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Socio-economic characteristics of the farmers practicing cage farming in Karnataka

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Abstract

The present study aims to understand the personal, communication and psychological characteristics of the farmers who are practicing cage farming. The study was conducted in two taluks practicing highest cage farming in Udupi district of Karnataka state namely, Uppunda and Byndoor during 2020. The primary data were collected randomly from 60 farmers from each of the taluks practicing cage farming. Thus, framing the total sample size to 120. The findings of the study showed that more than half the farmers belonged to middle age (56.67%) group, studied up to high school (53.33%) and nearly one third (35.83%) of the farmers had 20*6*5 cage size structure. Large majority (97.50%) of the farmers were male followed by majority of the farmers pursuing cage fish rearing as major occupation (65.83%) and 87.50 percent of the farmers as minor occupation. Majority of the farmers belonged to middle (91.67%) income category having medium level of extension contact (56.67%) and extension participation (62.50%). Whereas, majority of the farmers had high (88.33%) level of economic motivation with medium (83.33%) level of innovativeness and scientific orientation (81.67%). Majority of farmers had medium (79.17%) level of social participation, less than fifty percent of farmers had medium (46.67) level of achievement motivation and more than half the farmers belonged to medium (54.17%) category of risk orientation. Large scale expansion of cage farming is the need of the hour which acts as an opportunity for small scale fish farmers as an alternative livelihood.

Keywords: Cage, fishing; farmer, characteristics, Karnataka

Introduction

A beautiful blueprint for global peace and prosperity has been proposed in terms of Sustainable Development Goals (SDGs) by United Nations in 2015. The fisheries and aquaculture has much to contribute in securing all the SDGs but in particular to SDG 14- conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Global fish production is estimated to have reached about 179 million tonnes in 2018. Out of total, 156 million tonnes was used for human consumption. In the period 1961–2017, the average annual growth rate of total food fish consumption has increased at 3.1 percent. In 2018, preliminary estimates for per capita fish consumption currently stand at 20.5 kg. Various factors have influenced the increase in consumption such as increase in production, technological developments, rising incomes, less wastage and increased awareness of the health benefits of fish (FAO, 2020) [2]. India is the second largest producer of fish in the world contributing to 7.56 percent of global fish production and second largest producer of aquaculture in the world next only to china. The fisheries and aquaculture production contributes around 1.24 percent to the country's Gross Value added (GVA) and over 7.28 percent to the agricultural GVA (Ministry of Fisheries, Animal Husbandry and Dairying, GOI, 2021) [3].

The total fish production in the Karnataka state in the year 2020-21 was 5.99 lakh metric tons. Among which Inland fish production contributes to 2.52 lakh metric tons and Marine fish production stood for 3.47 lakh metric tons. The state contributed about 4.46 percent of India's total fish production for the year 2019-20 and ranks 9th position in total fish production, 6th and 9th position in marine and inland fish production (Fisheries of Karnataka, ENVIS Centre, 2022) [4]. Cage culture is an emerging technology where fish are placed and reared in floating nets. It encloses the fish in cage allowing free flow of water enabling water exchange and waste removal. Cages are used to culture various types of shell fish and finfish species in fresh, brackish and marine waters. Cage farming with enormous benefits in its field acts a source of living, nutrition, income and livelihood for small scale fish farmers.

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Despite the various advantages and economic success in the market the sector is facing numerous issues and challenges during its development. In this background, the present study makes an attempt to understand the personal, communication and psychological characteristics of the farmers who were practicing cage farming.

Methodology

The present study was conducted at Udupi district as majority

of the farmers were following cage fish farming as an alternate source of income. From this district two taluks were selected based on highest number of farmers following cage fish farming includes Uppunda and Byndoor. From each taluk 60 farmers following cage fish farming from last 3-4 years were selected as respondents. Thus the total sample for the study was 120 farmers. The data was collected by using pre tested interview schedule.

Table 1: Variables and measurement tools used for the study

Variables	Measurement
Personal variables	
Age	Schedule developed by Trivedi (1963) ^[24]
Education	Schedule developed by Trivedi (1963) ^[24]
Gender	Schedule was developed for the study
Cage size	Schedule was developed for the study
Major occupation	Schedule was developed for the study
Minor occupation	Schedule was developed for the study
Income per annum	Schedule was developed for the study
Communication variables	
Formal source	Schedule was developed for the study
Informal source of information	Schedule was developed for the study
Psychological variable	
Economic Motivation	Scale developed by Supe (1969) ^[23] with modifications
Innovativeness	Scale developed by Moulik and Rao (1973) ^[15] with modifications
Scientific orientation	Scale developed by Supe (1969) ^[23] with modifications
Social participation	Procedure followed by Saravanakumar (1996) ^[22]
Extension contact	Procedure followed by Hardikar (1998) ^[12]
Achievement motivation	Followed by Patil (2014)
Risk orientation	Scale developed by Supe (1969) ^[23] with modifications
Cosmopolitaness	Scale developed by Moulik(1965) ^[14]
Purpose of visit	Schedule was developed for the study
Extension participation	Procedure followed by Badagaonner (1983) ^[5]

Results and Discussion

For the study (Table 1) we have selected 19 variables after reviewing literature related to the study. These variables were further classified in to three categories indicating Personal, communication and psychological characteristics of the farmers practicing cage farming.

Personal characteristics of the farmers following cage fishing

Age: The results indicated that more than half the farmers belonged to middle age (56.67%) group whereas, 24.17 percent and 19.17 percent of the farmers belonged to old and young age, respectively. On the whole, majority of the respondents belonged to middle age followed by old age. Young farmers with high educational status were inclined towards other enterprises and jobs. Old age and middle age farmers perceived agriculture as their main occupation for livelihood. The results were in line with the findings of Abha Singh and Sadangi (2012) ^[1], Bennur (2015) ^[6], Chandana (2018) ^[7], Nitesh (2018) ^[17], Geethavani (2019) ^[11], Vivek (2021) ^[27], Geeta and Natikar (2022) ^[28].

Education: The data revealed that more than half the farmers studied up to high school (53.33%), whereas, 16.62 percent of the farmers studied up to middle school followed by 12.50

percent of them studied up to pre-university. Only 10.83 percent of the farmers studied up to primary school, however only 3.33 percent of the farmers were post graduate and 2.50 percent were graduates. Overall, more than half the farmers studied up to high school. Most of the rural areas now have high schools and people have realized the importance of high school education. The results were in accordance with the findings of Gayathri (2018) ^[9], Tyngkan (2018) ^[25] and Vivek (2021) ^[27].

Gender: The data inferred that large majority of the farmers were male (97.50%) and only 2.50 percent of farmers were female. As majority of the respondents with respect to cage fish farming was male. The results were in line with the findings of Kirti *et al.*, (2017) ^[13] and Purnima and Bhagyalakshmi (2022) ^[20].

Cage Size: The data inferred that nearly one third (35.83%) of the farmers practicing fishing in 20*6*5 feet cage size, followed by 26.67 percent and 22.50 percent of the farmers who belonged to 20*6*7 feet and 20*7 feet size categories respectively. Negligible number of respondents, 8.33 percent of the farmers belongs to 20*6 feet size category whereas, equal percentage (2.50%) of the farmers belonged to 10*6 and 20*18*12 feet cage size followed for fishing, respectively.

Only 1.67 percent of the farmers had 15*6 cage size. Based on the space available for them in estuaries and by looking into the compatibility farmers prefer the different sizes of cage for fish farming.

Major Occupation: It was found that 65.83 percent of the farmers following fishing as major occupation whereas, 34.17 percent of the farmers major occupation was cage fish rearing. As in the coastal area major source of income was fishing.

Minor Occupation: It was observed that majority of the farmers minor occupation was cage fish rearing (87.50%)

while, only 10.00 percent of the farmers practiced fishing as minor occupation.

Annual Income: The data revealed that majority of the farmers belonged to middle income (91.67%) category. Only few respondents belonged to lower income (6.67%) category followed by meagre 1.67 percent of the farmers belonged to higher income category. Family background and doing business from many years making them more expertize in the field might be the possible reasons for their better income. The findings are in line with Geeta and Natikar (2022) [28].

Table 2: Personal characteristics of the farmers practicing Cage farming in Karnataka n=120

Variable	Criteria	F	%
Age	Young (0-30)	23	19.17
	Middle (31-50)	68	56.67
	Old (>50)	29	24.17
Gender	Male	117	97.50
	Female	3	2.50
Education	Primary (I - IV Std)	13	10.83
	Middle (V - VII Std)	20	16.67
	High school (VIII - X Std)	64	53.33
	PUC (XI - XII Std)	15	12.50
	Graduation (Degree)	3	2.50
	Post-graduation (M.Sc or above)	4	3.33
Cage size	20*6*7	32	26.67
	20*6*5	43	35.83
	20*7	27	22.50
	10*6	3	2.50
	20*6	10	8.33
	20*18*12	3	2.50
	15*6	2	1.67
Major occupation	Fishing	79	65.83
	Cage fish raring	41	34.17
Minor occupation	Fishing	12	10.00
	Cage fish raring	105	87.50
Annual income	Low (< Mean- SD)	8	6.67
	Medium (Mean \pm SD)	110	91.67
	High (> Mean + SD)	2	1.67

Communication characteristics of the farmers following cage fishing

Formal Source: The results in Table 3 indicated that 61.67 percent of the farmers have regular contact with friends followed by relatives (53.33%), family members (45.00%). It is interesting to know that majority of the respondents has occasion contract with progressive farmers (67.50%), neighbours (66.67%) and family members (55.00%) for getting the information. These sources of information are readily available in there vicinity and belongs to their own socio economic system so they trust them more leads to have regular contact. The findings are in line with Purnima and Bhagyalakshmi (2022) [20].

Informal Source: It was evident from the table 3 that

majority of the respondents had occasional contact with input agencies (68.33%) followed by extension workers of NGOs (56.67%), KVK (55.00%) and equal number of respondents (45.00%) had occasional contact with consultancy agency personnel and Department of Horticulture. With reference to meteorological department 38.33 percent of respondents had regular contact followed by Input agencies (29.17%) and department of Agriculture (22.50%) for accessing the information about cage farming of the fish. Most of the farmers are carrying out the activities related to cage fishing by gathering information from informal sources but to get some facilities and to get technical guidance for effective fish production they depends on the formal sources of information. The results were in congruence with those of Purnima and Bhagyalakshmi (2022) [20].

Table 3: Communication characteristics of the farmers practicing Cage farming in Karnataka n=120

Sources of information						
Formal source	Regular		Occasional		Never	
	f	%	f	%	f	%
Family members	54	45.00	66	55.00	0	0.00
Friends	74	61.67	46	38.33	0	0.00
Relatives	64	53.33	54	45.00	2	1.67
Neighbours	40	33.33	80	66.67	0	0.00
Progressive farmers	38	31.67	81	67.50	1	0.83
Informal source of information	Regular		Occasional		Never	
	f	%	f	%	f	%
Dept. of Agriculture	27	22.50	56	46.67	37	30.83
Dept. of Horticulture	17	14.17	54	45.00	49	40.83
Scientists	1	0.83	46	38.33	73	60.83
Input agencies	35	29.17	82	68.33	3	2.50
Consultancy agency personnel	3	2.50	55	45.83	62	51.67
Extension workers from NGO's	2	1.67	68	56.67	50	41.67
University staff/ researcher	0	0.00	24	20.00	96	80.00
Agro- advisory services through SMS	4	3.33	26	21.67	90	75.00
KVK	7	5.83	66	55.00	47	39.17
Meteorological Department/Weather Forecasting	46	38.33	17	14.17	57	47.50

Psychological characteristics of the farmers following cage fishing

Economic Motivation: It was clear from the Table 4 that majority (88.33%) of the farmers had high level of economic motivation, however only 8.33 percent and 3.33 percent of farmers had low and medium level of economic motivation, respectively.

Innovativeness: The results indicated that majority (83.33%) of farmers had medium innovativeness category, while 11.67 percent and only 5.00 percent of farmers had high and low innovativeness. On the whole, majority of the farmers had medium level of innovativeness. As the majority of the respondent farmers were of middle age category with formal education, they were enthusiastic to try new techniques which might improve their productivity. The results were in agreement with the findings of Patil (2018) ^[18], Vineetha (2018) ^[26], Narendra (2019) ^[16], Vivek (2021) ^[27] and Purnima and Bhagyalakshmi (2022) ^[20].

Scientific Orientation: The data inferred that majority (81.67%) of the farmers had medium level of scientific orientation followed by high (10.00%) and low (8.33%) categories. Their educational level, social exposure might have been influenced to have the medium level of scientific orientation. The results are in line with Raghavendra (2010) ^[21], Devaraja (2011) ^[8] and Gayathri (2018) ^[9],

Social Participation: It is evident from the Table that majority (79.17%) of farmers belonged to medium category of social participation followed by 12.50 percent in high category and 7.50 percent in low category.

Extension Contact: The data revealed that 56.67 percent of farmers had medium level of extension contact, followed by

high (23.33%) and low (20.00%) levels.

Achievement Motivation: The results inferred that 46.67 percent of farmers had medium level of achievement motivation, while 30.00 percent and 23.33 percent of farmers had high and low levels of achievement motivation, respectively.

Risk Orientation: The data pertinent to risk orientation revealed that more than half (54.17%) the farmers belonged to medium category of risk orientation, followed by high (26.67%) and low (19.17%) categories. Cage farming was considered to be highly remunerative and hence farmers were ready to take risks with a view of making higher profits. Further, majority of the farmers had education up to high school and exhibited high level of economic motivation which might have led to their medium to high level of risk orientation. The obtained results were similar to the similar to the findings of Patil (2018) ^[18], Vineetha (2018) ^[26], Narendra (2019) ^[16] and Vivek (2021) ^[27].

Cosmo politeness: It was evident from the Table 4 that more than half (52.5%) the farmers visited cities twice a week whereas, one fifth of the farmers (21.67%) visited once in a 15 days followed by daily (17.5%), sometimes (5.83%) and once in a month (2.50%).

Extension Participation: It was found that majority (62.50%) of farmers belonged to medium category of extension participation whereas, 20.00 percent and 17.50 percent of farmers are in high and low categories. The probable reason for medium extension participation of the respondents might be due to the participation of farmers in extension activities conducted by various institutions.

Table 4: Psychological characteristics of the farmers practicing Cage farming in Karnataka n=120

Variable	Category	Frequency	Percent (%)
Economic Motivation	Low (< Mean- SD)	10	8.33
	Medium (Mean \pm SD)	4	3.33
	High (> Mean + SD)	106	88.33
Innovativeness	Low (< Mean- SD)	6	5.00
	Medium (Mean \pm SD)	100	83.33
	High (> Mean + SD)	14	11.67
Scientific orientation	Low (< Mean- SD)	10	8.33
	Medium (Mean \pm SD)	98	81.67
	High (> Mean + SD)	12	10.00
Social participation	Low (< Mean- SD)	9	7.50
	Medium (Mean \pm SD)	95	79.17
	High (> Mean + SD)	15	12.50
Extension contact	Low (< Mean- SD)	24	20.00
	Medium (Mean \pm SD)	68	56.67
	High (> Mean + SD)	28	23.33
Achievement motivation	Low (< Mean- SD)	28	23.33
	Medium (Mean \pm SD)	56	46.67
	High (> Mean + SD)	36	30.00
Risk orientation	Low (< Mean- SD)	23	19.17
	Medium (Mean \pm SD)	65	54.17
	High (> Mean + SD)	32	26.67
Cosmo politeness	Frequency of visit		
	Daily	21	17.5
	Twice a week	63	52.5
	Once in 15 days	26	21.67
	Once in a month	3	2.50
	sometimes	7	5.83
Extension participation	Low (< Mean- SD)	21	17.50
	Medium (Mean \pm SD)	75	62.50
	High (> Mean + SD)	24	20.00

Conclusion

The present study analysed the personal, communication and psychological characteristics of farmers practicing cage fish farming in Karnataka. Fisheries sector which is gaining popularization has been recognized as a 'Sunrise sector'. From the study it has been come to know that majority of the farmers was young having education up to high school. They have more access to the informal sources of information rather than formal source of information. They have medium level of innovativeness, scientific orientation, social participation, extension contact, risk orientation and extension participation. Farmers had high economic motivation. There is a need to create awareness about different formal sources of information to get scientific information by organizing capacity building programme to get higher returns.

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