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The Elements Determining the Prevailing State of Poverty among Sea Food Harvesting Community along the North Eastern Coastal Belt of Sri Lanka

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Abstract: Mullaitivu is one of the districts located along the North Eastern coastal belt of Sri Lanka, relatively more viable for fishing industry. Before civil unrest, times were quite prosperous for the people of Mullaitivu. The thirty years of civil commotion dismantled and destroyed the social structure and the infrastructure. Presently, as the people return to their ancestral land, they are faced with a hostile climate and non-climatic factors such as the use of illegal fishing equipment, poaching, and over harvesting, etc. A radical change in the life style of rural folk, whose living was more in keeping with nature, could be another cause for their regression. The net result being that they do not harvest a return proportionate to the time, labour and the capital invested. Thus, these people are caught up in a whirl pool of poverty from which they are unable to emerge. Hence this research attempted to find out the socio-economic elements determining the contemporary state of affairs of the sea food harvesting community of the Mullaitivu District. A total of 192 fishing households were selected using purposive random sampling method. The poverty levels of the respondents were assessed based on the Multidimensional Poverty Index in compliance with UNDP HDRO standards. Using the Binary Response Logistic Model, an effort was made to decipher what community base or socio-economic characteristics were responsible for their state of poverty. It was found that membership in fishermen organization, income generated from fishing activity and income diversification practices of heads of households influenced poverty negatively at 1%, 5% and 5% significant levels, respectively, whereas, social interaction activity contributed positively towards poverty at 1% significant level. It is recommended by the researchers that the activity which influences poverty positively be discouraged and that which influences negatively be encouraged and fostered.

Keywords: Extension program, fisheries, logistic model, Mullaitivu, poverty

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Introduction

Globally fisheries sector is play a major role in human livelihood activities and food security scenario. Fish provided 6.7% of all protein consumed by humans worldwide. More than 57 million people depend on primary fish production sectors (FAO, 2016). The marine capture fishery shows the decline level in present years. Biologically sustainable levels decreased from 90% in 1974 to 68.6% in 2013 [SOFIA (The State of World Fisheries and Aquaculture), 2015]. There are two main subjects involved in this decline namely having climatic and non-climatic factors (IPCC, 2007). The non-climatic factors may include socio economic characteristics of the community, overfishing, use of restricted fishing gear and poaching. Those kinds of problems are common to all. Fisheries sector is play a significant role in Sri Lankan GDP and animal protein intake 1.3% of the total Gross Domestic Product (GDP) and 60% (Ministry of Fisheries and Aquatic Resources Development, 2015). There are over 2 million population who get livelihood directly and indirectly from fisheries industry and around 200000 fishing households are directly depended on marine fishery.

Mullativu is one of the districts located along the North Eastern coastal belt of Sri Lanka relatively more viable for the fishing industry. The pre-civil unrest time, was quite prosperous for the people of Mullativu. The thirty years of civil commotion dismantled and destroyed the social structure and the infrastructure. Presently as the people return their ancestral land they are faced with a hostile climate and non-climatic factors such as the use of illegal fishing equipment, poaching, over harvesting, etc. A radical change in the living style of rural folk whose living was more in keeping with nature, could be another cause for their regression. The net result being that they do not harvest a return proportional to the time, labour and the capital invested. Thus, these people are caught up in a whirl pool of poverty from which they are unable to emerge. Hence this research has taken attempt to find out the socio-economic elements determining the contemporary state of affairs of the sea food harvesting community of the Mullaitivu District.

Materials and Method

This research was conducted by using combination of quantitative and qualitative methods. this research has taken attempt to find out the socio-economic elements determining the contemporary state of affairs of the sea food harvesting community of the Mullaitivu District. A total of 192 fishing households were selected using purposive random sampling method. The poverty level of the respondents was assessed based on the Multidimensional Poverty Index in compliance with UNDP HDRO standards. Using the Binary Response Logistic Model the effort was made to decipher what community base or socio economic characters were responsible for their state of poverty.

Model specification:

$$Prob\ (Poverty = 1/0) = \beta_0 + \beta_1 dist + \beta_2 hhz + \beta_3 exp + \beta_4 edu + \beta_5 few + \beta_6 idst1 + \beta_7 idst2 + \beta_8 iper + \beta_9 mforg + \beta_{10} uh + \beta_{11} pfb + \beta_{12} eclfb + \beta_{13} thfbm + \beta_{14} ufl + \beta_{15} ucl + \beta_{16} gtfb + \beta_{17} lnincff + \beta_{18} aser + \beta_{19} hsfg + \square i$$

Variable ownership and management of livelihood asset as independent variable, while the success of households of fishermen moving out of poverty (out of poverty) or they are still poor (trapped in poverty) as dependent variable. According to Chambers and Conway (1992); Chambers, 1995; Carney (1998); DFID (1999); Bebington (1999); Ashley and Carney (1999); and Ellis (2000), in the concept of SLF (Sustainable Livelihood Frameworks), that a family unit or a particular community to continue living and livelihood by relying on its various livelihood assets.

Livelihood assets consist of five capital assets, namely: human resources capital assets; natural resources capital assets; financial capital asset; social capital assets; and physical capital assets. Based on the concept of livelihood assets above, there are 19 variables was developed as independent variable, to analyze namely: District (*dist*); Formal Education of household head (*edu*); Formal Education of spouse (*few*); Household size (*hhz*); Fish farming experience (*exp*); Multiple-Husband's Work (*idst1*); Total Hours of Fishing per month (*thfpm*); Utilizing Female Labor (*ufl*); Utilizing Child labor (*ucl*); Ownership Gardens and Livestock Ownership (*idst2*); Investment Performance (*iper)*;Income from fishing activities (*incff*); Amount of Social and Economic Relations (*aser*); Period of Membership in fishing organization (*mforg*); Household Sustainability In Fisherman Group (*hsfg*); Utilization Home For business (*uh*); Gross Tonnage of Fishing Boats (*gtfb*); Performance of Fishing Boat (*pfb*); and Economic Life of Fishing Boat (*eclfb*). Because the dependent variable in the form of dichotomy, the success or still poor, then for this purpose binary logistic model (Freedman, 2009) was used and data processing by using STATA. The dependent variable was determined by Multiple Poverty Index (Alkire and Santos, 2010).

Results and Discussion

Using the binary response logistic model the effort was made to decipher what community base or socio economic characters were responsible for their state of poverty. Regression Diagnostic test and Analysis were done with STATA-13. Marginal effect of significant variables was considered for the interpretation.

It was found that, membership in fishermen organization and Income generated from fishing activity, Income diversification practices of heads of households' influence poverty negatively. Whereas, conversely, social interaction activity contributes positively towards poverty. It is recommended by the researcher that the activity which influence poverty positively be discouraged.

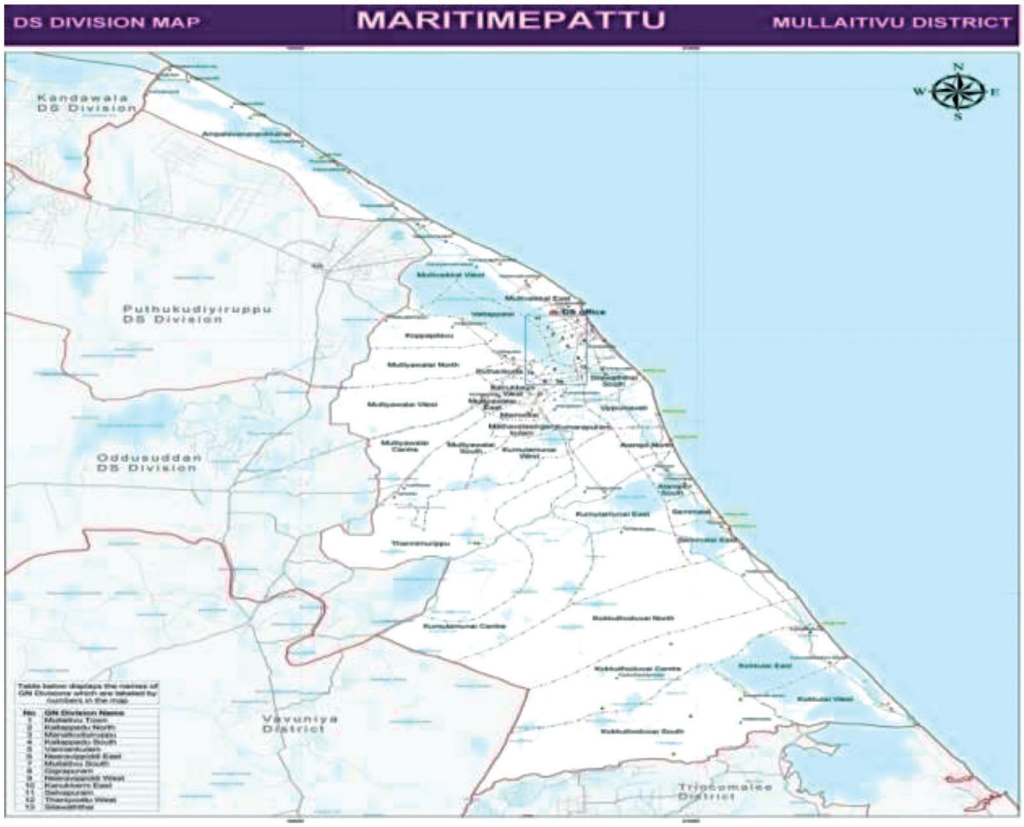

Figure 1: Maritimepattu Divisional Secretariat Map

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Regression out-put
Model specification or Goodness of fit is satisfied

Logistic regression                     Number of obs   =  192
                                        Wald chi²(15)   =  72.38
Prob> chi²      =  0.0000
Log pseudolikelihood = -137.22337       Pseudo R² =     0.3399
```

Table 1: regression results with significant values with bold letters *** 1% significant ** 5% significant

poverty	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
hhz	.0627742	.1666446	0.38	0.706	-.2638433	.3893917
exp	.0315766	.0254679	1.24	0.215	-.0183396	.0814927
edu	-.2710681	.0823965	-3.29	0.221	-.4325623	-.1095738
Didst1	-.6363891	.0083807	-1.60	**0.030****	.417201	.1444227
Didst2	.2835536	.3656196	0.78	0.438	-.4330477	1.000155
iper	.1732525	.1701397	1.02	0.309	-.160215	.5067201
mforg	-.1166102	.0302545	-3.85	**0.000*****	-.175908	-.0573124
Duh	1.550565	.626895	2.47	0.213	.3218736	2.779257
pfb	.0026844	.0177922	0.15	0.880	-.0321876	.0375565
thfpm	.0017036	.0041817	0.41	0.684	-.0064924	.0098995
ufl	.0037433	.0039196	0.96	0.340	-.003939	.0114256
Ducl	3.392102	.6886058	4.93	0.2352	.042459	4.741744
Lnincff	-1.506463	.6980089	-2.16	**0.031****	-2.874535	-.1383907
aser	19.06263	2.617268	7.28	**0.000*****	13.93288	24.19238
hsfg	1.357646	.8721874	1.56	0.120	-.3518099	3.067102
_cons	.1939709	2.976961	0.07	0.948	-5.640765	6.028707

Average marginal effects Number of obs = 192
Model VCE:Robust

Expression :Pr(poverty), predict()
dy/dx w.r.t. :hhz exp edu Didst1 Didst2 iper mforg Duh pfb thfpm ufl Ducl lnincff aser hsfg

Table 2: Marginal effect

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
hhz	.009407	.024827	0.38	0.705	-.039253	.0580669
exp	.0047319	.0037339	1.27	0.205	-.0025864	.0120502
edu	**-.0406206**	.0123722	-3.28	0.221	-.0648696	-.0163717
Didst1	**-.0953655**	.0583273	-1.64	0.002	.2096848	.0189539
Didst2	.0424916	.0548	0.78	0.438	-.0649144	.1498977
iper	.0259626	.0253446	1.02	0.306	-.0237118	.075637
mforg	**-.0174745**	.0040188	-4.35	0.000	-.0253513	-.0095978
Duh	.2323584	.0886176	2.62	0.229	.0586712	.4060457
pfb	.0004023	.0026638	0.15	0.880	-.0048186	.0056231
thfpm	.0002553	.0006253	0.41	0.683	-.0009702	.0014808
ufl	.0005609	.0005872	0.96	0.339	-.0005899	.0017118
Ducl	.50832	.0880492	5.77	0.125	.3357468	.6808932
Lnincff	**-.2257495**	.0989466	-2.28	0.023	-.4196813	-.0318177
Aser	**2.856611**	.2139053	13.35	0.000	2.437365	3.275858
hsfg	.2034487	.1281833	1.59	0.112	-.0477859	.4546833

Using the binary response logistic model the effort was made to decipher what community base or socio economic characters were responsible for their state of poverty. Regression Diagnostic test and Analysis were done with STATA-13. Marginal effect of significant variables was considered for the interpretation.

It was found that, membership in fishermen organization and Income generated from fishing activity, Income diversification practices of heads of households' influence poverty negatively. Whereas, conversely, social interaction activity contributes positively towards poverty. It is recommended by the researcher that the activity which influence poverty positively be discouraged. Opportunities for income diversification have to be explored and adopted. Income should be enhanced through furthering the activity in the sea gathering a better harvest. This harvest should be sustained through proper management practices. Involvement directly in marketing without the help of middlemen helps, to avoid meaningless loss. Fishermen's organizations supply inputs of all variety, bargain on behalf of the fishermen, function as channels for all types of subsidiary equipment eg. Spare parts, fuel etcetera and disseminate relevant useful information as reliable institutions which guarantee smooth management of the individual and the community and guarantee credit facility. Encouraging a fisherman to join a suitable fisherman's organization, which would provide him the said advantages then it could be said that it would certainly result in poverty reduction considerably. Income diversification for fishermen falls into two categories one within the fishing effort and the other without. Involvement in marketing the fish they harvested directly providing the logistics required. Further, seeking employment within reach at cold storage and transport. Value addition effort could be both private and corporate dry fish production and sale. Fishing gear repair, Boat manufacture and fishing net preparation require training in the relevant skills. On the other hand, skilled, semi-skilled and unskilled employment could be seemed on an ad hoc basis. The research recommends such training to all fishermen that they may profitability employ themselves. Further efforts outside the traditional trade such as home gardening, Poultry keeping, Livestock breeding and Bee keeping etc. could be employed to help out with the economy. Social activity involving people here and abroad and functions held at home and an artificial prosperity look take children away from their books. Parents themselves can be taught the seriousness of the drama. This takes away financial resources which could be easily utilized for investment in fishing. Waste of time, energy and money is the final achievement.

Conclusions and Recommendations

This paper examines livelihood management reducing the poverty among sea food harvesting community in Mullaitivu District. Using binary logistic model analysis, it is evident that income diversification strategies practiced by the households, income from fishing activities and the period of membership in the fishermen organization, contributed

to the poverty reduction at 5%, 5% and 1% probability levels respectively. Whereas, social interaction activity contributed positively towards poverty at 1% probability level.

It is recommended by the researchers that the activity which influences poverty positively be discouraged and that which influences negatively be encouraged and fostered. Opportunities for income diversification have to be explored and adopted. Income should be enhanced through furthering the activity in the sea gathering a better harvest. This harvest should be sustained through proper management practices, restricting poaching activities, better market facilities and value addition services for fish product in this study area. Encouraging the fisherman to join a suitable fisherman's organization, which would provide them advantages in enhancing their bargaining power, increasing access to capital, technology and market information, it could be said that it would certainly result in poverty reduction considerably. Further the researchers recommend skill training to all fishermen that may help them a long way to employ themselves profitability. Moreover, efforts outside the traditional trade such as home gardening, poultry keeping, livestock rearing and bee keeping etcetera could be employed to help out with the economy. Finally, social activity involving people here and abroad and functions held at home and artificial prosperity look, take away financial resources which could be easily utilized for investment in fishing. All of these can be accomplished by extending a tailormade community specific extension program.

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