THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Socio Economic Factors Influencing Marine Small Scale Fishers' Income in the Batticaloa District of Sri Lanka

Saravanamutthu Jeyarajah
Senior Lecturer, Department of Economics, Faculty of Commerce and Management
Eastern University, Vanthrumoolai, Sri Lanka
Dr. Selvarathnam Santhirasegaram
Senior Lecturer, Department of Economics, University of Jaffna, Jaffna, Sri Lanka

Abstract:
The main objective of the present study is to analysis the socio economic factors contributing to the per capita income of small scale marine fishers in the Batticaloa district of Sri Lanka. It also try to explore the socio economic Characteristics of small scale marine fishers in the district. 370 fishing households were selected from the study area and a questionnaire was used to collect data. Data were analyzed using descriptive statistics and regression method using SPSS. The study reveals that 35.4‰ f the respondents were in the age group of 31 to 40 years and 51.4% of respondent had primary level of education. The literacy rate of the respondents is 87% in the small scale fisheries households in the in the study area. Average family size of small-scale fisheries households in the Batticaloa district is 4. Average monthly income of small scale fisheries was 18,284.00 Sri Lankan Rupee. The finding of the study also reveals that the estimated coefficients for variables gender, age, family size, marital status and value of fishing equipment were individually significant, for the p values were so low. F value was also very high. Therefore, these variables are very important in explaining the factors contributing to the per capita income of small scale fisheries households in the Batticaloa district.

Keywords: Fishermen, socio economic status, batticaloa, fisher's income, socio economic factors

1. Introduction
Millions of people all over the world have been engaged in fishing and fish trading over the years. Fishery is the oldest and most important livelihood option of the dwellers of the coastal line of the Sri Lanka since ancient times. The coastal areas of Sri Lanka are usually rich in their natural resources that offer great opportunities for the livelihood activities, particularly resource-based economic activities such as fishing and tourism. Sri Lankan marine fishery sector is mainly depends on small-scale fishing. The small scale fishery sector in Sri Lanka is not only an important source of seafood for our peoples but it is also a main social and economic contributor of the country. Batticalao district is one of the coastal areas of Sri Lanka which contributes around 1.5% of the total fish production of the country.   15% of the population mainly depend on the fishing activities in the district. There is a lack of study based on the socio economic factors affecting the per capita household income of small scale marine fishers in the Batticaloa district. Therefore, the present study aims to narrow down this gap to the important livelihood sector of coastal area peoples in the study area.

Narayanakumar et.al. (2000)have conducted a study on "Socio-economic analysis of marine fishermen in India. In this study, the socio-economic parameters such as family size, age structure, educational and occupational pattern, customs, beliefs and the standard of living of the coastal fishermen household have been analyzed.Ayoola et al., 2011 conducted a research on "Socio-economic factors influencing rice production among male and female farmers in Northern Guinea Savanna Nigeria: lessons for promoting gender equity in action research". The research examined the performance of male and female farmers in rice farming in the study area.Olatunji A. E and O. M. Olah (2012) studiedthe status of artisanal fishery in the Cross River State, Nigeria. A multiple regression method was used in their study. Poul, et al., (2013) studied the livelihood status of the fishermen of the Turag River, Bangladesh. They collected primary and secondary data using sturucted questionnaire collecetd data was analysed by employing descriptive statistical methods. Mumba, et al., (2012) conducted anEconometric Analysis of the Socio Economic Factors Affecting the Profitability of stallholder dairy farming in Zambia using multiple regression method. Based on this research studies the present study was conducted in the Batticaloa district of Sri Lanka.

2. Objective of the Study
Main aim of the present study is to analysis the socio economic factors contributing to the per capita income of small scale marine fishers in the Batticaloa district of Sri Lanka. It also try to explore the socio economic Characteristics of small scale marine fishers in the Batticaloa district of Sri Lanka.

3. Method and Materials

3.1. Study area
The study area is Batticaloa district in Sri Lanka. It is one of the coastal districts in the Eastern part of Sri Lanka and occupies the Central Part of the Eastern Province. Its geographical coordinates are 7° 43' 0" North, 81° 42' 0" East and it covers a land area of approximately 2633.1 Square Km. and an internal waterway of 229 square Km. The district accounts for 3.8% of the country's total land area.

Figure 1: Administrative map of Batticaloa district of Sri Lanka.
Source: DMC. 2008.

Majority of the population in district is engaged in agriculture for income generation while fishing occupies the second place in livelihood activities. Other occupations include industrial activities and employment in the government, corporate and private sectors. High potential development sectors are tourism development and fisheries expansion in the district.

3.2. Sample and Data Collection
Primary and secondary data were used in the present study. Primary data were collected through interview with a pre developed questionnaire. 370 small scale fisheries households were selected as sample in the study. Selected coastal fishing villages were included in the study. The socio economic characteristics, such as gender (X_1), age (X_2), level of education (X_3), fishing experience (X_4), family size (X_5), marital status (X_6) and value of fishing equipment (X_7), were collected during the time period from March 2014 to September 2014.

3.3. Method of Data Analysis
The collected data were analyzed using descriptive statistics to summarize the socio economic characteristics of the fishing families. Multiple regression technique was performed to test the socio economic factors, contributing to the annual per capita income of the fishing households in the study area. The regression model of the study is expressed as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$$

Y-   Annual per capita income of household
X_1 -   Gender
X_2 -   Age (Years)
X_3 -   Level of Education (Years)
X_4 -   Fishing Experience (Years)
X_5 -   Family Size (Number of Persons)
X_6-   Marital Status
X_7-   Value of Equipment for Fishing
βs -   Parameters
e-   Error

Hypothesis is each independent variables, gender (X_1), age (X_2), level of education (X_3), fishing experience (X_4), family size (X_5), marital status (X_6) and value of fishing equipment (X_7), has no effect on dependent variable.

4. Results and Discussion

4.1. Socio Economic Characteristics
The present study reveals that majority of the respondents (97%) were male in the study area. All respondents were reported that the female of the household are responsible for the activities such as cooking, child bearing, caring family and clothing in the family. Matthews et al. (2012) highlights that Men and women participate in almost all activities in the fisheries sector in developing countries. Women are often responsible for post-harvest activities, such as processing and trading. The present study demonstrates that female interest in small-scale fishing activities is very less in the Batticaloa district. Due to the hardness of this activities mostly men involved in the fishing activities. Batticaloa district has multi ethnicity. The study also indicates that the majority of small- scale fishers were Tamils (86%). 11% of them were Muslims.

Age is an important social factor that influences individual working ability. The human capital hypothesis predicts that productivity increases with age early in the life cycle and then decreases with age late in the life cycle as human capital depreciation exceeds investment. In line with this, the research examines age of respondents as a relevant socio-economic characteristic.The study reveals that most of the respondents were in the age group of 31 to 40 years (35.4%), followed by 41 to 50 years age group (30.3%). While the age group above 60 years contained the least respondents (1.4%). The study highlights that the majority of small-scale fishers falls under the age between 30-50 years in the Batticaloa district.

The education always helps to obtain required skills for livelihoods which imparts knowledge about the different livelihood opportunities. The present study reveals that, Out of sampled fisheries households 13% of respondents had no education, 51.4% of respondent had primary level of education, 23.2% of respondents have completed middle level of education, 11.1% of respondents had secondary level of education and around 1% of respondents had advanced level of education. The finding also reveals that the literacy rate of the respondents is 87% in the small-scale fisheries households in the in the study area.

Family is an important basic organization in most Sri Lankan societies. Family relationship is an asset in the form of human capital. Gyekye (1998) as summarized by Zakaria (2009) highlights that the marital status either a positive or negative influence on socio economic status as marital partner contribute to each other. The analysis shows that, majority of respondents (97%) in the sample are married, while very few (1%) are separated and 1.6% of them are windows/Widower.

Family size too isan important socio-economic indicator as it heavily affects the income of the households. Family size has considerable influence on the income and expenditure of the family. Results of the present study reveals that the average family size of small-scale fisheries households in the Batticaloa district is 4. The empirical results show that out of 370 sample households 36.2% had family size up to 3 members. 53.8% of households has family size between 4-5 members and 8.6% of households had 6-7 members. Only 1% of households had more than 8 members. It was found from the research majority of the small-scale fisheries households in the Batticaloa district had average family size (4-5). It exceeds the national level of family size (3.9 in 2012). In the study area, majority of the respondents mainly involved in fishing. 88% of the respondents were involved in fishing as their primary occupation. 9% of respondents were involved fishery related services like providing equipment, fuel and food. 1% of the respondents were involved in fish trade. Income is the most important factor to understand the status of the Socio economic situation and the livelihood of the fishermen. The results of the research show that the monthly income of fisheries households were varied from 6,000/- 42,000/- Sri Lankan rupees. Average monthly income of small scale fisheries was 18,284.00 Sri Lankan Rupee (LKR). 60% of the sampled respondents earns income less than the average income in the study area. Selected sampled households were grouped in to five categories based on the level of monthly income.

4.2. Socio Economic Factors Affecting Per Capita Income of Fishery Households
The F value of the linear function was 91.38465, with the p value 0.000 indicating that the model was statistically significant. The coefficient of determination (R^2) was 0.638, meaning that approximately 63.8% of variation of the dependent variable was explained by the independent variable in the model. Gujarati (2004) states that, in determining model adequacy, look at some broad feature of the results such as the R^2 and F values which were statistically significant in the estimated linear model.

Model	Unstandardized Coefficients		t-Statistic	Prob.
	Coefficient	Std. Error		
Constant	40,424.22	12640.38	3.198023	0.0015**
X_1	43,121.10	8914.519	4.837176	0.0000**
X_2	428.1670	143.3573	2.986713	0.0030**
X_3	112.4398	283.5260	0.396577	0.6919
X_4	-273.9155	163.9710	-1.670511	0.0957
X_5	-16,032.21	915.4456	-17.51302	0.0000**
X_6	11,221.62	3456.114	3.246889	0.0013**
X_7	0.135464	0.007496	18.07202	0.0000**

Table 1: Estimates of Regression Model
* Significant at $p < 0.05$

Dependent Variable: Y, $R^2 = 63.8\%$,   F value 91.38465 (0.0000)

Table 1 summarizes the multiple linear regression estimates of socioeconomic factors contributing to the annual per capita income of the fisheries households in the Batticaloa district. The intercept in a multiple regression model is the mean for the response when all of the explanatory variables take on the value zero. Coefficient of constant was positive and statistically significant in the model.

Gender (X_1) was used as a dummy variable, one if the respondent is male and zero for female in the research. Gender of the respondents had a positive coefficient and statistically significant. This indicates that the gender of the respondent had a positive contribution to the dependent variable, remain other variable constant in the linear model. If the respondent is a male the per capita income of the household would increase by 43,121.10 LKR in the research area.

Age (X_2) of the respondent in the present research had positive and statistically significant coefficient. A unit increases in age would lead to an increase in the annual per capita income of household by 428LKR, provided other variables held constant. This is meant that the Age of respondent would contribute to the annual per capita income in the small scale fisheries households in the Batticaloa district.

Level of education (X_3) of respondents was not statistically significant and had positive coefficient implying that this variable had no contribution to the per capita income of household. It is argued by various scholars that education help to open up horizon and a positive effect on their employment and income. The level of education attained by the respondent has an important bearing on the quality of household human capital. However, the present study has explored that the level of education had no contribution to the per capita income of the small scale fisheries households in the district. However, a unit increase in the level of education would lead to an increase in the per capita income of household by 112.43 LKR. All small scale fisheries households have equal chances of income earning regardless of level of education in the research area.

Fishing experience (X_4) was also not statistically significant and negative coefficient implying that the experience had negative effect on per capita income of household provided other variable held constant. It is meant that a unit increases in fishing experience would lead to decrease the income per person by 273.91 LKR. This is meant that the fishermen grow older they become weaker on fishing.   So, the study reveals that the fishing experience has negative effect on per capita income of small scale fisheries households in the Batticaloa district of Sri Lanka. The expected sign of this variable was not attained in this study.

Family size is an important socio economic indicator as it effect the income of a household. The coefficient of the family size was negative and statistically high significant in the linear model. This is meant that a unit increase in the number of person in the household would decrease the annual per capita income of household by 16,032.2 LKR, remained other variable held constant. Family size has been described as the most important determinant of labour investment as well as, it also influences the need for increased production for family consumption. Because of the large family size, it is notable that the most of the fish caught were used for family consumption.

Marital status (X_6) was used as dummy variable, one if the respondent is married and zero in otherwise, in the research. The coefficient of marital status was positive and statistically significant in the model of the study. This implies that the annual per capita income of small scale fisheries household in the Batticaloa district heavily depend on marital status. It is believed that the married couples helps themselves to raise their family income. The result shows that 97% of the respondent were married in the study and the linear regression estimates says that the respondents were a married person the annual per capita income of fisheries household would increase by 11,221.62 LKR.

The coefficient of the value of fishing equipment (X_7) was positive and statistically significant. This implies that a unit increase in the value if fishing equipment resulted in the increase of income per person by 0.135464 LKR, other factors held constant in the present study.

5. Conclusion

The things to notice in the linear model of this research is that the estimated coefficients for variables gender, age, family size, marital status and value of fishing equipment were individually significant, for the p values were so low. F value was also very higher. Therefore, these variables are very important in explaining the factors contributing to the per capita income of small scale fisheries households in the Batticaloa district. Further research are needed to identify other factors affecting income of small scale fishers as well as inland fishers.

6. Acknowledgement

7. Reference

1. Amarasinghe, Oscar (2005) Social welfare and social security in Sri Lankan fisheries. Chennai, India, International Collective in Support of Fish workers.
2. Ayoola, J. B.; C. Dangbegnon, C.K. Daudu A. Mando, T.M. Kudi, I.Y. Amapu, J.O. Adeosun, and K.S. Ezui (2011), Socio-economic factors influencing rice production among male and female farmers in Northern Guinea Savanna Nigeria: lessons for promoting gender equity in action research, Agriculture and Biology Journal of North America, [Online] 2151-7525, doi:10.5251/abjna. Science Huβ, p.1010.1014 http://www.scihub.org/ABJNA
3. DMC. (2008). Disaster Management Center. Retrieved from DMC: www.dmc.gov.lk
4. Ministry of Fisheries and Aquatic Resources (2007). Ten year development policy Framework of the fisheries and aquatic resources sector, 2007-2016, Sri Lanka.

5. Ministry of Fisheries and Aquatic Resources, 2012, Fisheries Statistics, Sri Lanka.
6. Mumba C, Samui K L, Pandey G S and Tembo G (2012). Econometric analysis of the socio-economic factors affecting the profitability of smallholder dairy farming in Zambia. Livestock Research for Rural Development. Volume 24, Article #66. Retrieved August 31, 2014, from http://www.lrrd.org/lrrd24/4/mumb24066.htm
7. Olatunji A. E and O. M. Olah (2012). The Socio-Economic Status of Artisanal Fishers in Cross River, Cross River State, Nigeria, World Journal of Fish and Marine Sciences 4 (6): 672-678.
8. Poul, B., Faruque, H. & Ali Ahsan, D. (2013). Livelihood Status of the fishermen of the Turag River, Bangladesh. Middle East Journal of Scientific Research, 18(5)
9. Safa, M. S., (2005). Socio-Economic Factors Affecting the Income of Small-scale Agroforestry Farms in Hill Country Areas in Yemen: A Comparison of OLS and WLS Determinants. Small-scale Forest Economics, Management and Policy.[Online].4(1):117-134,117-134. Available at http://link.springer.com /article/ 10.1007%2Fs11842-005-0008-7 [Accessed 07 November 2014]
10. Zakaria, H., (2009). Socio-Economic Analysis of Livelihood Strategies of Rural Women Beneficiaries of Microcredit in the Tolon/Kumbungu district of the northern region of Ghana, a thesis submitted in partial fulfillment of the requirement of University of Ghana for the degree of Master of Philosophy.