



Constraints in Usage of ICT and Sea Safety Tools by Trawler Operators of Ratnagiri, Maharashtra

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ABSTRACT

The study was carried out to assess the constraints faced by trawler operators in usage of ICT and sea safety tools by trawler operators of Ratnagiri block, Maharashtra. For the study trawler operators from the seven different landing centers of Ratnagiri block were randomly selected. Information was collected from 102 trawler operators with the help of structured interview schedule. Descriptive statistical tool was used to study the socio-personal information and weighted average technique were used to assess the constraints faced by trawler operators in usage of ICT and sea safety tools. Result of the study revealed that, majority of trawler operators (66.67%) belongs to middle age group (41-60 years). About 78.43% trawler operators had annual income between ₹ 100001-250000. It was observed that lack of training/ awareness programs, high price of ICT tools, low durability of sea safety tools was the main reasons for limiting the usage of ICT and sea safety tools among the trawler operators. Therefore it was necessary to enforce rules such as Maharashtra Marine Fishing Regulation Act, 1981 and rules, Merchant Shipping Act and Marine Fishing Policy etc in a participatory mode so as to increase usage of ICT and sea safety tools among trawler operators.

Key Words: Constraints, Usage, ICT, Sea Safety Tools, Trawler Operators, Ratnagiri

INTRODUCTION

Marine fisheries are very important to the economy and well-being of coastal communities, providing food security, job opportunities, income and livelihoods as well as traditional cultural identity (Guguloth *et al*, 2018). The transformation of the marine fishing sector in our economy into a thriving one has been largely attributed to modern technical equipment. Technologies that facilitate communication, processing, and transmission of information by electronic means is called as information communication. Modern technical externalities like ICTs in marine fisheries have significantly changed the way of life of the population of fishermen, both personally and in terms of their livelihood activities as the global fishing community plays a vital role in economic advancement (Guguloth *et al*, 2017). ICT as a basic resource for development, a number of ICT tools

such as mobile phone, television, radio, GPS and sonar, can bring significant changes in the development and reduction in the level of poverty of different communities including the fishermen (Kularatne, 1997).

The world's most vulnerable profession is fishing at the sea. The majority of tragedies in the fishing sector were because of mistakes committed or because of human error (Patil *et al*, 2017). Safety at sea consistently remains an inseparable component of fisheries management, both directly and indirectly. Under the open access system, the intense competition to capture fish has spurred advancements in fishing vessels and equipment, but unfortunately, this has led to a lack of emphasis on enhancing the safety of fishermen working at sea. Consequently, very few fishing boats are equipped with even the basic life-saving tools such as lifebuoys, life jackets, and flares (Patil *et al*, 2017).

Table 1. Socio-personal Information.

N = 102

Sr. No.	Socio-personal Characteristic	Frequency	Percentage
A.	Age in years		
	< 40	31	30.4
	41 – 60	68	66.7
	> 61	3	2.9
B.	Education		
	Illiterate	4	3.9
	Primary	66	64.7
	Secondary	27	26.5
	Higher Secondary	5	4.9
C.	Annual Income		
	< 100000	3	2.9
	100001 – 250000	80	78.4
	250001 – 500000	19	18.6
D.	Religion		
	Hindu	53	51.9
	Islam	49	48.0
E.	Fishing Experience in years		
	< 15	11	10.8
	15 – 30	67	65.7
	31 – 46	21	20.6
	47 – 62	3	2.9
F.	Source of Information		
	Employer/ Owner	62	60.8
	Boat driver	81	79.4
	Senior	80	78.4
	Relatives	11	10.8

The appropriate and timely use of ICTs can positively impact fishing costs as well as the improvement of fishers' quality of life (Marciniak, 2010). Similarly, it is important to use life-saving equipment on boat for emergency purpose like life jackets, ring buoy, life rafts, fire safety measures (Fire extinguisher and fire bucket) and first aid kit. Proper use and periodic maintenance of safety equipment are carried out as per the recommendations (NETFISH-MPEDA, 2020). To prevent maritime disasters, fishermen need to be educated in safety and navigational requirements. Fishermen can work at sea without worry if they have knowledge about communication and safety technologies (NETFISH-MPEDA, 2020).

There are different ICT and sea safety tools used for the different purposes but it is essential to understand the level of awareness of ICT and sea safety tools for filling the gap between knowledge and usage which can further helps to improve sea safety practices. This study also helps to know the emergency response mechanisms of trawler operators as they are well equipped with communication devices. Also, improved communication, navigation and access to the market information can enhance the efficiency of fishing, contributing to the economic development of fishermen community. Assessing the gaps between knowledge and usage of ICT and sea safety tools can help to construct policies and regulation in future by considering needs as well

as challenges of trawler operators of Ratnagiri block. Hence, the study was undertaken to understand the constraints related to usage of ICT and sea safety tools among the trawler operators of Ratnagiri block, Maharashtra.

MATERIALS AND METHODS

The study was carried out in Ratnagiri block, Ratnagiri district, Maharashtra which is situated between 17°01'48.69" N latitude and 73°11'38.14" E longitude and 16°48'24.76" N latitude and 73°18'48.85" E. Data was collected from the 7 landing centers in Ratnagiri block namely Mirkarwada, Rajiwada, Kasarveli, Sakhartar, Kalbadevi, Jaigad and Purnagad. An interview schedule was developed as a data collection tool to elicit information in the current study. Trawler operators (tandel) were the targeted respondents during data collection. Data were collected from 102 randomly selected trawler operators. Questions were asked in local language to get accurate information about knowledge and usage ICT tools. Total 8 ICT tools selected for study such as Magnetic Compass (MC), Global Positioning System (GPS), echo sounder, RADAR, wireless set, mobile phone, Emergency Position Indicating Radio Beacon (EPIRB), Very High Frequency radio (VHF) and Two-band transistor radio as well as total 9 sea safety tools were selected for study such as life jacket, life buoy, first aid kit, fire extinguisher, fire bucket, signalling flame, self-igniting light, oil lamp and signalling torch and batteries.

Descriptive analytical tool such as percentage analysis was used to analyse socio-personal information. Weighted average technique was used to understand and rank various constraints faced by trawler operators in usage of ICT and sea safety tools (Patil and Sharma, 2021). The weighted average for each constraint was determined by multiplying the frequency of each constraint by its corresponding weight or score. The weights used for calculating the weighted average were assigned as follows: 2 for "agree," 1 for "neither agree nor disagree," and 0 for "disagree." The formula for calculating the weighted average can be expressed as follows:

$$\text{Weighted Average} = \frac{\sum (X1.W1 + X2.W2 + X3.W3)}{\sum (W1 + W2 + W3)}$$

$$X3.W3 / \sum (W1 + W2 + W3)$$

Where,

X1, X2, X3= Frequency of the respective constraints/motivations

W1, W2, W3= Weighted values i.e., 2,1,0

RESULTS AND DISCUSSION

Socio-personal Information

Results revealed that, maximum (66.7%) trawler operators of Ratnagiri block belong to the middle age group (41–60 years). Similar results were reported by Sethulakshmi (2017) in her study in Kerala and reported that 48% fishers belong to the middle age group (41-60 years). Anusaya *et al* (2014) reported that, large number of fishermen (52.5%) in Udupi district, Karnataka had age between 20 to 30 years.

Maximum trawler operators of Ratnagiri block (64.7%) had primary level education. Sethulakshmi (2017) observed that majority of fishermen (53%) of Kerala had secondary level of education. Sabu and Shaijumon (2014), observed that, around 35% and 40% of fishermen from Munambam and Pozhiyoor village of Kerala had primary level of education respectively. It was observed that, 78.4% trawler operators of Ratnagiri block had annual income in between ₹ 100001-250000. Anusaya *et al* (2014) reported that monthly income of 47.5% fishermen from Udupi district, Karnataka was between 5001 to 10000 rupees.

Majority of interviewed trawler operators (51.9%) of Ratnagiri belongs to Hindu religion followed by Islam (48.04%). Sethulakshmi (2017) reported that Hindus (39%) were maximum in Kerala followed by Christians (34%) and Muslims (24%). Anusaya *et al* (2014) reported that, 97.5% fishermen from Udupi district of Karnataka were Hindus. It was observed that 86.3% trawler operators of Ratnagiri had an experience of 15-46 years. Similar type of results was reported by Sethulakshmi (2017) in her study in Kerala mentioned that 97% of the fishers had an experience of 15-46 years.

It was observed that trawler operators from Ratnagiri block were getting information regarding use of ICT tools from different sources

Table 2. Constraints faced by trawler operators in usage of ICT tools

Sr. No.	Constraint	Weighted average	Rank
1.	High price of device	2	I
2.	Damage due to humid air	1.57	II
3.	Low durability	1.34	III
4.	Lack of training	0.95	IV
5.	Lack of space in vessel	0.95	V
6.	Lack of confidence	0.69	VI

Table 3 Constraints faced by trawler operators in usage of sea safety tools

Sr. No.	Constraint	Weighted average	Rank
1.	Hindrance in work	2	I
2.	Damage due to salt water	1.68	II
3.	Lack of training	1.47	III
4.	Low durability	1.17	IV
5.	Lack of space in vessel	0.74	V
6.	Size of device	0.72	VI

such as employers/owners (60.8%), boat driver (79.4%), seniors/elderly person (78.4%) and relatives of respondents who were also engaged in fishing. Sometimes owners provide information regarding application of ICT tools Anusaya *et al* (2014) reported that fishermen of Udupi district got information about safety measures from employer (2.5%), driver (8.8%), senior (6.2%) and relatives (10%).

Constraints faced by trawler operators in usage of ICT tools and sea safety tools

The major constraints faced by the trawler operators in usage of ICT and sea safety were studied and results were presented in Table 2 and Table 3.

The results revealed that, high price of device was the first ranked constraint faced by the trawler operators in usage of ICT devices (weighted average 2.0). It was observed that maximum trawler operators were not using all ICT tools due to its high price. Similarly, Guguloth *et al* (2017) reported that fishermen of Andhra Pradesh faced constraint like financial inability to purchase high-cost ICT instruments. Sharma and Sethulakshmi (2019) reported that fishers of Kerala were also facing financial constraint while getting ICT devices.

The damage due to humid air was the second ranked constraint faced by the trawler

operators (weighted average 1.57). Trawler operators were not using ICT tools as it malfunctions due to high level of humidity in coastal environments.

Third ranked constraint was low durability of device with weighted average of 1.34. Low durability of ICT tools was the reason for non-usage of all ICT tools by trawler operators.

Lack of training and lack of space on vessel to fit and install these devices was the fourth ranked constraint with weighted average 0.95. Sharma and Sethulakshmi (2019) reported that lack of training/awareness programme was the major reason for low or no use of ICT tools among the fishers of Kerala. Qureshi *et al* (2014) reported that no proper guidance with respect to use of communication tools was the reason for no usage of communication devices. Sabu and Shaijumon (2014) observed that fishers of Kerala were facing technological gap due to which they were not using ICT tools such as GPS. Sharma and Sethulakshmi (2019) also reported that lack of space in fishing vessel was major constraint among fishers of Kerala. Lack of confidence in case of usage of ICT tools was the fifth ranked constraint with weighted average 0.69.

It was observed that the first and foremost constraint faced by trawler operators in usage of sea safety tools was hindrance in work (weighted

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average: 2). It was difficult for them to carry fishing operation and related activities while wearing sea safety tools like life jackets, however it is necessary to have continuous training and practice of using SSTs while working onboard to manage the marine risk.

The damage due to salt water was second ranked constraint faced by trawler operators (weighted average: 1.68). Sea safety tools such as oil lamp, malfunctioned when comes in contact with saltwater leading to frequent repairs and maintenance.

Lack of training was the third ranked constraint with weighted average of 1.47 in the use of sea safety tools. Sharma and Sethulakshmi (2019) observed that, lack of training/awareness programme among the fishers of Kerala was the major constraint.

The fourth ranked constraint faced by trawler operators in usage of sea safety tools was low durability of sea safety tools (weighted average: 1.17). It was found that, good quality sea safety tools were having the higher price, so instead of buying the costly sea safety tools fishermen tends to buy low quality sea safety tools which were affordable to them. These low-quality sea safety tools were having low durability therefore some trawler operators refuse to use SSTs.

Lack of space on fishing vessel was the fifth ranked constraint with weighted average score of 0.74 was recorded in the present study. Sharma and Sethulakshmi (2019) reported that fishermen from Kerala were not using sea safety tools due to lack of space on fishing vessel.

CONCLUSION

Sufficient knowledge and proper usage of ICT and sea safety tools brings safety and development in trawler fishing. But still there was low usage of ICT and sea safety tools among the trawler operators of Ratnagiri block, Maharashtra such as, most of the trawler operators were not aware about use of new ICT (EPIRB and RADAR) and sea safety tools (signalling flame, self-igniting light, signalling torch and batteries). The reasons for

non-usage of ICT and sea safety tools were lack of training, lack of awareness programs, high prices of devices and lack of space on board fishing vessel. To increase usage of ICT and sea safety tools among the trawler operators, it is necessary to enforce Maharashtra Marine Fishing Regulation Act, 1981 and rules thereof, Merchant Shipping Act, Marine Fishing Policy in a participatory mode, and not by force.

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