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LIVELIHOOD AND LEVEL OF ASPIRATION OF COASTAL FISHER FOLK OF TAMILNADU

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Abstract

A study on the livelihood status of different stakeholder categories in marine fisheries sector was undertaken. Four categories of stake holders namely fishermen operating motorized craft, fishermen operating mechanized craft, fishermen operating motorized craft + boat building and fisherwomen who were fish vendors were selected for the study. Among the stake holders studied, fishermen operating mechanized crafts earned the highest average monthly income of Rs.5161.54 followed by fisherwomen who were fish vendors, with an average monthly income of Rs.4,660.00 followed by fishermen operating motorized craft + boat building with an average monthly income of Rs.4,274.36 and fishermen operating motorized crafts with an average monthly income of Rs.2021.13. The results of "F test" revealed that the values differed significantly for characteristics such as education, family type, annual income, material possession, social participation, economic motivation, risk orientation, scientific orientation, annual expenditure, annual savings, livelihood index and level of aspiration at 1 percent level of significance. However characteristics such as age, occupation and annual debt did not differ significantly for the different stakeholder categories. The result of the correlation analysis revealed that annual income, scientific orientation, level of annual expenditure, annual debt and annual savings had a highly significant and positive relationship with the livelihood index of the different stake holder categories. Further, it was observed that variables such as scientific orientation, and average annual expenditure of fishermen operating motorized crafts, and fishermen operating mechanized crafts had a highly significant and positive relationship with their level of aspiration.

Key words : Stake holder category, Livelihood index, Level of Aspiration.

INTRODUCTION

MARINE fisheries sector in India provides a gainful source of employment, income and livelihood to the millions of fisher folk, who support the fishery economy of the country. The socio-economic profile and livelihood status of these fishermen assumes paramount importance in designing fishery developmental programmes for augmenting the fisheries production and raising the economic status of people involved in this sector (Sathiadhas and Panikka, 1989).

Livelihood is commonly defined from an economic perspective as an occupation, work or other means by which one earns income to provide the necessities of life (Asong *et al.* 2000).

Studies on the Socio- economic profile of fishermen by Balasubramaniam *et al.*, 2003, Balasubramaniam and Braj Mohan, 2002, and Bihari *et al.* 1999, indicated the need for strengthening of fisheries extension services to augment the socio-economic status of marine fisher folk.

However studies on livelihood and aspirations among different stakeholder categories among marine fisher folk are limited or few.

Hence, the present work was undertaken with the following specific objectives:

1 To study and compare the socio-economic profile of the different stakeholder categories.

2 To determine the relationship between the profile characteristics with the livelihood index and level of aspiration of stakeholders.

Materials and Methods

The study was conducted in Kancheepuram, Chennai and Tiruvallur districts of Tamilnadu. Based on the pilot survey conducted in these three districts, four main groups of stakeholder categories were identified. They were fishermen operating motorized crafts, fishermen operating mechanized crafts (Trawlers), fishermen operating motorized crafts + having boat building as an ancillary occupation and fisherwomen who were fish vendors.

A random sample consisting of 146 fishermen operating motorized crafts were selected from Kancheepuram and Thiruvallur districts, 65 fishermen operating mechanized crafts (trawlers) were drawn from Chennai, 39 fishermen operating motorized crafts + boat building as an ancillary occupation were drawn from Thiruvallur district and 50 fisherwomen who were fish vendors drawn from Kancheepuram and Chennai districts.

Thus the total sample for the present study was 300 respondents. A total of 16 independent variables namely age, education, occupation, stakeholder category, family type, annual income, material possession, source of livelihood, social participation, credit orientation, economic motivation, risk orientation, scientific orientation, expenditure per year, debt per year, savings per year was selected for the study. The independent

variables were operationalised and categorized as detailed below.

Age : Age was operationalised as the number of completed years of the respondents at the time of enquiry and the chronological age was taken as the measure. The respondents were classified in to three categories according to their age as adopted by Lekshmi (1995).

Young- less than 35 years (score of 1), Middle - 35-45 years (score of 2) and old – above 45 years (score of 3).

Education : Educational status referred to the formal educational qualification of the respondents. The scoring procedure of Sudhakar (2002) was used for the study. The educational status was classified as illiterate, can read only, can read and write, primary level, middle level, high school level, higher secondary level and collegiate level. The following scoring procedure was used:

Category	Score
Illiterate	1
Can read only	2
Can read and write	3
Primary level	4
Middle level	5
Secondary level	6
Higher secondary level	7
Collegiate level	8

Occupation : The occupational status was classified into two categories such as Fisheries as primary occupation and Fisheries as secondary occupation. The scoring technique of Sudhakar (2002) was used.

Category	Score
Fisheries as primary	2
Fisheries as secondary	1

Family type : This was operationalised as the nature of the family whether joint or nuclear. The scoring procedure of Lekshmi (2004) was used for the study.

Category	Score
Joint	2
Nuclear	1

Annual income : It referred to the total income earned by the respondent

from fisheries. For every 10,000 Rupees a score of 1 was given.

Category	Score
For every 10,000 Rupees	1

Annual expenditure : It referred to the total amount of money incurred by the respondent for his occupation as well as for the maintenance of his family.

Category	Score
For every 10,000 Rupees	1

Annual debt : It referred to the total amount of money availed as loan in a year for his occupation as well as for the maintenance of his family, by the respondent.

Category	Score
For every 5000 Rupees	1

Annual savings : It referred to the total amount of money saved by the respondent in an year.

Category	Score
For every 2000 Rupees	1

Social participation : It referred to the degree of involvement of an individual in a formal organization as a member or as an office bearer in the past or in the present situation. The scoring procedure developed by Trivedi and Pareek (1973) was used for quantification.

S.No.	Level of participation	Score
1	Member in an organization	1
2	Office bearer in an organisation	2
	Status	
1	Present	2
2	Past	1

The product of membership score and the status of the respondent was calculated to get the social participation score for a particular organization. Such social participation score for all organization in which the respondent reported participation were pooled together to get an individual's social participation score.

Credit orientation : Credit orientation was operationalized with the help of responses relating to the need for credit, use of credit, and availability of credit as adopted by Ahamed (1987) was used, with suitable modifications to suit the study. The scoring procedure adopted, is as follows.

S.No.	Questions	Responses	Scores
1	Do you think a farmer like you, should get loan for fishing	Yes	1
		No	0
2	Getting loan for fishery related activities is	Very easy	4
		Easy	3
		Difficult	2
		Very difficult	1
		Not available	0
3	Have you ever thought of getting loan for fishery related activities?	Yes	1
		No	0
4	Have you ever utilized credit for the purpose of fishery related activities?	Yes	1
		No	0

The scores added together on the above five questions for each respondent would indicate his credit orientation score.

Economic motivation : Economic motivation was operationalised in terms of profit maximization and the relative value placed by the farmer on economic ends. It was measured with the help of the scale developed by Supe (1969). The scale consisted of six statements of which first five were positive while the last one was negative. The scoring procedure is as follows.

Response	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Score for positive statements	7	5	4	3	1
Score for negative statements	1	3	4	5	7

Thus the maximum score an individual respondent would get was 42 and minimum score was 6. The respondents were classified into low, medium and high categories based on cumulative frequency.

Risk orientation : Risk orientation was defined as the degree to which the farmer was oriented towards risk and uncertainty in adopting new ideas in the family. Risk orientation scale, developed by Supe (1969) was used. The scale consisted of six statements wherein items one and five were negative and the rest were positive.

The scoring was done as given here under.

Response	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Score for positive statements	7	5	4	3	1
Score for negative statements	1	3	4	5	7

Material possession : The material possession was operationalised as the reported possession of fishing crafts, gears, fishing equipments as well as home possessions. The respondents were asked to indicate the items they actually possessed for day to day operation of the fishing and for maintenance of their homes. The responses were quantified based on the scoring procedure adopted by Lekshmi (2004) with slight modification to suit the study. The summation of scores on fishing materials and home possessions gave the total score for material possession of the individual respondents.

S.No.	Items	Score
1	Fishing craft	6
2	Fishing gears	5
3	Home possessions	
	a) T.V	4
	b) Radio	3
	c) Motor bike	2
	d) Cycle	1

Scientific orientation : The scientific orientation was measured using the scale of Supe (1969). The scale consisted of 5 statements of which statement 2 was negative and the others were positive.

Response	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Score for positive statements	5	4	3	2	1
Score for negative statements	1	2	3	4	5

The dependant variable livelihood index was measured using an index developed for the study.

The level of aspiration was measured by using the scoring procedure developed by Jancy (1991). The level of aspiration was defined as the level of future performance of a familiar task, which an individual after knowing the level of past performance in his task is able to reach.

Each fisherman is asked to express his hope, desires, worries and fear in his own terms and assumptions. A figure of a ladder he feels, and where he stands personally is shown to him, and he is asked to indicate his position in the ladder with respect to the time period indicated. Corresponding to the sets in the ladder for the present, past and future scores are given and summed up. The livelihood index for the present study was operationalised as the income, expenditure, debt and savings pattern of the individual respondent which denotes the standard of living of the individual respondent.

a) Where in that ladder do you feel you stand personally at present?

Step No ——— 10

b) Where on that ladder, would you say you stood 5 years ago?

——— 9
——— 8
——— 7

c) And where do you think you will be on the ladder 5 years from now

——— 6
——— 5
——— 4
——— 3
——— 2
——— 1
——— 0

A livelihood index (L.I.) was developed for the present study which was as follows:

$$\text{Livelihood Index} = \frac{\frac{\text{Actual income}}{\text{Potential income}} + \frac{\text{Actual expenditure}}{\text{Potential expenditure}} + \frac{\text{Actual debt}}{\text{Potential debt}} + \frac{\text{Actual savings}}{\text{Potential savings}}}{4} \times 100$$

The potential income, potential expenditure, potential debt and potential saving was defined as the maximum possible income, expenditure, debt, savings that could be incurred by a particular stakeholder category and was calculated separately for each stakeholder category.

Potential income : The potential income was operationalised as the maximum possible income a respondent could earn in an year from his occupation.

Potential expenditure : The potential expenditure was operationalised as

the maximum possible expenditure a respondent incurred in an year for carrying out his occupation as well as for maintenance of his family.

Potential debt : The potential debt referred to the maximum possible debt a respondent incurred in a year, for his occupation as well as for maintenance of his family.

Potential savings : The potential savings referred to the maximum amount of money a respondent could save in an year.

The potential income, the potential expenditure, the potential debt and potential savings for each category was calculated by taking a sample of 30 respondents from each category and asking them to indicate the level of potential income, potential expenditure, potential debt and potential savings. The average of the values were found out for each category which are detailed as follows :

Fishermen operating motorized crafts	**Rupees**
Potential income/year	60,000
Potential expenditure/year	40,000
Potential debt/year	10,000
Potential savings/year	10,000
Fishermen operating Trawlers	**Rupees**
Potential income/year	1,25,000
Potential expenditure/year	1,00,000
Potential debt/year	10,000
Potential savings/year	12,000
Boat Building fishermen	**Rupees**
Potential Income/year	90,000
Potential expenditure/year	60,000
Potential debt/year	15,000
Potential savings/year	12,000
Fisherwomen who are fish vendors	**Rupees**
Potential Income/year	75,000
Potential expenditure/year	50,000
Potential debt/year	10,000
Potential savings/year	20,000

The data was collected using a well structured interview schedule and also by using selected PRA (Participatory Rural Appraisal) techniques. The data was collected during the period from October to November 2004.

The collected data was analysed by using tools such as Percentage analysis,

Statistical methods, Correlation analysis and Analysis of variance.

Findings and Discussion

A perusal of Table 1 reveals the profile characteristics of the different categories of stakeholders. It could be observed that among the fishermen who operated motorized crafts, most of the respondents were young, had primary level of education and had fisheries as the primary occupation. The findings gain the support of ICM (2003) who revealed in their studies that most of the fishermen in the coastal communities in Orissa belong to the young and middle aged category *i.e.* between 18 and 50 years of age. The findings of NIRD, 1999 revealed that 72 percent of fisher folk in coastal Orissa had access to primary schools. Studies in Puri (Chilka area) and Ganjam districts indicate that most of the coastal villagers lack employment opportunities (Salagrama and Mahapatro, 1998). Their studies revealed that few sustainable income generating opportunities existed as alternatives for coastal communities.

With respect to the stake holder category it was observed that all the fishermen belonging to this category were involved in capture fisheries and only 34.25 per cent were involved in fish processing. In fish processing it was observed that the fishermen were involved in processing of Jelly fish or "Sori" which was a seasonal occupation.

The family type of most of the fishermen of this category was nuclear. This gains support of the findings of (ICM, 2003) who reported that although the joint families were better equipped to cope with lean periods, such arrangements also brought friction in familial relations. Besides these studies pointed out that the influence of media particularly television, has brought about a cultural revolution in fishing villages and has altered the priorities, needs and aspirations of the younger generation.

Further perusal of the table revealed that most of the fishermen had medium level of material possession. It could be observed further that all the fishermen depended on capture fisheries for a source of livelihood, 91.09 per cent involved in auction of fresh fish, 34.25 per cent were involved in fish processing (Jelly fish processing) and 1.37 per cent were involved as labourers for loading of fishes in lorries.

Further, it could be inferred that most of the fishermen had medium level of social participation, medium level of credit orientation, economic motivation, risk orientation and a high level of scientific orientation. The scores for low, medium and high are indicated in Table 1. The high level

Table 1
Socio-economic profile of the different categories of stake holders

S.No.	Category	Fishermen operating motorized craft (N = 146)		Fishermen operating mechanized craft (N = 65)		Fishermen operating motorized craft+ boat building (N = 39)		Fisherwomen who were fish vendors (N = 50)	
		No.	%	No.	%	No.	%	No.	%
1	**Age**								
	Young (up to 35 years)	63	43.15	21	22.31	19	48.72	12	24.00
	Middle (>35-45 years)	56	38.36	39	60.00	11	28.21	29	58.00
	Old (above 45 years)	27	18.49	5	7.69	9	23.07	9	18.00
2	**Education**								
	Illiterate (Score = 1)	42	28.78	40	61.54	4	10.26	22	44.00
	Primary level (Score = 2)	76	52.05	17	26.16	16	41.02	28	56.00
	Middle level (Score = 5)	11	7.53	0	0.00	11	28.02	0	0.00
	High School level (Score =7)	16	10.96	6	9.23	4	10.25	0	0.00
	Collegiate level (Score = 8)	1	0.68	2	3.07	4	10.25	0	0.00
3	**Occupation**								
	Fisheries as primary occupation (Score = 2)	146	100.00	65	100.00	39	100.00	50	100.00
	Fisheries as secondary occupation (Score = 1)	0	0.00	0	0.00	0	0.00	0	0.00
4	**Stake holders category**								
	Capture fisheries	146	100.00	65	100.00	39	100.00	0	0.00
	Culture fisheries	0	0.00	0	0.00	0	0.00	0	0.00
	Net making	0	0.00	0	0.00	34	87.18	0	0.00
	Boat making	0	0.00	0	0.00	39	100.00	0	0.00
	Fish vending	0	0.00	0	0.00	35	89.74	50	100.00
	Fish processing	50	34.25	0	0.00	25	64.10	40	80.00
	Labourer in export companies	0	0.00	0	0.00	0	0.00	0	0.00
5	**Family type**								
	Nuclear (Score = 1)	85	58.22	31	47.70	23	58.97	14	28.00
	Joint (Score = 2)	61	41.78	34	52.30	16	41.03	36	72.00
6	**Material Possession**								
	Low	0	0.00	0	0.00	0	0.00	0	0.00
	Medium	146	100.00	65	100.00	39	100.00	50	100.00
	High	0	0.00	0	0.00	0	0.00	0	0.00
7	**Source of livelihood**								
	1 Capture fisheries	146	100.00	65	100.00	39	100.00	0	0.00
	2 Culture fisheries	0	0.00	0	0.00	0	0.00	0	0.00

contd...

S.No.	Category	Fishermen operating motorized craft (N = 146)		Fishermen operating mechanized craft (N = 65)		Fishermen operating motorized craft+ boat building (N = 39)		Fisherwomen who were fish vendors (N = 50)	
		No.	%	No.	%	No.	%	No.	%
	3 Sale of fish								
	a) Dry fish	0	0.00	0	0.00	0	0.00	35	70.00
	b) Fresh fish (by auction)	133	91.09	0	0.00	35	89.74	50	100.00
	4 Fish processing	50	34.25	0	0.00	25	64.10	40	80.00
	5 Labour in the form of loading fishes in lorries	2	1.37	0	0.00	0	0.00	0	0.00
	6 Ancillary activities	0	0.00	0	0.00	39	100.00	0	0.00
8	**Social participation**								
	Low (Score of 1)	9	6.17	0	0.00	0	0.00	0	0.00
	Medium (Score of 2)	124	84.94	59	90.77	36	92.31	21	42.00
	High (Score of 3 and above)	13	8.90	6	9.23	3	7.69	29	58.00
9	**Credit orientation**								
	Low (<4)	3	2.05	0	0.00	0	0.00	0	0.00
	Medium (Score of 4, 5)	120	82.19	61	93.85	37	94.87	37	74.00
	High (> 5)	23	15.75	4	6.15	2	5.13	13	26.00
10	**Economic motivation**								
	Low (Score < 33)	42	28.77	8	12.31	12	30.77	4	8.00
	Medium (Score of 34-36)	101	69.18	57	87.69	27	69.23	14	28.00
	High (Score > 36)	3	2.05	0	0.00	0	0.00	32	64.00
11	**Risk orientation**								
	Low (Score < 28)	47	32.19	2	3.08	0	0.00	13	26.00
	Medium (Score 28-30)	93	63.70	63	96.92	19	48.72	15	30.00
	High (Score > 30)	6	4.11	0	0.00	20	51.28	22	44.00
12	**Scientific orientation**								
	Low (Score < 15)	19	13.00	21	32.30	4	10.25	12	24.00
	Medium (Score 16-20)	60	41.10	0	0.00	12	30.77	23	46.00
	High (Score > 20)	67	45.90	44	67.70	23	58.97	15	30.00

of scientific orientation could be attributed to the fishermen's adoption of improved technologies such as fiberglass boats which made an entry into the coastal waters of Tamilnadu in 1980's, due to scarcity of wood for boat building (Bavinck, 1998).

Traditional gears made of cotton nets have been replaced by synthetic nets and fishermen use specialized fishing gears to capture specific varieties (Sathiadhas, 1998).

Further perusal of Table 1 on the socio-economic characteristics of fishermen operating mechanized craft (Trawlers) revealed that 60 per cent of the fishermen were middle aged, were illiterate, had fisheries as the primary occupation, were involved only in capture fisheries, and had joint family type. This might be due to the fact that fishermen, who go on multi-day trawlers, are often characterized by long periods of absence from their homes, and the presence of joint family would help to lessen the responsibilities of their women and children at home.

Further it could be inferred that most of the fishermen had a medium level of annual income, medium level of material possession and all of them were involved only in capture fisheries for a source of livelihood. This might be because in India, fishing is a full time profession, especially so in the case of fishermen operating mechanized crafts and fishermen do not have any alternate source of income generation (Kulkarni, 2005).

Further it could be observed that an overwhelming majority (90.77%) had a medium level of social participation. This might be due to the fact that most of the fishermen of this category were members of fishermen co-operative societies.

Further it would be inferred that majority of them had a medium level of credit orientation, economic motivation, risk orientation, and a high level of scientific orientation. It might be due to the fact that fishermen operating trawlers have high level of exposure in operating modern and scientific gadgets like echo-sounders and GPS (Geographic Positioned Systems) as supported by the findings of Kurien (2005) who opined that use of scientific artifacts such as hand held GPS and cell phones aid significantly in enhancing the fishing capability, occupational safety and ensuring better product prices to the fishermen.

A cursory look at the Table revealed the profile characteristics of fishermen operating motorized crafts + boat building as an ancillary occupation. It could be inferred that majority of the fishermen were young, had primary level of education and had fisheries as primary occupation. Further perusal of the table revealed that all the fishermen were involved in capture fisheries, and cent percent of them were engaged in boat building as an ancillary occupation. Further it could be observed that 89.74 per cent were engaged in fish vending, 87.18 per cent in net making and 64.10 per cent were involved in fish processing *i.e.* processing of Jelly fishes. These marine fishermen made country boats called "Nattu Padaku" as they were called in Tamil and were made of Teak wood. These boats were

built based on the orders received from the neighboring lake fishing villages.

These fishermen also made nets used for lake fishing such as "Visiri Valai" (Cast net), Ayala Valai (Gill net) and Konda Valai (Shrimp net) used for catching Shrimps. The boat building fishermen were predominantly a muslim community and it was a traditional occupation handed down generations. This finding gains the support of (ICM, 2003) who in their study on the coastal communities in Orissa found that traditional boat builders were another specialist category of people who found themselves out of job when new boats such as the FRP versions of indigenous crafts arrived on the scene. Further it could be observed that most of them had a nuclear family type, all of them had a medium level of material possession, social participation, credit orientation, economic motivation, high level of risk orientation and scientific orientation.

Further perusal of the table revealed the profile characteristics of fisherwomen who were fish vendors. It could be observed that most of the fisherwomen (58.00%) were middle aged. These findings are in agreement with the findings of Rosen (1998), Bostock *et al* (1993) and DFID (2003) who reported that fisherwomen of Tamilnadu who do fish marketing are either middle-aged or old and younger women are bound by the rules of the highly traditional and prescriptive society which prevents them from getting involved in marketing activities. Further it could be seen that most of them had a primary level of education, had fisheries as the main occupation. Further it could be observed that all the women were involved in fish vending and 80.00 per cent were involved in fish processing. Further it could be observed that majority of them had joint family type and medium level of annual income and material possession and 100 per cent of the fisherwomen were involved in the auction of fresh fishes. This is in agreement with the findings of Joseph *et al* (1997) who reported that in Chennai, Tamilnadu, it is exclusively women who act as auctioneers. Further it could be observed that cent per cent of the fisherwomen had high levels of social participation, medium level of credit orientation, high level of economic motivation, high level of risk orientation, and medium level of scientific orientation.

A perusal of Table 2 revealed the levels of income, expenditure, debt and savings of the different stakeholder categories. A comparison of the average monthly income among the different categories indicated that the average monthly income was the highest for fishermen operating mechanized crafts(Rs 5161.64). Trawlers by virtue of the improved technologies on board operate at greater depth and more extensive and productive fishing

zones where motorized crafts cannot operate, and bring sizeable catches of commercially valued species like Shrimps which fetches more market value. The monthly expenditure was highest for this category, showing, an increased income also leads to a proportionate increase in expenditure.

Table 2
Income, expenditure, debt and savings pattern of the different stakeholder categories

Independent Variables	Fishermen operating motorized craft (n=146)	Fishermen operating mechanized craft (n=65)	Fishermen operating motorized craft + boat building (n=39)	Fisherwomen who are fish vendors (n=50)
Income (In Rs.)				
Average income/month	2021.13	5161.54	4274.36	4666.00
Average income/year	23972.60	61938.50	51292.31	55920.00
Expenditure (In Rs.)				
Average expenditure/month	2244.58	4178.25	3348.29	3816.67
Average expenditure/year	26934.93	50138.46	40179.49	45800.00
Debt (in Rs.)				
Average debt/month	508.33	434.01	498.90	483.33
Average debt/year	6100.00	5215.38	5987.18	5800.00
Savings (in Rs.)				
Average Saving/month	121.67	456.67	970.00	531.67
Average Savings/year	1460.00	5480.00	11640.00	6380.00

Further perusal of the table revealed that the annual average debt was highest for fishermen operating motorized crafts. As far as savings was concerned, it could be inferred that the average annual savings was highest for fisherwomen who were fish vendors; indicating that fisherwomen play a key role in monitoring the income/expenditures/savings/debt pattern of the household and also for socio-economic upliftment of the family. The high level of savings of fisherwomen have been promoted due to their intensive participation in self help groups (SHG's) which play a vital role in mobilizing and motivating the fisherwomen to save their hard earned money. (FAO Corporate Document Repository, 2003).

The findings of Immanual *et al* (1995) indicate that the annual income of fishermen operating mechanized boat was estimated to be Rs.34200, in a motorized boat Rs.15,200 and in an artisanal unit Rs.800 during 1995-96.

Further, the present study revealed that fishermen operating motorized crafts + boat building as an ancillary occupation have a relative advantage with respect to income generation, when compared to fishermen operating

motorized crafts alone as their full time occupation. Ancillary occupations in fishing community by fishermen and fisherwomen such as toy boat making, carpentry, fuel wood vending, lantern making in Guimaras, Phillippines (Asong et al, 2000) has led to the attainment of the goal of sustainable and equitable development.

A perusal of Table 3 revealed the levels of annual income, expenditure, debt and savings of the fishermen belonging to the different categories. For the fishermen operating motorized crafts, it could be seen that most of the fishermen belonged to the medium level (Rs.20,000-30,000) of annual income. With respect to the expenditure/year it could be observed that majority of the fishermen (76.03%) had medium level (Rs.18,000-,40,000) of expenditure/year. Further, it could be observed that most of the fishermen of this category had medium level of debt/year (Rs.5000-7500) and an overwhelming majority (82.88%) had a low level of savings (less than Rs.600 per year).

Table 3

Annual income, expenditure, debt and savings of fishermen belonging to different categories

A) Annual income of fishermen operating motorized crafts (n= 146)

S.No	Category	Number	Percentage
1	Low (Up to Rs 19,900)	23	15.75
2	Medium (Rs 20,000-29,900)	76	52.05
3	High (Rs.30,000-1,00,000)	47	32.19

B) Annual Expenditure of fishermen operating motorized crafts (n= 146)

S.No	Category	Number	Percentage
1	Low (< Rs 18,000)	17	11.64
2	Medium (Rs 18,000-39,900)	111	76.03
3	High (above Rs.40,000))	47	32.19

C) Annual debt of fishermen operating motorized crafts (n= 146)

S.No	Category	Number	Percentage
1	Low (< Rs 5000)	46	31.50
2	Medium (Rs 5000-7500)	60	41.10
3	High (above Rs 7500)	40	27.40

D) Annual savings of fishermen operating motorized crafts (n= 146)

S.No	Category	Number	Percentage
1	Low (< Rs 600)	121	82.87
2	Medium (Rs 600 -20,000)	25	17.13
3	High (above Rs 20,000)	0	0.00

E) Livelihood index of fishermen operating motorized crafts (n=146)

S.No	Category	Number	Percentage
1	Low (score < 35)	61	41.78
2	Medium (score of 35-49)	50	34.25
3	High (score > 50)	35	23.97

F) Level of aspiration of fishermen operating motorized crafts (n=146)

S.No	Category	Number	Percentage
1	Low (score < 10)	46	31.51
2	Medium (score of 10-13)	56	38.36
3	High (score > 13)	44	30.14

A) Annual income of fishermen operating Trawlers (n=65)

S.No	Category	Number	Percentage
1	Low (< 60,000)	22	33.85
2	Medium (Rs 60,000-70,000)	29	44.61
3	High (> Rs 70,000)	14	21.54

B) Annual Expenditure of fishermen operating Trawlers (n=65)

S.No	Category	Number	Percentage
1	Low (< Rs 44,000)	20	30.77
2	Medium (Rs 44,000-55,000)	30	46.15
3	High (> above Rs 55,000)	15	23.08

C) Annual debt of fishermen operating Trawlers (n= 65)

S.No	Category	Number	Percentage
1	Low (< Rs 3000)	20	30.77
2	Medium (Rs 3000-5000)	34	52.31
3	High (> Rs 5000)	11	16.92

D) Annual savings of fishermen operating Trawlers (n=65)

S.No	Category	Number	Percentage
1	Low (< Rs.3000)	18	27.69
2	Medium (Rs.3000-8000)	28	43.08
3	High (above Rs.8000)	19	29.23

E) Livelihood index of fishermen operating Trawlers (n=65)

S.No	Category	Number	Percentage
1	Low (score < 60)	18	27.70
2	Medium (score of 61-65)	28	43.08
3	High (score > 66)	19	29.23

F) Level of aspiration of fishermen operating Trawlers (n=65)

S.No	Category	Number	Percentage
1	Low (score < 10)	30	46.15
2	Medium (score of 10-13)	20	30.77
3	High (score > 13)	15	23.08

A) Annual income of motorized+ boat building fishermen (n=39)

S.No	Category	Number	Percentage
1	Low (< Rs.45,000)	8	20.51
2	Medium (Rs.45,000-55,000)	22	56.41
3	High (< Rs 55,000)	9	23.08

B) Annual Expenditure of motorized+ boat building fishermen (n=39)

S.No	Category	Number	Percentage
1	Low (< Rs.35,000)	4	10.26
2	Medium (Rs.35,000- 50,000)	35	89.74
3	High (> above Rs.50,000)	0	0.00

C) Annual debt of motorized+ boat building fishermen (n=39)

S.No	Category	Number	Percentage
1	Low (< Rs 5000)	10	25.64
2	Medium (Rs.5000-7500)	24	61.54
3	High (> Rs.7500)	5	12.82

D) Annual Savings of motorized+ boat building fishermen (n=39)

S.No	Category	Number	Percentage
1	Low (< Rs. 8000)	15	38.46
2	Medium (Rs. 8000-16,000)	18	46.15
3	High (> Rs.16,000)	6	15.38

E) Livelihood index of motorized+ boat building fishermen (n=39)

S.No	Category	Number	Percentage
1	Low (score < 55)	14	35.89
2	Medium (score of 55-61)	12	30.76
3	High (score > 61)	13	33.33

F) Level of aspiration of motorized+ boat building fishermen (n=39

S.No	Category	Number	Percentage
1	Low (score < 10)	6	15.38
2	Medium (score of 10-13)	20	51.28
3	High (score > 13)	13	33.33

A) Annual income of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (< Rs.50,000)	21	42.00
2	Medium (Rs.50,000- 75,000)	29	58.00
3	High (> Rs.75,000)	0	0.00

B) Annual Expenditure of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (< Rs.40,000)	9	18.00
2	Medium (Rs40,000 – 65,000)	41	82.00
3	High (above Rs 65, 000)	0	0.00

C) Annual debt of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (< Rs. 3000)	0	0.00
2	Medium (Rs. 3000-5000)	42	84.00
3	High (> Rs. 5000)	8	16.00

D)Annual Savings of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (< Rs. 3000)	12	24.00
2	Medium (Rs. 3000-8000)	22	44.00
3	High (> Rs. 8000)	16	32.00

E) Livelihood index of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (score < 40)	13	26.00
2	Medium (score of 40-50)	18	36.00
3	High (score > 50)	19	38.00

F) Level of aspiration of fish vendors (n=50)

S.No	Category	Number	Percentage
1	Low (score < 10)	5	10.00
2	Medium (score of 10-13)	15	30.00
3	High (score > 13)	30	60.00

Further it was observed that most of the fishermen had a low level (31.51%) of livelihood index (score > 35) and a medium level (30.14%) of aspiration (score < 13).

With respect to fishermen operating trawlers it was observed that 44.61 percent of the respondents had a medium level of annual income (Rs.60,000-70,000), 46.15 percent had medium level of annual expenditure

(Rs 44,000-55,000), 52.31 percent had medium level of annual debt (Rs.3000-5000) and 43.08 percent had medium level of annual savings (Rs.3000-8000). As regards the livelihood index it was observed that 43.08 percent had medium level of livelihood index. Low level of aspiration was constituted by most of the fishermen (46.15%) operating trawlers.

With respect to the fishermen belonging to motorized+boat building category it was observed that 56.41 percent had medium level of annual income (Rs.45,000-55,000), 89.74 percent had medium level of expenditure (Rs.35,000-50,000), 61.54 percent had medium level of debt (Rs.5000-7500) and 46.15 percent had medium level of savings(Rs 8000-16,000). As far as the livelihood index was concerned, there was a uniform distribution with 35.89 percent in low livelihood index category, followed by 30.76 percent in medium and 33.33 percent in high category. More than half the total number of respondents (51.28%) had a medium level of aspiration under this category.

Under the fish vendor category, 58.00 percent belonged to the medium level of annual income, 82.00 percent had medium level of expenditure, 84.00 percent had medium level of annual debt and 44.00 percent had medium level of savings. It could be further observed that 36.00 percent had medium level of livelihood index and 60 percent had a high level of aspiration.

It is evident from Table 4 that when the "F test" was applied for the mean scores obtained with respect to the profile characteristics of the different categories of stakeholders, the f-values differed significantly for characteristics such as education, family type, annual income, material possession, social participation, economic motivation, risk orientation, scientific orientation, annual expenditure, annual savings, livelihood index and level of aspiration at 1 percent level of significance. However characteristics such as age, occupation, and annual debt did not differ significantly for different stakeholder categories.

A perusal of Table 5 revealed the relationship between the different profile characteristics with the livelihood index and level of aspiration.

It could be inferred from the table that with respect to the fishermen operating motorized crafts, characteristics such as annual income, scientific orientation, annual expenditure and annual debt had a positive and significant relationship with the livelihood index of fishermen operating motorized crafts. The results implied that as the annual income increases, the livelihood index also increases.

Table 4
Analysis of variance of characteristics of the respondents

S.No.	Characteristics of the respondents	Fishermen operating motorized craft (n=146)	Fishermen operating mechanized craft (n=65)	Fishermen operating motorized craft + boat building(n=39)	Fisherwomen who are fish vendors (n=50)	F- value
		Mean Score/values				
1	Age	1.753	1.7385	1.7436	1.940	1.018 ns
2	Education	3.593	2.4615	4.7436	2.7143	14.751**
3	Occupation	1.993	2.0000	2.0000	2.000	.349 ns
4	Family type	1.418	1.5231	1.4103	1.720	5.159**
5	Annual income	2.453	6.1600	5.1026	5.616	210.782**
6	Material possession	6.000	3.0000	6.0000	3.000	699.71**
7	Social participation	2.110	2.1846	2.1538	3.160	29.742**
8	Credit orientation	4.137	4.0615	4.0513	4.260	3.581*
9	Economic motivation	33.452	33.6000	35.1795	34.520	4.393**
10	Risk orientation	29.130	28.1846	28.7179	29.140	6.263**
11	Scientific orientation	16.110	17.0615	18.5641	16.480	13.353**
12	Expenditure/year	2.694	5.0138	4.0179	4.580	134.833**
13	Debt/year	1.223	1.0431	1.1974	1.160	.651 ns
14	Savings/year	.726	2.7462	5.8205	3.19	82.404**
15	Livelihood index	41.878	62.800	57.0182	47.388	45.538**
16	Level of aspiration	15.781	13.5385	19.5385	19.880	58.608**

*** = Significant at 1% level, * = Significant at 5% level, ns = Non significant*

It could be inferred that as the scientific orientation of the respondents increases, the livelihood index also increases. Further it was observed that as the annual expenditure and annual debt increased, the livelihood index also increases. The results implied that with an increase in expenditure and debtit is inevitable to achieve a higher livelihood index.

It is implied that as age increases, the desire to lead better quality of life by the fishermen also increases and an increase in income leads to a higher level of aspiration. Similarly it could be inferred that an increase in economic motivation and an increase in scientific orientation leads to an increase in level of aspiration. Further, an increase in annual expenditure lead to an increase in level of aspiration.

With regard to fishermen operating mechanized crafts, it was observed that an increase in age, family type, annual income, scientific orientation, annual expenditure, annual debt and annual savings was found to lead an increase in livelihood index. It was further observed that an increase

Table 5
Correlation Coefficient of independent variables with dependent variables

Variables	Catamaran/fibre boat (n=146)		Trawlers (n=65)		Boat building (n=39)		Marketing fish (n=50)	
	Y1	Y2	Y1	Y2	Y1	Y2	Y1	Y2
Age	0.154	0.253**	0.408**	0.493**	-0.059	.206	-.389**	-0.129
Education	0.153	0.024	-0.257*	-0.557**	-0.058	-.075	.228	-0.294*
Occupation	-0.141	-0.109	-	-	-	-	-	-
Family type	0.141	0.106	0.469**	0.264*	-0.127	0.250	0.187	-0.178
Annual income	0.528**	0.540**	0.581**	0.638**	0.866**	0.184	0.805**	0.433**
Material possession	-	-	-	-	-	-	-	-
Social participation	-0.193*	-0.008	0.236	-0.041	-0.071	0.137	-0.104	-0.314*
Credit orientation	0.092	0.013	0.189	-0.086	0.001	0.143	-0.134	-0.295*
Economic motivation	-0.093	0.217**	-0.173	0.048	-0.117	0.057	0.062	0.192
Risk orientation	0.135	0.126	0.104	-0.011	0.058	-0.318*	0.236	-0.023
Scientific orientation	0.560**	0.609**	0.450**	0.690**	0.711**	0.192	0.690**	0.312*
Expenditure/year	0.702**	0.350**	0.341**	0.675**	0.690**	-0.123	0.749**	0.520**
Debt/year	0.426**	0.092	0.567**	0.314*	0.451**	-0.085	0.514**	0.152
Savings/year	0.099	0.196	0.999**	0.248*	0.497**	0.109	0.837**	0.436**

** = Significant at 5% level, ** = Significant at 1% level*

in education, led to a decrease in livelihood index. This could be because as the educational status of the fishermen increases, they would prefer to go in search of jobs which are non-fishing related, for e.g. employment in private/government or in service sectors. Further the variables such as age, annual income, scientific orientation, annual expenditure was found to have a positive and highly significant relationship with the level of aspiration of fishermen operating mechanized crafts. Further it could be observed that educational status was found to have a negative and highly significant relationship with the level of aspiration. This could be attributed to the fact that as the educational status of fishermen increases they prefer to search for occupations other than fishing such as teaching, clerical and service oriented occupation.

With respect to fishermen operating motorized crafts + boat building as an ancillary occupation, it could be observed that annual income, scientific orientation, annual expenditure, annual debt and annual savings was found to have a positive and significant relationship with the livelihood index and risk orientation was found to have a negative and significant relationship with the level of aspiration.

With respect to fisherwomen who were fish vendors it could be observed that age had a negative and highly significant relationship with the livelihood index of fisher women. The results indicated that as the age

increases, it is difficult for fisherwomen to undertake marketing of fish; and this would lead to a decrease in income. The variables annual income, scientific orientation, annual expenditure, annual debt and annual savings were found to have a positive and highly significant relationship with the livelihood index of fisherwomen.

Further it was observed that the variables education, social participation, and credit orientation maintained a negative and significant relationship with the level of aspiration, and the variables such as annual income, annual expenditure and annual savings was found to have a positive and significant relationship with the level of aspiration of fisherwomen.

Thus the study revealed that fishermen operating mechanized crafts had an average monthly income of Rs.5161.54, followed by average monthly income of Rs.4660.00, followed by fishermen operating motorized craft + boat building with an average monthly income of Rs.4274.36.

Fishermen operating motorized craft, were the poorest category with an average monthly income of Rs.2021.13. Similarly this category had the highest annual average debt of Rs.6,100 among the stakeholder categories studied. Fishermen operating motorized craft + boat building had highest level of average annual saving of Rs.11,640. This implied that fishermen can involve in ancillary income generating activities which play a major role in raising their standard of living. The results of analysis of variance revealed that the different stakeholder categories differed significantly with respect to education, family type, annual income, economic motivation, risk orientation, scientific orientation, level of expenditure, average annual savings, livelihood index and level of aspiration. Hence extension programmes should be oriented and tailored in specific ways and methods to uplift the socio-economic status of the different stakeholder categories. As revealed by the correlation analysis, the variables which had a highly significant and positive relationship with the livelihood index of the different stakeholder categories were annual income, scientific orientation, level of annual expenditure, annual debt and annual savings. These factors have to be considered in framing of developmental programmes for different stakeholder categories of marine fishermen and women.

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