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Sources of Information and their Role in Influencing the Decision-Making Process among the Brackish Water Cage Farming Community in Kerala

K. V. Unnikrishnan and K. Dinesh

ABSTRACT

In recent years, the Kerala University of Fisheries and Ocean Studies (KUFOS) along with the State Fisheries Department has been promoting brackish water cage farming by providing extensive online and field-level technical support to the farmers. There are various sources from which farmers gather information for adopting cage culture. A study was carried out among the brackish water cage farmers located in different regions of Kerala to identify the significance of various sources of information in adopting sustainable cage culture practices. The information platforms having various sorts of tools and methodologies are generally categorized into four: print media, visual media, social media, and the traditional type of training programme. All the sources selected for the study are a rich repository of information and insights on the subject under discussion. From the study, it was possible to identify the sources of information according to the magnitude of popularity among various farmers and corelating the same with the rate of adoption of a technology. The maximum number of farmers gathered information through training programme. Least number of farmers with mean score of 208 utilized print media as a medium to gather information on cage culture.

Keywords: *Farmers; Information Source; Socio-demographic; Cage culture; Kerala*

INTRODUCTION

The demand for fish and fishery products is increasing day-by-day. The brackish water fishery resources consist of 75 species, out of which 28 species were identified as commercially important fishes (Harikumar and Rajendran 2007). The annual fish production from brackish water areas of Kerala was estimated at 3000 tonnesout of total production of 3.93 lakh tonnes in India (NFDB 2017). The State of Kerala is witnessing a rapid increase in brackish water cage farming which not only increases productivity but also results in additional income generation for the fishing community. Efficient utilization of information and technology increases fish production, employment creation, and income generation. Contributions from different sources and interventions by various agencies have made brackish water

Kerala University of Fisheries and Ocean Studies, Panangad, Kochi, Kerala - 682 506, India.

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cage farming more profitable. In addition to State Government agencies, several research institutes and departments were also involved in guiding and implementing various brackish water and aquaculture projects. Indian Council of Agriculture Research (ICAR) is exclusively focusing on aquaculture research activities. Central Marine Fisheries Research Institute (CMFRI) deals with aquaculture and mariculture research studies. The Central Institute of Brackish water Aquaculture (CIBA) is focused on brackish water aquaculture projects and research activities. Kerala University of Fisheries and Ocean Studies (KUFOS) contributes by imparting education in fisheries and technology. The National Fisheries Development Board (NFDB), part of the Ministry of Agriculture, is actively providing training in the field of aquaculture and fisheries (De Jong, 2017).

In recent years, KUFOS in association with the State fisheries Department was involved by providing field-level informative training programs on brackish water cage culture for potential farmers and entrepreneurs. The information sourced by the farmers acts as a catalyst for increased productivity and income generation. The information thus acquired enables farmers to take appropriate decisions on adopting the right methods of cage farming (Mittal and Tripathi, 2009). A time-bound, trustworthy, and quality information source are the important aspects that are required by farmers to meet their needs and expectation. The optimum technology identified can be considered as an eye-opener for the players in cage farming. Hence this study was taken up to identify the sources of information and their role in brackish water cage farming.

METHODOLOGY

The study was carried out from different brackish water areas located in the state of Kerala encompassing farmers of various demographic features. A total of 121 beneficiary farmers adopting brackish water cage farming from three districts (Ernakulam, Alleppey & Trichur) with different socio-demographic features were considered for the survey. Data were collected as respondents from farmers with the help of pre-specified questionnaires and response forms. The respondents included in the study area were from different age groups and different educational backgrounds. Farmers' responses on the sources of information utilized by them for practicing cage culture were collected. A total of 17 types of information sources that were influencing the farmers in adopting brackish water cage culture were identified. The information sources were categorized into four groups based on the nature of the tool utilized; namely the print media, visual media, social media, and the traditional type of training programmes. The “responses were recorded” by the standard three-point like summated rating scale technique (Likert 1932) viz; always, sometimes, and never respectively and were ranked based on the respondent's view. The weighted scores (w) for each response with points 1 to 3 as ratings were thus obtained were multiplied

with the frequency (f) of the respondent to obtain the weighted frequency (wf) which is compounded as weighed cumulative frequency distribution (cf). The relative frequency (rf) of each information source and its percentage (%) were identified by dividing the frequency of response by the total number of respondents. The rank order was computed for each source identified based on the final weighted frequency scores and compared. Similar rank order was computed for the social demographic characteristics of the farmers and correlated for its significance in decision making. Statistical test, analysis of variance (ANOVA) was used to test the significance ofsocio-demographic variables with maximum utilized information sources.

FINDINGS AND DISCUSSION

The various sources of information utilized by farmers were ranked based on the frequency distribution of different information tools. From this study, it was revealed that the maximum number of farmers preferred to get guidance and support from State Fisheries Department (DoF) by attending to the training programs provided under various schemes. Of the four different groups of preference, mobile WhatsApp, YouTube channels, magazines & periodicals, and State Fisheries Department were preferred by most farmers and ranked one respectively in each group(Table 1&2). The cumulative scores obtained for utilizing different information sources in this study were 273, 267, and 264 which includes the highest score for State Fisheries Department training, followed by the internet tools like YouTube channels (visual media) and Whats App groups (social media) respectively. Gathering information through YouTube channels has been increasing due to the emerging advancement in communication technology. The mobile-based extension is a good medium for reaching youth and educated farmers (Ntiri et al., 2022).Social and visual media tools act as cross-platform monetization solution that connects farmers with relevant content and thus enable interactions with the expertise (Thakur et al., 2017). The best possible coverage of information about farming activities would be by the usage of mobile phones and mobile extensions supported by the internet (Joshua et al., 2015). Farmers who feel confident to learn new technology are likely to find the technology easier to use than someone who is not as confident. More farmers preferred to follow the traditional methods of collecting information directly from expertise and resource persons, and the overall mean cumulative score among the different information sources also showed the highest preference for utilizing information from training and technical support. Fewer farmers gather information from the print media with the lowest mean cumulative score of 208. This is mainly due to the preferential decision of farmers towards utilizing the internet platform.Table1 and Table 2 describe the maximum and minimum scores obtained for using various tools and methods in gathering information for cage farming.

Table 1. Information Sources through Various Tools

Groups	Type of sources	W	F	WF	RF	(%)	CF	Rank
Social Media	Through mobile WhatsApp groups	A(3)	33	99	0.27	27.27	099	**I**
		ST(2)	77	154	0.64	63.64	253	
		N(1)	11	11	0.09	09.09	**264**	
	Through Google search and links	A(3)	24	72	0.19	19.83	072	**II**
		ST(2)	80	160	0.66	66.11	232	
		N(1)	17	17	0.14	14.04	**249**	
	Through networks like Facebook, Twitter, etc	A(3)	-	-	-	-	-	**III**
		ST(2)	58	116	0.48	48.00	116	
		N(1)	63	63	0.52	52.06	**179**	
Mean cumulative score							**230**	
Visual Media	Through Television channels	A(3)	08	24	0.06	06.61	024	**III**
		ST(2)	87	174	0.72	72.00	198	
		N(1)	26	26	0.21	21.48	**224**	
	Through online seminars	A(3)	10	30	0.08	08.26	030	**II**
		ST(2)	98	196	0.80	80.99	226	
		N(1)	13	13	0.10	10.74	**239**	
	Through YouTube channels	A(3)	34	102	0.28	28.09	102	**I**
		ST(2)	78	156	0.64	64.46	258	
		N(1)	09	09	0.07	07.43	**267**	
	Through big screens/documentary	A(3)	-	-	-	-	-	**IV**
		ST(2)	66	132	0.54	54.54	132	
		N(1)	55	55	0.45	45.45	**187**	
Mean cumulative score							**229**	
Print Media	Through local and national newspaper	A(3)	11	33	0.09	09.09	033	**III**
		ST(2)	61	122	0.50	50.41	155	
		N(1)	49	49	0.40	40.50	**204**	
	Through magazines and periodicals	A(3)	4	12	0.03	03.31	012	**I**
		ST(2)	97	194	0.80	80.17	206	
		N(1)	20	20	0.17	16.53	**226**	
	Through research papers, articles, and publications	A(3)	11	33	0.09	09.09	033	**IV**
		ST(2)	41	82	0.33	33.88	115	
		N(1)	69	69	0.57	57.02	**184**	
	Through brochures, pamphlets, notices	A(3)	10	33	0.08	08.26	033	**II**
		ST(2)	77	154	0.63	63.64	187	
		N(1)	34	34	0.28	28.09	**221**	
Mean cumulative score							**208**	

No. of samples 121, A -Always, ST - Sometimes, N -Never, W -Weighed score, F -Frequency, WF -weighed frequency, Relative frequency, (%) - Percent, CF -Cumulative frequency.

Table 2. Information Sources through Training Programmes

Group	Type of sources	W	F	WF	RF	(%)	CF	Rank
Training Technical & support	Kerala State Fisheries Department	A(3)	41	123	0.33	33.88	123	**I**
		ST(2)	70	140	0.57	57.85	263	
		N(1)	10	10	0.08	8.26	**273**	
	Kerala University of Fisheries and Ocean Studies	A(3)	34	102	0.28	28.09	102	**III**
		ST(2)	67	134	0.55	55.37	236	
		N(1)	20	20	0.16	16.53	**256**	
	Marine Product Export Development Authority	A(3)	-	-	-	-	-	**VI**
		ST(2)	53	106	0.43	43.80	106	
		N(1)	68	68	0.56	56.20	**174**	
	Central Marine Fisheries Research Institute	A(3)	33	99	0.27	27.27	99	**II**
		ST(2)	70	140	0.57	57.85	239	
		N(1)	18	18	0.14	14.87	**257**	
	By other agencies or groups	A(3)	14	42	0.11	11.57	42	**V**
		ST(2)	57	114	0.47	47.10	156	
		N(1)	50	50	0.41	41.32	**206**	
	Information from other farmers.	A(3)	44	132	0.36	36.36	132	**IV**
		ST(2)	33	66	0.27	27.27	198	
		N(1)	44	44	0.36	36.36	**242**	
Mean cumulative score							**234**	

No. of samples 121, A -Always, ST - Sometimes, N -Never, W -Weighed score, F -Frequency, WF -weighed frequency, Relative frequency, (%) - Percent, CF -Cumulative frequency.

Among the farming community, socio-demographic features play an important role in decision-making to gather information. The information on the availability of seeds are vital for the farmers. Cost effective species selection can be adopted by fisher folks on a small scale basis for additional income (Kappen et al., 2018). The present study also revealed that the decisions taken by the farmers to choose a particular information source largely depend on socio-demographic features. Maximum number of farmers who gathered information from internet platforms were from larger family sizes and with family members having higher education backgrounds. One of the most important sources of information was through internet

platforms, especially for more coverage of aquaculture extensions (Pieniak et al., 2013). Moreover, the larger the family size, the more the number of participants in cage culture activities and off-field culture management practices. Among the socio-demographic features, the family size and education background of farmers was ranked highest (Rank I & II) when compared to other associated demographic features (Table 3).The education of farmers was positively correlated to decision-making and significant whereas age and designation were negatively correlated (Nirmalkar et al., 2022). The education and experience gained provided the basic knowledge to understand technical aspects and improve farmers' standards (Unnikrishnan and Dinesh 2020). It can be understood that farmers from larger family sizes with average education status are more likely to gather more information by attending the maximum number of training programmes than farmers from smaller family sizes.

Table 3. Socio-Demographic Features of Cage Farmers

Sl. No.	Category	(W)	F	WF	RF	(%)	CF	Rank
1	Age	<30 years (1)	33	33	0.27	27.27	33	**IV**
		30-50 years (2)	55	110	0.45	45.45	143	
		> 50 years (3)	33	99	0.27	27.27	**242**	
2	Educational status	Primary School (1)	11	11	0.09	9.09	11	**II**
		High School (2)	77	154	0.63	63.64	165	
		≥ Graduate (3)	33	99	0.27	27.27	**264**	
3	No. of family members	Up to 2(1)	11	11	0.09	9.09	11	**I**
		5 and above (2)	44	88	0.36	36.36	99	
		3 to 4 (3)	66	198	0.54	54.55	**297**	
4	Experience in cage farming	1 -4 years (1)	33	33	0.27	27.27	33	**III**
		5-10 years (2)	44	88	0.36	36.36	121	
		>10 years (3)	44	132	0.36	36.36	**253**	
5	Average Annual Income	< 1 Lakh (1)	77	77	0.63	63.64	77	**V**
		1 to 5 Lakh (2)	33	66	0.27	27.27	143	
		> 5 Lakh (3)	11	33	0.09	9.09	**176**	

No. of samples 121, W-Weighed score in ascending order, F- Frequency, WF-weighed frequency, RF-Relative Frequency, (%) - Percent, CF-Cumulative frequency.

Statistical analysis (ANOVA) proved the significance of socio-demographic features and their influence on decision-makingin choosing a source. Farmers' family size and educational background were significant ($P<0.05$) in choosing the required tool and gathering more information. This coincides with the findings by Furtan et al.,

(1985), about the influence of family size in choosing the type of information tool for gathering information. The efforts in on-farm participation and off-farm activities were higher among larger families than the families with lesser active members. Thus, it was established from this study that, a larger family size influences the decision-making to choose a tool to gather information for cage farming activities. Similar findings were also observed by Mishra and Goodwin (1997) on the significance of farming community size towards decision-making. According to Reed and Harford (1989), farmers with more family members especially grown-up children tend to work more hours and support more on information for farming activities. In this study area, the least number of farmers with a lower annual income (< 1 lakh) did not prefer to use the internet platform to gather information; rather they depended mostly on the field-level guidance and support provided by State Fisheries Department. Though family income is one of the socio-economic requirements of the farming community, they have the least impact on choosing an information tool and were insignificant ($P>0.05$). This contradicts the finding by Raza et al., (2020), where socio-economic conditions significantly impact the farmers' preference to choose an information tool. The information's on the availability of seeds are vital for the farmers. Cost effective species selection can be adopted by fisherfolks on a small-scale basis for additional income (Kappen et al., 2018a). Though there are various constrains faced by cage culture farmers, by organizing beneficiary groups with innovative promotional activities the profitability increases (Kappen et al., 2018b).

CONCLUSION

There are various sources of information, from which farmers gather information for adopting cage culture. Socio-demographic elements like age, educational background, number of family members, and family income have greater explanatory power for gaining knowledge as they are directly linked to farmers' attitudes toward using a particular information tool. Attitude may be positive or negative with some physiological objectives (Edwards, 1957). Though most farmers follow the traditional methodology of gathering information by attending training sessions and seminars, the use of information technology medium is on the rise among the younger generations and entrepreneurs.

Also, due to the rapidly emerging information technology, maximum number of farmers tend to move towards the internet platform to gather information. Though the internet platform plays an important role in communication, most farmers preferred to gain informative knowledge directly from on-field expertise

which is one of the traditional methods. The field-level informative training and support provided by various agencies like CMFRI and KUFOS in association with State Government bodies were found to be more effective in increasing the awareness of cage culture protocols, thus maximizing the productivity of brackish water cage farming, employment opportunities, and livelihood security to fisherfolk. The preference of farmers in utilizing a particular source for gathering information needs to be ascertained beyond the study area.

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