishermen to gain more catches and increase their income.

The use of technology allows the fishermen to shorten their fishing operations (Osman et al., 2014; Omar et al., 2011). The use of GPS for example, allows fishermen to navigate their vessel accurately to the pinpointed catching locations. Traditional methods such as referring to the position of the hills or stars are less accurate in detecting fishing locations. Some fishermen even use buoys as markers, a technique that impose risks such as theft and bad weather. Using the GPS, on the other hand, allows them to reduce the duration of their fishing operation. As they spend less time at sea they also use less fuel and have more fishing operations, therefore they are able to spend more time with families and be involve in social activities with colleagues.

The use of fishing technology also strengthen the social relationships between the fishermen and their surrounding community (Mazuki et al., 2013). Mobile phone usage for example, allows the fishermen to be in touch with their families while conducting their fishing routines at sea. Also, having wireless sets allow them to remain in contact with other fishermen for early warnings related to extreme weather conditions (Ramli et al., 2013).

A study by Mazuki and Man (2014) shows that 77% of the fishermen feel safer at sea when they use fishing technology. Torner & Nordling (2000) also found that fishing technology can significantly reduce the rate of fatality and risks associated with fishing operations. Several threats such as poor visibility, bad weather, and dangerous reefs can risk the fishermen's lives, vessels, and fishing tools. Having advanced tools during fishing operations such as a GPS can give early warnings of the potential threats and hence help the fishermen to navigate safely to the jetty in case of bad weather. Meanwhile, communication devices such as wireless sets or mobile phones help them call for help in case of emergency at sea (Shaffril et al., 2015)

The Obstacles and Limitations of Utilizing Fishing Technology

The fishermen community faces several obstacles and limitations when it comes to utilizing fishing technology in their fishing operations. One apparent limitation is their technological illiteracy; this shortcoming forces the fishermen community to continue fishing based on their traditional and old fishing methods. A person who is technologically illiterate is generally unaware about latest technologies (Chhachhar et al., 2014). Without technology, the fishermen community relies on traditional ways of marketing their catches, which consequently result in them getting lower bidding prices for their catches. The lack of access to fishing technology such as the unavailability of fishing technology hardware and the lack of communication infrastructure in rural areas are both obstacles that bring limitations to rural folks. As such, the fishermen may

face difficulty when trying to communicate with family, friends, as well as getting the latest information on market prices and weather changes.

The third limitation is related to the lack of knowledge on technology usage. Although the local and national authorities have promoted the benefits of using fishing technology, most fishermen find it difficult to understand the given instructions or manuals of the technology due to their low education level. This situation is quite common in many third world countries (Qureshi & Davis, 2007). Not all fishermen in Malaysia are illiterate, while some of them can read, they however do not get enough exposure to fishing technology due to geographical and social factors such as the circle or network of friends.

The high price of fishing technologies nowadays is another limitation to be considered. The average income of Malaysian fishermen was USD167 (Samah et al., 2019, Ramli et al., 2013; Mazuki et al., 2013; Bolong et al., 2013). Faced with limited financial resources, these fishermen find buying a basic mobile phone to be demanding. Other than being limited to financial stability and acquiring the device, these fishermen also face challenges in paying the monthly subscriptions.

The last limitation associated with the use of fishing technology among fishermen in Malaysia is due to the limited network infrastructure and satellite signals. These obstacles make it difficult for the fisherman to communicate with their friends and inform them about their location at sea (Chhachhar et al., 2014). The limitations due to limited network infrastructure and satellite signals are particularly crucial, especially at sea where the fishermen conduct fishing operations. There are dangers associated with sea, hence the absence of communication signals during emergencies can be life threatening. This is fairly a common issue in Malaysia where mobile phone services are generally weak and unavailable in a number of rural areas, and particularly at sea.

Recommendations and Conclusion

This paper concluded that it is important to encourage the usage of fishing technology among the fisherman community in Malaysia. Nevertheless, it is important to consider the obstacles and limitations that impinge the use of fishing technology among fishermen community in Malaysia. There is a proverb that accentuates, "*Give a man a fish and he will eat for a day…Teach a man how to fish and you feed him for a lifetime*". In order to encourage the use of fishing technology among Malaysian fishermen, the government agencies should restructure and extend their assistance to the fisherman community in exposing them to the benefits of utilizing fishing technologies during fishing operation. Despite the government handing out allowances, equipment, and training lessons, they failed to offer knowledge on fisheries related technologies. It is noticeable that the price of fishing technology devices like the echo sounder, GPS, and others are not affordable for the fishermen community in Malaysia. Thus by introducing a subsidy for them to buy the devices will probably promote fishing technology usage. Also funding for trainings that focus on the use and how to handle a fishing technology device among the fisherman community should be emphasized.

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