Entrepreneurial Behaviors and Constraints Faced by Fish Farmers in South Kerala

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Abstract

The study was carried out to examine the socio-economic characteristics of the fish farmers in southern region of Kerala and factors influencing entrepreneurial behaviour and also identified the various constraints faced by the farmers. Ex-post facto research design was followed for the study. The study was conducted by using multi stage random sampling technique in the southern districts of Kerala and a total sample of 150 respondents was selected. The findings of the study revealed that majority of the respondents have a medium level of entrepreneurial behaviour. Age, gender, experience of fish farmers, membership in an organisation, mode of fish farming, aquaculture training received and extension agency exhibited positive and significant correlation with the entrepreneurial behaviour of the respondents. The personal, socio economic factors such as age, education, experience, membership in an organisation, mode of fish farming, aquaculture training received and extension agency contact has a significant influence on the knowledge level of fish farmers. The study recommends organization of trainings, exhibitions, demonstrations, and awareness, to improve the farmers for undertaking entrepreneurial ventures so as to enhance the socio-economic development of the fish farmers.

Keywords: Entrepreneurial behaviour, fish farmers, fish farming, knowledge, constraints and entrepreneur.

1. INTRODUCTION

Entrepreneurship is a formation of human behavior. It is essential for widening and management of the society. Normally, entrepreneur is regarded as a person who organizes, initiates activities; direct the event of business component incorporating the element of goods and services from production to supply chain. (Kharlukhi Cordilia and Jha Kaushal Kumar)

India is the 2nd largest aquaculture and 3rd largest fish producing country in the world fish and fishery resources occupy a unique position in the economy of Kerala especially the inland fisheries sector. The inland fish production during 2019-20 was 0.25 and 2.24 was in the year 2021-22(statistics, directorate of fisheries 2021) and the contribution of this sector to the State Gross Domestic Product (SGDP) is 1.26 per cent.
According to the United Nations Food and Agriculture Organization, roughly 32% of world fish stocks are overexploited and depleted. Fish farming is only one solution to solve this problem to a particular extent.

Fish farming is a type of aquaculture in which fish are raised and cultivated in enclosures for consuming as food and considered the fastest growing area of animal food production. Today, more than half of the global fish consumption is met with the help of fish raised in these artificial environments. Common farmed species include salmon, tuna, cod, trout and halibut, tilapia, pangasius etc.
There is a vast possibility for inland fish farming in Kerala because it has significant brackish and fresh water resources. These water resources helped in the growth of fishing industry in Kerala. Fish and fishery products are having always high demand and it is increasing day by day in the domestic and foreign demand.

Inland aquaculture has been the major fish producing system in Kerala with 1224495 tonne (Kerala Fisheries Statistics at a glance 2021, Govt. of Kerala, Directorate of Fisheries and Kerala) in the year 2020-21.Alapuzha, Kottayam, Eranakulam and Kollam are the largest fish production in the state. Freshwater aquaculture in village tanks and ponds serve the household needs for fish and generate some additional income for the family.

Fish farmers have high chances to become entrepreneurs but due to some constraints such as non-availability of quality seeds at correct time , lack of demand and low price when the bulk quantity production , poor marketing facility and lack of public awareness, they are not able to achieve much growth. To meet the demands of increasing complexity, the farmers need to increase their managerial ability. If farmers are put up with appropriate trainings, development programmmes and technological know-how the fish farming have the potential to enhance employment and economic development.

It has been reported that different information sources are being used by fish farmers to get latest fish production related information including fellow farmers, print media, television and staff of public, private and NGOs sector officials (Farooq et al., 2007). The advancement of technology is the only reason for massive increase in fish production. But majority of the fish farmers are not adopt scientific and improved technology for fish farming because of their high cost.

The entrepreneurs are key persons of any country for promoting economic development and technological change. The appearance of their activities i.e. development of entrepre-neurship is associated with the socio-economic development of the society.

Entrepreneurial behaviour is the concept in which the study of human behaviour is involved for identifying and exploiting opportunities through creating and developing new ventures. There for the present study conducted with the main objectives such as to study the socio-economic characteristics of the fish farmers in south Kerala and to examine the entrepreneurial behaviour of the selected respondents and the relationship of selected independent variables in influencing their entrepreneurial behaviour. The study also assessed the various constraints faced by the fish farmers in the south district of Kerala.

2. REVIEW OF LITERATURE

Nomesh kumar and Narayanaswamy (2000) defined the concept the entrepreneurial behaviour as a combination of seven components such as innovativeness, decision making ability, and achievement motivation, information seeking ability, risk taking ability, co-ordinating ability and leadership ability. In the same way Vijay kumar (2001) defined the concept entrepreneurial behaviour as the cumulative outcome of information seeking behaviour, farm decision making, and leadership ability, risk taking ability, innovativeness, achievement motivation and market orientation of farmers. Subrahman-yeswari and Veeraraghava Reddy (2003) perceived the term entrepreneurial behaviour as the changes in knowledge, skill and attitude of women livestock farmers towards dairy enterprises. (Esearch et al., 2014) defined entrepreneurial behaviour as it is the study of human behaviour involved in identifying and exploiting opportunities through creating and developing new ventures. (Kumar and Poonam, 2019) defined entrepreneurial behaviour can be attributed as the change in knowledge, skills and attitude of entrepreneurs in the enterprise they have taken up (Kharlukhi & Jha, 2021) revealed that the socio- economic variables such as education, extension contact, scientific orientation, knowledge, sex, annual income, information sources utilization, social participation and attitude exhibited positive and significant correlation with the entrepreneurial behaviour of the respondents.

(Pandey et al., 2015) identified the potential problems such as lack of technical knowhow, low level of education, social norms and beliefs, high number of middlemen, high marketing cost, fluctuations in price, poor storage facilities, lack of market information on price, delay in settlement of sale proceeds, and unavailability of finance, poor connecti

vity and transportation, lack of exposure to mass media and information, poaching and poisoning and acidic nature of soil are the various problems reported by the fish farmers. These problems can be addressed through training and motivation, publicizing entrepreneurial opportunities, providing techno-economic support, offering incentives and recognition, creation of forum for entrepre neurs and ensuring access to information. (Nwabunike, 2015) analyzed the constraints of fish marketing, factors influencing the quality and quantity of fish sold by fish marketers and makes necessary recommend-dations for the improvement of fish marketing. The analysis of the study showed that the most accepted factors that affect the quality of fish handling include consumer's choice and inadequate storage facilities while the most rejected factors were lack of cold room and fear on the side of the fish marketers. The research showed that the most accepted constraints to fish marketing are problem of processing and inadequate spacing in fish marketers' stalls or shops. Majority of the Fish marketers should form a co-operative society to enable them obtain loan from financial institutions so as to expand their marketing activities and government and private organization should encourage fish marketers by building an organized market and effecting free trade. (Pongener & Sharm, 2018) identified the problem faced by the fishery enterprise during the production and marketing of fish enterprise. The findings of the study highlighted that lack of knowledge about fish protection measures, reduction of production by diseases and pest infections, lack of training and demonstration, non-availability of credit facilities, lack of technical knowledge, non-availability of fertilizers and its application, non-availability of fingerlings on time and lack of fingerlings and high labour cost are the various problem faced by the fishery entrepreneurs during production.
(Gaikwad & Tpuii, 2016) revealed that majority of the anthurium growers faced constraints like investment problem, lack of working capital, lack of planting material and manure; insufficiency of electricity, high cost of labour, lack of skilled labour, non-availability of labour, pest and disease

management problem, transportation problem, lack of storage facilities, price fluctuation and lack of market knowledge.

(Rani et al., 2015) studied constraints perceived by dairy farmers in availing and repayment of dairy loans observed that too many intermediaries, lengthy complicated loan procedure, attitude of the loan officer were accepted as extreme problems.

Biswajit Goswami and Tammay Samajdar (2014) indicated that innovative proneness was the most potent variable in effecting the knowledge of fish farmers positively. The fish farmers can accrue latest knowledge on scientific fish culture practices through organising awareness campaigns, field days, demonstrations, exhibitions, krishan gosti, krishan mela and necessary to increase innovative proneness, extension agency contact and mass media participation.

Goswami et al. (2010) identified the factors that influencing adoption behavior of fish farmers towards scientific fish culture practices and found that majority (74%) of fish farmers belonged to medium to high adoption category.

3. OBJECTIVES OF THE STUDY
The specific objective of this study is:
- To study the socio-economic characteristics of the fish farmers in south Kerala
- To examine the entrepreneurial behaviour of fish farmers and relationship between selected socio-economic characteristics of the fish farmers with their entrepreneurial behaviour.
- To analysis the knowledge and adoption of fish farmers regarding selected fish farming practices
- To identify the various constraints faced by the fish farmers in the south district of Kerala

4. RESEARCH METHODOLOGY
The present study is analytical in nature and Primary data was collected from the sample respondents by using a pre tested structured interview schedule. The study was conducted in southern region of Kerala. Ex-post facto

research design and multistage stratified random sampling techniques was followed. Two districts from southern region such as kollam and Kottayam were selected based on highest number of fish farmers. From each district 2 clusters each were selected based on highest number of fish farmers that is Kundara and Thevalakkara from kollam district and Pala and vaikam from Kottayam district. From each clusters, samples were selected by using random sampling procedure. Thus, the total sample size constituted 150 fish farmers for the present study.

Independent variables selected for the study are age, gender, marital status, education, experience of fish farmers, membership in organisation, annual income, mode of fish farming aquaculture training received and extension agency contact and economic motivation and dependent variable is the entrepreneurial behaviour. The entrepreneurial behaviour is measured in five components like innovation, decision making, risk orientation, achievement motivation, leadership and market orientation.

Entrepreneurial Behaviour Index (EBI) is an aggregate measure of all those six attributes such as innovation, decision making, risk orientation, achievement motivation, leadership and market orientation. These components are measured with the help of scale developed by Nandapurkar (1982) and Supe (1969) and Murali (1977). The each attribute of entrepreneurial behaviour was studied under three levels such as low, medium and high based on cube root cumulative frequency. Multiple regression analysis was conducted to identify the key determinants of entrepreneurial behaviour of fish farmers.

$Y1 = B0 + B1X1 + B2X2 + B3X3 + B4X4 + B5X5 + B6X6 + B7X7 + B8X8 + B9X9 + B10X10 + \mu$

Where,

$Y1$= Entrepreneurial Behaviour Index
$X1$ = Age (1- if below 30 years, 2- 30-50, 3- above 50)
$X2$= Gender (1- if male, 2- if female)
$X3$= Marital status (1-if married, 2-if not married, 3- if widowed)
$X4$= Education (1- if the farmer educated below SSLC, 2- if the farmer educated SSLC, 3- If the farmer studied degree, 4- if the farmers had others category)
$X5$ = Experience in years
$X6$= Membership in organisation (1- Yes, 2- If No)
$X7$ = Annual income in Rupees
$X8$= Mode of fish farming (1- if full time, 2- if part time)
$X9$= Aquaculture training (1-If farmers has attended training, 2- if farmers not attended)
$X10$ = Extension agency contact (1-if Yes, 2- if No)
μ = Random error
$B0$ = Intercept term
$B1$-$B10$= Parameter estimates

5. RESULTS AND DISCUSSION
5.1 PERSONAL AND SOCIO-ECONOMIC CHARACTERISTICS OF FISH FARMERS
The findings in Table 1 revealed that majority (62.0per cent) of the respondents were middle aged (30-50 years) and (89.3per cent) of the respondents were male. The findings are in accordance with the findings of Vijay Kumar (2001) for age and Kharlukhi Cordilia (2021) for gender of the respondents. It was found that (40per cent) of the respondents had education up to degree .This is supported with the findings of Atul Basweshwar Patil, (2008) for education.76.7 per cent of the respondents involved in fish farming as part-time. It was also found that majority (58.7per cent) of the respondents had 5 to 10 years of experience in fish farming. This is supported with the findings of Raghavendra (2007). Majority (79.3 per cent, 55.3 per cent and 58 per cent) of the respondents has membership in various organisations, acquired aqua cultural training and regular extension agency contact.

Table 1: Distribution of Respondents based on personal and Socio-economic character ristics of the respondents

N=150

Attributes	Category	Percentage (per cent)
Age	Young (below 30 years	10.7
	Middle (30-50)	**62.0**
	Old(above 50)	27.3
Gender	Male	**89.3**

	Female	10
Marital status	Married	**80.7**
	Not married	14.0
	Widowed	5.3
Education	Below SSLC	2.7
	SSLC	9.3
	Pre degree	25.3
	Degree	**40**
	Others	22.7
Occupation in fish farming	Full time	10.20
	Part time	**89.80**
Years of experience	Below 5 years	29.3
	5-10 years	**58.7**
	Above 10 years	12
Membership in an organisation	Yes	**79.3**
	No	20.7
Annual income	Below Rs.50000	36.0
	50000-100000	**59.3**
	Above Rs.100000	4.7
Aquaculture training	Acquired	**55.3**
	Not acquired	44.7
Extension agency contact	Very regular	35.3
	Regular	**58.0**
	Nor regular	5.3
	Never	1.3

Source: Primary Data

5.2 DIMENSIONS OF ENTREPRENEURIAL BEHAVIOR AND ASSOCIATION BETWEEN SELECTED PERSONAL AND SOCIO-ECONOMIC FACTORS OF FISH FARMERS IN INFLUENCING THEIRENTREPRENEURIAL BEHAVIOUR

Entrepreneurial behaviour index is an aggregate measure of all those six attributes. These components of achievement motivation, leadership ability, decision making, and innovativeness were measured with the help of different scales developed by Nandapurkar (1982) and the dimensions such as management orientation, risk taking ability were measured using the scales developed by Supe (1969) and Murali (1977). The different scales were applied by giving different score values. The composite (Entrepreneurial Behaviour Index) EBI was calculated by aggregating all the scores of the above components.

Achievement motivation (mean score 9.83) was higher fish farmers because they have targets to achieve their personal aim. It is followed by decision making, risk orientation, innovation, leadership and management orientation with mean score 8.03, 7.82, 7.49, 6.01 and 5.48 respectively.

It was revealed from Table 2 that majority of the fish farmers had medium level of entrepreneurial behaviour. The finding was support with the findings of Boruah et al., (2015). Entrepreneurial Index (EI) was found to be 44.66.The overall EBI index is 46.66 and this indicates that it can be improved the entrepreneurial behavior of fish farmers to a higher level through improving areas where they are at medium level and low level.

Table 3 revealed that independent variables such as age, gender, years of experience, membership in any organisations, and mode of fish farming, aquaculture training acquired and extension agency contact exhibits positive and significant correlation with the entrepreneurial behaviour of the respondents at 5per cent level of probability. Also, independent variables like marital status, education and annual income exhibit non-significant correlation with the entrepreneurial behaviour of respondents.

Table.2 Classification of the respondents based on dimensions of entrepreneurial behavior

Dimensions	Mean	Rank	Level
Achievement motivation	9.83	1	High
Decision making	8.03	2	High

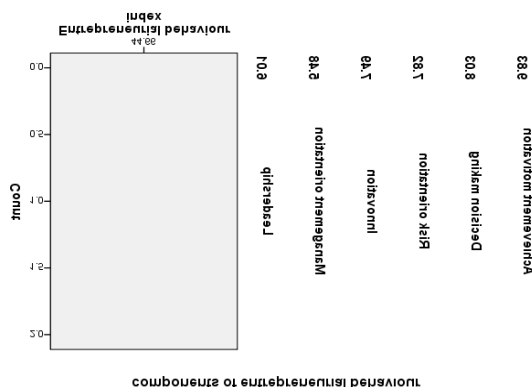|			
Risk orientation	7.82	3	Medium
Innovation	7.49	4	Medium
Leadership	6.01	5	Medium
Management orientation	5.48	5.48	Medium
Entrepreneurial behaviour index	**44.66**		

Source: Primary Data

Fig: 1: Level of entrepreneurial behaviour components

Table. 3 Correlation between selected independent variables and entrepreneurial behaviour of the respondents

	Coefficients[a]					
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.796	.396		4.538	.000
	Age of the respondents	.130	.066	.157	1.971	.051
	Gender of the respondents	.266	.128	.162	2.076	.040
	Marital status of the respondents	.042	.072	.046	.578	.564
	Education of the respondents	.014	.039	.029	.358	.721
	Experience of the fish farmer	.116	.063	.146	1.847	.050
	Membership in any organisation	.291	.095	.239	3.069	.003
	Annual income of the respondents	.044	.069	.049	.630	.529
	Mode of fish farming	.291	.095	2.39	3.069	.003
	Aquaculture training	.129	.059	.182	2.190	.030
	Extension agent's contact	.135	.062	.170	2.170	.032
a. Dependent Variable: Entrepreneurial Behaviour						

Table 4

	ANOVA[b]					
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.155	10	.716	3.381	.001[a]
	Residual	29.207	138	.212		
	Total	36.362	148			

a. Predictors: (Constant), Extension agent's contact , Aquaculture training , Mode of fish farming, Member of any organisation, Experience of the fish farmer, Gender of the respondents ,Age of the respondents

b. Dependent Variable: Entrepreneurial behaviour

Based on the results of the analysis, table 4 shows the value of F count = 3.381 with a significant of .001 <.05 it shows that , age of the respondents, gender of the respondents, experience of the fish farmer, mode of fish farming, , aquaculture training , member of any organisation and extension agency contact have positive and significant impact on entrepreneurial behaviour of fish farmers.

5.3 KNOWLEDGE LEVEL OF FISH FARMERS REGARDING SELECTED FISH FARMING PRACTICES

Table 5 revealed that the knowledge level of fish farmers regarding selected fish farming practices. The majority of the fish farmers (98 per cent, 92 per cent, 88 per cent, 92 per cent, 94 per cent, 69 per cent and 92 per cent)

have very high level of knowledge regarding various fish farming practices such as optimum level of water PH level, increasing the level of water PH level, methods available for decreasing water PH level, removing excess ammonia, increasing dissolved oxygen, bacterial Fish disease and the feeding frequency of fishes in early stage.

Table 5 Knowledge level of fish farmers regarding selected fish farming practices

SL. No.	Statement	Practice			
1.	The optimum level of water PH level	Below 6.5	**7.5 (n=147, 98per cent)**	8.5	Above 9
2.	Increasing the level of water PH level	Dolomite	Calcium oxide	Agricultural Liming	**All (n=138 92per cent**
3.	Methods available for decreasing water PH level	Partial water change	Alum or aluminum sulfate	gypsum	**All (n= 132, 88 per cent)**
4.	Removing excess ammonia	Water exchange	Probiotic	**Yucca (n= 138, 92 per cent)**	Zeolite
5.	Increasing dissolved oxygen	Larger water exchange	Use ice cubes	Use a battery powered air pump	**All (n= 141, 94 per cent)**
6.	Bacterial Fish disease	**Tail and fin rot (n= 104, 69per cent)**	Dropsy	Kidney and ulcer disease	White spot and fungal infection
7.	The feeding frequency of fishes in early stage	2 times per day	4 times per day	**3 times (n= 138, 92)per day**	5 times per day

5.4 ASSOCIATION BETWEEN KNOWLEDGE LEVEL AND SELECTED PERSONAL AND SOCIO-ECONOMIC CHARACTERISTICS OF FISH FARMERS

Table 6 revealed that personal, socio-economic characteristics such as age, education, experience of fish farmers, membership in any organisations, and mode

of fish farming, aquaculture training acquired and extension agency contact exhibits positive and significant influence on the knowledge level of the respondents. Also, independent variables like gender, marital status, and annual income exhibit non- significant influence on the knowledge levels of fish farmers.

Table 6 Association between knowledge level and selected personal and socio-economic characteristics of fish farmers

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.262	.308		4.098	.000
	Age of the respondents	.103	.056	.155	.1.849	.050
	Gender of the respondents	.090	.100	.075	.908	.366
	Marital status of the respondents	.038	.051	.063	.745	.4.58
	Education of the respondents	.135	.076	1.47	1.726	.046
	Experience of the fish farmer	.385	.160	.209	2.449	.016
	Member of any organisation	.161	.074	.181	2.189	.030
	Annual income of the respondents	-.032	.054	-.049	-.589	.557
	Mode of fish farming	.394	.161	.209	2.449	.016
	Aquaculture training	.135	.078	1.49	1.726	.047
	Extension agent's contact	.3.79	.168	1.88	2.250	.026
a. Dependent Variable: Knowledge of fish			**Farmers**			

5.5 ADOPTION LEVEL OF FISH FARMERS ON SELECTED FISH FARMING PRACTICES

The findings in Table 7   revealed that majority (57.14 per cent, 79.59 per cent, 68.16 per cent, 68.57 per cent, 96.32 per cent, 69.38 per cent and 64.08 per cent) of the

respondents were adopted private fish hatchery for purchasing fish seed, hired labour as source of labour, mono fish culture, floating pellet as fish feed, partial harvesting, live marketing and Gift tilapia for fish farming respectively.

Table 7 Adoption level of fish farmers on selected fish farming practices

Sl. No.	Practices	Adopted (Frequency)	Percent (per cent)
1	**Source of purchase of fish seed**		
	1. Fisheries department	92	37.55
	2. Private fish farm	140	57.14
	3. own seed production	13	5.30
2	**Source of labour**		
	Hired labour	195	79.59
	Family labour	50	20.40
3	**Type of aquaculture practice**		
	1. pond culture	37	15.10
	2. cage or pen culture	13	5.30
	3. RAS	31	12.65
	4. Biofloc	114	46.53
	5. Integrated fish farming	28	11.42
	6. Others	22	8.97
4	**Fish culture**		
	Mono culture	167	68.16
	Poly culture	78	31.83
5	**Type of fish feed**		
	Sinking pellet	36	14.69
	Floating pellet	168	68.57
	Slow sinking	11	4.49
	Conventional feed	30	12.24
6	**Harvesting method**		
	Partial harvesting	236	96.32
	Complete harvesting	9	3.67
7	**Marketing channel**		
	Live marketing	170	69.38
	Farm sale outlet	13	5.30
	Local market(within the district)	62	25.30
8	**Type of edible fishes**		
	Gift tilapia	157	64.08
	Pangasius	37	15.10
	Pearl spot/karimeen	13	5.30
	Anabas	38	15.51

5.6 CONSTRAINTS FACED BY FISH FARMERS

Present study has also found the problems and limitations faced by the fish farmers in the southern district of Kerala (Table 4). Results further revealed the extent to which those problems have affected to the fish farmers. According to the result the major problem faced by the fish farmers are no demand for farmed fish in local market. Availability of sea fishes, other substitute products and public preference etc. was the reasons for no demand. No price was ranked the second critical limitation faced by the fish farmers of the study area. The reason for no price was importing fishes cultivated under non-organic fish farming from other sate like Andrapredesh and Bangal at low price. Poor quality of the seed was ranked third among the list of problems studied, most of the fish farmers said that the seed issued form some hatchery was very low growth rate and breeding automatically. Availabity of sea fishes, changes in water quality parameters, poor water quality, high initial cost, lack of proper training, lack of quality feed and lack of credit facilities are the various other problems experienced by the fish farmers.

Table 8 Constraints Faced by fish farmers

Constraints	Frequency	Percentage (per cent)	Rank
No demand	112(High) 78 (Medium) 23 (Low)	86.94	1

	Total 213		
Low price	96(High) 82 (Medium) 33 (Low) **Total 211**	86.12	2
Lack of quality seed	89(High) 93 (Medium) 7 (Low) **Total 189**	77.14	3
Availably of sea fish	46 (High) 89 (Medium) 37(Low) **Total 172**	70.20	4
Changes in water quality parameters	23(High) 45(Medium) 12 (Low) **Total 80**	32.65	5
Poor water quality	39(High) 19 (Medium) 12 (Low) **Total 70**	28.57	6
High initial cost	17(High) 28 (Medium) 11 (Low) **Total 56**	22.85	7
Lack of proper training	14 (High) 27(Medium) 13 (Low) **Total 54**	22.04	8
Lack of quality feed	13 (High) 8 (Medium) 0 (Low) **Total 24**	9.79	9
Lack of credit facilities	0 (High) 7(Medium) 3 (Low) **Total 10**	4.08	10

Source: Primary Data

7. CONCLUSION

In this paper it has explored the level of entrepreneurial behavior, the key determinants the entrepreneurial behaviour and the constraints faced by the fish farmers in southern region of Kerala. The study concludes with an analytical finding of entrepreneurial behavioural behaviour of fish farmers at medium level because the Entrepreneurial Behavioural Index of 44.66.

The study also revealed that fish farmers in southern region of Kerala have medium entrepreneurial behavior at four attributes form six attributes such as risk orientation, innovation, leadership and management orientation, these should be shifted to high level of entrepreneurial behaviour by proper training, extension and various orientation programmes, motivation and adoption of improved technologies. For the profitable and developed fisheries sector the fish farmers must possess a higher entrepreneurial behaviour.

The key determinants of entrepreneurial behaviour were identified as age, gender, experience of fish farmers, membership in an organisation, mode of fish farming, aquaculture training received and extension agency exhibited positive and significant correlation with the entrepreneurial behaviour of the respondents. These exhibits positive and significant correlation with the entrepreneurial behaviour.

The personal, socio economic factors such as age, education, experience, membership in an organisation, mode of fish farming, aquaculture training received and extension agency contact has a significant influence on the knowledge level of fish farmers.

Study has also revealed main constraints for the fish farmers among which, low demand

(97per cent), low price (86.94per cent), low price (86.12per cent) and lack of quality of seed (77.14per cent) were identified as the main problems faced by the fish farmers in the southern districts of Kerala.

8. ACKNOWLEDGEMENT

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