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*Keywords:* *social capital, artisanal fishing households, Akwaibom State.*

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# Effect of Social Capital on Poverty: Evidence from Fish Farming Households in Akwa Ibom State, Nigeria

Salman K. K. [α] & M. E. Ekong [σ]

*Abstract-* Despite the role of artisanal fishing in the economy of Akwalbom state, Nigeria, the fishing households are still poor. Poverty among fishing households could be reduced if they establish good networks among themselves and a high degree of connectedness referred to as social capital. In this study, the effect of social capital on the poverty level of fishing households in Akwalbom state was therefore investigated. A multi-stage random sampling method was used. With structured questionnaire and a sample size of 120; data were collected on socioeconomic characteristics, participation in local level institutions/associations, and households' expenditure. The data were analyzed using descriptive statistics, and two-stage least square (2SLS). Average age of the household head was 41.9 years with seven persons per household. Households belonged to at most two associations and the most important one was fishing association with 52.6% participation index in decision making. The level of heterogeneity was 21% with 80% meeting attendance index per household head. Core poor households were 6.70% while 39.20% and 54.10% were moderately and non-poor, respectively. Half (50%) of the total monthly households' expenditure was spent on food whereas only 9.24% was spent on house rent. Participation in decision making, meeting attendance and heterogeneity in social groups were the significant social capital dimensions that had effect on poverty. The result also showed that social capital was truly exogenous implying no bi-causal relationship between social capital and poverty. It is concluded that social capital and its dimensions have remarkable contributing role in reducing the poverty among fishing households in Akwalbom State, Nigeria.

*Keywords: social capital, artisanal fishing households, Akwaibom State.*

## I. Introduction

One of the most pathetic features of the Nigerian economy today is that a majority of its populace is living in a state of destitution while the remaining insignificant minority is living in affluence (Osinubi, 2003, Okunmadewa, 2015). Nigeria is one of the most resource-endowed nations in the world. But socio-economically, Nigerians are also among the poorest in the world (Etim*et al.*, 2009). Hence, there is a persisting paradox of a rich country inhabited by poor people, which has been the subject of great concern for some years, but more especially in the last decade (Etim and Patrick, 2010). The Human Development Report by United Nations Development reported that the poverty situation in Nigeria has been on the increase since 1980. The National Bureau of Statistics (NBS, 2010) further shows that the incidence of poverty was raised from 54.7% in 2004 to 60.9% in 2010.

In Nigeria, rural poverty is relatively high. A national poverty survey carried out indicates that the high tropic areas have moderate poverty while the northern regions have poverty levels that are as high as 60% (Odusola, 1997; Okunmadewa*et al.,* 2007; NBS, 2009). The average national poverty incidence indicates that this situation has not improved during the last 20 years in majority of sub-Saharan Africa countries, Nigeria included (World Bank, 2008; Apata*et al.,* 2009). Social capital refers to the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded (Collier, 1998). Social capital is the glue that holds societies together and without which there can be no economic growth or human well-being. There is a growing empirical evidence that social capital contributes significantly to sustainable development. The traditional composition of natural capital, physical or produced capital, and human capital needs to be broadened to include social capital. There are many approaches to defining social capital. However, emphasis is always placed on the role of networks and civil norms in various definitions (Cote and Healy, 2001). Social capital is widely understood to be the social associations, networks, norms and values that facilitate interaction between individuals and groups and enhance their socioeconomic welfare (Putnam, 1993; Grootaert, 2001). It is conceptually defined as "the value of social networks, bonding similar people and bridging between diverse people, with norms of reciprocity". Thus social capital has three main dimensions: Bonding social capital referring to strong family ties, bridging social capital referring to weak ties among friends and acquaintances and more formal ties linking members of voluntary organizations (Sabatini, 2005).

Following Collier (2002), the mechanisms through which social capital embedded in social networks, trust and norms is said to reduce poverty can be summarized as: i) facilitating the transmission of knowledge about technology and markets, ii) reducing market failures in information and thereby reducing

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transactions costs (the costs of obtaining information about technology, the market, the creditworthiness of contract parties, among others), iii) reducing problems of free-riding and thereby facilitating cooperative action, iv) coordinating and monitoring effective public services delivery, and v) ameliorating other conventional resource constraints such as market access or credit limitations and thereby reducing the vulnerability of households to poverty. Social capital holds strong position in resolving disputes (Schafft and Brown, 2000) and share beneficial information (Isham and Kahkonen, 1999; Rauch and Casella, 2001). It also fosters adoption of new production technologies (Narayan and Pritchett, 1997; Isham, 2002), and more importantly, provides avenues for risk sharing (Rosenzweig, 1988). There is increasing evidence to show that when people are well organized in groups whose knowledge is sought, incorporated and built upon during planning, implementation, then the productivity of agriculture and natural resources can manifest in the long-term (Pretty, 2008).

Fish is one of the cheapest sources of animal protein in the diet of most Nigerians and the Southern Nigerians in particular (FAO, 1995). Fishing has substantial social and economic importance. It is estimated that 12.5 million people are employed in related fishing activities and value of fish traded internationally has been estimated at US$40 billion/annum for the early 1990s (Udoh and Nyienekuna, 2008). The total production from capture fisheries and aquaculture during the same period reached a total mass of 100 million tonnes (FAO, 1995). Also, food consumption in Nigeria has been found to be inadequate both in quality and quantity. Nigeria still consumes less than the minimum food requirement of 2440 kcal and 65 g of protein per day as recommended by FAO (1995). Neiland *et al.* (2005) revealed that in 2004, the fishery sub-sector contributed to the food and nutritional security of 200 million Africans and provided for the 10 million engaged in fish production, processing and trade. Tall (2004), however, observed that Nigeria's fish production volume of 0.5 million tonnes cannot meet the annual demand of 1.3 million tonnes. Average annual fish consumption in the country has therefore stagnated at 9.2 kg per capita, which is quite below the world average of 13 kg per capita, a situation that resulted in a wide supply and consumption gap. With an estimated population of 178.5 million (World Bank, 2014)[1], the demand for fish and other animal protein products are fast outpacing the supply.

Fishing is being practiced by virtually all homes in the coastal zones. But these activity recorded limited success in increasing income and improving the quality of life. Understanding the factors underlying their persistent deprivation is important, when designing policies to meet their needs and improve their welfare. Akwalbom State is one of the nine naturally endowed coastal states in Nigeria. According to UNDP Survey 2010, Akwalbom State had the third highest poverty rate of 27.1% in the South-south zone (NBS, 2010). The area is rich in petroleum (crude oil), gas, numerous mineral resources, wetlands and agricultural potentials. In spite of this, poverty is widespread in the State. A study carried out in 2005 reveals that among the 57 percent of people living in poverty, 28 percent are classified as core or extreme poor and about 29 percent are moderately poor. Majority of the people live in the rural areas and they depend mainly on agriculture. They operate fragmented and marginal holdings while some others concentrate on artisanal fishing. Despite the obvious role of farming and artisanal fishing in the economy of the state, rural people remain poor. In general they exhibit several characteristics such as low levels of educational attainment, relatively low access to material resources, physical and social infrastructures, higher susceptibility to community-wide exogenous shocks such as weather induced crop losses and natural disasters.

Poverty alleviation has been receiving increasing global attention more importantly in the developing countries where majority of the people are poor. The absence of appropriate local level institutions and the weakness of existing ones largely deprive the poor from participating in the decision making process of interventions and issues that affect their welfare. However, recent studies indicated that local institutional strengthening through the active participation of the poor in project design and implementation is a necessary factor in poverty reduction. Thus, group formation (social network) is now seen as an important requirement for the poor to benefit from some of the public instituted poverty reduction programmes (Yusuf, 2008).

In this study, an attempt was made to fill the gap in knowledge in poverty analysis by characterizing the various dimensions of social capital based on fishing households' socio-economic characteristics. The influence of social capital on the poverty level of fishing households was also established in order to provide required evidence not only for the fishing households but to also sustain the existing the group based farmers support programmes/approaches of the government.

## II. Methodology

This study was carried out in Akwalbom State. The state is located in the coastal South – Southern part of Nigeria lying between latitudes 4°32$^{l}$ and 5°33$^{l}$ North, and longitudes 7°25$^{l}$ and 8°25$^{l}$ East. The climate of the state falls within the tropical rain forest zone. The annual rainfall is estimated at 2000mm in the hinterland and 2400 mm along the coast. The dwellers in the coastal

[1] Work Bank (2014): Working for a World Free of Poverty (http://www.worldbank.org/en/country/nigeria)

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areas of the state are mainly dependent on fishing as their main source of income.

A multi-stage random sampling method was used to collect data for the study. Three local governments were randomly selected to cover each of the urban, rural, and peri-urban areas that were involved in fishing for the study (that is; Ibeno, Itu and Mbo local government areas respectively). In the second stage, two wards were randomly selected from each of the three local governments; and finally, 20 fishing households were randomly selected from each ward giving a total sample size of 120.With a structured questionnaire, data collected were socioeconomic characteristics and social capital variables.

*a) Analytical Tools*

The data were analyzed using descriptive statistics and Two-Stage Least Square (2SLS).

*b) Estimation of Social Capital Indices*

Following Okunmadewa *et al.,* 2007, Yusuf, 2008; the itemized social capital indices below were estimated:

- Meeting attendance index – This is the summation of the attendance at meeting by members as against the expected total that per annum.
- Heterogeneity index – This is the aggregation of diversity of members of three most important groups to the fishing households, The scores by the three associations for each household were then divided by the maximum score and scaled to 100 to obtain the index.
- Labour contribution – This was represented by the number of days that group members worked for his group. This represented total number of days worked by fishing households in a year.
- Decision making index – This is the summation of rating of the respondent's performance in decision making. This was calculated by asking the association members to evaluate subjectively whether they were; very active; somewhat active; or not active in group's decision making.
- Cash contribution –This is the amount paid as membership due per annum in an association. This was obtained by the summation of the total cash contributed to the various associations which the fishing household belonged to.
- Membership density –This is the summation of the total number of associations that a fish farmer belongs to.
- Aggregate social capital index –This is the multiplicative social capital index. This was calculated using the products of density of membership, heterogeneity index and decision making index of fish farmers in their various social groups.

*c) Estimation of poverty line*

A poverty line is often defined as a predetermined or well-defined standard of income or consumption, which is deemed to represent the minimum required for a productive and active life or even survival. There is no official poverty line in Nigeria and as such, many earlier studies have used poverty lines which are proportions of the average per capita expenditure (see Okunmadewa *et al.*, 2007). This study also followed the approach to determine poverty line. Using the per capita expenditure, the poverty line is defined as the two-thirds of the mean per capita household expenditures (MPCHE). The total per capita expenditure (PCE) is the sum of cash expenditure on consumption of food and non-food items relative to individual household size.

$$\text{Mean PCHE} = \frac{\text{Total per capita household expenditure of households}}{\text{Total number of households}}$$

The non-poor threshold is above two-third of MPCHE while the moderate poverty line ranges from one-third to two-third of MPCHE; and the core poor threshold is the region less than one-third of MPCHE.

*d) Two-Stage Least Square*

In order to test whether social capital is truly capital, instrumental variable (IV) was used. According to Olayemi (1998), the method of instrumental variable is applied to one equation of a model at a time. It is applicable to over-identified models and hence applicable to structural equations. Since social capital can be assessed at a cost (time and resources), therefore the causality between expenditure and social capital runs in both direction and this leads to biasness in the OLS estimates. In order to address the endogeneity problem, it was necessary to isolate the exogenous impact of social capital on household expenditures. Variables such as length of household residency in the community, household donation in the past year and membership in a religious group and membership in ethnic group(s) were considered as potential instruments for social capital variable. The 2SLS reduces the correlation of the explanatory endogenous variable with the error term as much (Olayemi, 1998). Hence, the regression parameters were better enhanced. The 2SLS is a single equation method and is the most popular method for estimating over-identified models. The conventional model of household economic behaviour under constrained utility maximization was used to relate the level of household expenditure (as indicator of poverty) directly to the exogenous asset endowments of the household and variables describing the social and economic



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environment in which the household makes decision. The fishing household poverty is hypothesized to be influence by the independent variables as represented in the equation below:

$$LnEi = a + bSCi + cHCi + dOCi + eXi + fZi + ui \quad (10)$$

Where Ei = Household expenditure per capita of fishing household i

SCi = Household endowment of social capital

HCi = Household endowment of Human Capital

OCi = Household endowment of other assets

Xi = a vector of household characteristics

Zi = a vector of village characteristics

ui = error term

Social capital Variable:

$SC_1$ = Heterogeneity index of associations (%)

$SC_2$ = Meeting attendance index of households to associations (%)

$SC_3$ = Decision making Index (%)

$SC_4$ = Membership density of households in association (Number)

$SC_5$ = Cash contribution index of households to associations (Naira)

$SC_6$ = Labour contribution index of households to associations (mandays)

Human Capital:

$HC_1$= Years of formal educational of household head (years)

$OC_1$ = Household asset endowment (total assets value of household) (Naira)

Household Characteristics:

$X_1$ = Age of household head (Year)

$X_2$ = Dependency ratio

$X_3$ = Sex of household head (D=1 for male, otherwise D=0)

$X_4$ = Household size (Continuous)

$X_5$ = Marital status (D=1 if Married, 0=Otherwise)

$X_6$ = Primary occupation (D=1 if Fishing, 0= otherwise)

Regional Characteristic:

Z1 = Locality (D= 1 if rural, 0=Otherwise)

The key feature of the model is the assumption that social capital is truly "capital" i.e. a stock, which generates a measurable return (flow of income) to the household. Social capital has many "capital features: it requires resources (especially time) to be produced and it is subject to accumulation and destruction. The effect of destruction of social capital is evident in the work of Rose (1995) on Russia and former Yugoslavia. Much social capital is built during interactions, which occur for social, religious, or cultural reasons. The key assumption is that the network built through these interactions has measurable benefits to the participating individuals, and lead, directly or indirectly, to a higher level of well-being. There is an impact assumption that social capital is embodied in the members of the household. This conforms to the position advocated by Portes (1998), which highlights that, although the source of social capital is the relationship among a group of individuals, the capital itself is an individual.

## III. Results and Discussions

### a) *Dimensions of Social Capital and Socio- Economic Characteristics of Fishing Households Age and Social Capital Dimensions*

As shown in table 1, age range of between 41 and 50 accounted for the highest percentage (25.33%) in membership of local institutions while those that were less than 30 years had the lowest membership density (15.46%).This could be due to resource availability. Respondents within the age range of 51 and 60 years had the highest diversity (27.9percent) in the association they belonged while those above 60 years have the least. This could be due to weakness or reduction in active fishing activities, a due to ageing. All the age groups, except those that were less than 30 years had more than average attendance at scheduled meetings by their various associations. However, the highest representation of 58.19 percent at meeting attendance



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was recorded for age group within 41 and 50 years. This implies that households attended at least every other meeting scheduled i.e. one out of every two meetings.

The highest representation of cash contribution (₦9, 374.95) to various associations was within age group of 41 and 50 years. The least was ₦5, 399.00, by those above 60 years. The highest labour contribution was from age group less than 30years and labour contribution reduces as age increases. Decision making index in various associations was 90 percent for those above 60 years while the least was recorded for 31-40 years age group. All the age groups have well above average in decision making in their various associations. The overall social capital dimension showed that 44.8 percent of respondents within age group of 51 and 60 years had the highest aggregate social capital and the least, 38.10 percent, was from those that were less than 30years.

*Table 1 :* Distribution of Respondents Age and Social Capital Dimensions

| Age groups (years) | Frequency | Membership Density Index (%) | Heterogeneity Index (%) | Meeting Attendance Index (%) | Cash Contribution (₦) | Labor contribution (manday) | Decision Making Index (%) | Aggregate Social Capital (%) |
|---|---|---|---|---|---|---|---|---|
| <30 | 12 (10.00) | 15.46 | 19.00 | 47.75 | 5,509.32 | 3.00 | 75.70 | 38.10 |
| 31-40 | 37 (30.83) | 18.91 | 20.10 | 54.20 | 6,235.43 | 2.75 | 73.80 | 39.63 |
| 41-50 | 54 (45.00) | 25.33 | 23.00 | 58.19 | 9,374.95 | 1.90 | 82.27 | 43.56 |
| 51-60 | 16 (13.33) | 22.80 | 27.90 | 53.84 | 7,656.32 | 1.00 | 86.42 | 44.80 |
| >60 | 1 (0.83) | 17.50 | 10.00 | 51.95 | 5,399.00 | 0.50 | 90.00 | 41.69 |

*Figures in parenthesis are the percentage in the group*

*b) Education and Social Capital Dimensions*

The educational level of the respondents is presented in table 2. Respondents with 7-12 years of education had the highest percentage of membership density in local institution (48.65 %). The least was those without formal education (10.87%). This indicates that educational level can expose households to local level institutions. On the issue of diversity in membership, respondents with 7-12 years of education were also most diversified with 47.1 percent while the least diversified are those with primary education. All the respondents had above average meeting attendance but those with no formal education accounted for highest (85.90%). Respondents with no formal education accounted for the least cash contribution of ₦4, 357.00. Also a highest 2.3 mandays labour contribution was also recorded for those without formal education, while those within 7-12 years of education had the least (1.5 mandays). This could be expected since the exchange of physical labour would be more recorded among those without formal education. All the educational groups partook in decision making in their various associations. However, respondents without formal education had highest participation index of 84.9 percent while the least (76.9%) was by those within 7-12 years of education. On the aggregate, those within 7-12 years of education had the highest social capital index (43.55 %). The least was 40.88 percent by those with no formal education.

*Table 2 :* Distribution of Respondents level of Education and Social Capital Dimensions

| Educational group (yrs) | Frequency | Membership density index (%) | Heterogeneity index (%) | Meeting attendance index(%) | Cash contribution (₦) | Labour contribution (mandays) | Decision making index(%) | Aggregate social capital(%) |
|---|---|---|---|---|---|---|---|---|
| 0 | 16 (13.33) | 10.87 | 38.90 | 85.90 | 4,357.00 | 2.30 | 84.90 | 40.88 |
| 1-6 | 54 (45.00) | 40.48 | 15.00 | 80.54 | 8,569.00 | 1.90 | 85.56 | 43.37 |
| 7-12 | 50 (41.67) | 48.65 | 47.10 | 79.26 | 7856.29 | 1.69 | 76.90 | 43.55 |

*Figures in parenthesis are the percentage in the group*

*c) Household size and Social Capital Dimensions*

The composition of the household size is presented in table 3. The household size between 6 and 10 members participated most (43.7 percent) in local institutions and those above 10 members had the least. Households with above 10 members had the highest diversity (49.1%) while those 1-5 members are the least (19.2%). On meeting attendance, household with above 10 members had highest (62.6%) meeting attendance while the least (52.4%) was for households between 1-5 members. Meeting attendance increases as household size increases since the household head can either be represented at home or at the meeting by any other household member.

Respondents having 6-10 household members contributed most (₦8, 103.94) to their various associations. The least (₦1, 974.89) was from respondents above 10 members; this could be attributed to their high dependency ratio. On the other hand, this group (>10 members) had the highest labour contribution of 3.0 mandays while those having 1-5 members had the least, 1.7 mandays. The highest decision making index of 83.5%was recorded for household with 6-10 members while households with



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above 10 members had the least (76.5%). On the aggregate level, social capital increases as the number of household increases except for those with members that are above 10 members.

*Table 3 :* Distribution of Household Size and Social Capital Dimensions

| Household size distribution | Frequency | Membership density index (%) | Heterogeneity index (%) | Meeting attendance index (%) | Cash contribution (₦) | Labour contribution (mandays) | Decision making index (%) | Aggregate social capital (%) |
|---|---|---|---|---|---|---|---|---|
| 1-5 | 23 (19.17) | 38.27 | 19.20 | 52.40 | 5,547.32 | 1.70 | 80.59 | 57.56 |
| 6-10 | 90 (75.00) | 43.70 | 31.70 | 59.38 | 8,103.94 | 2.30 | 83.50 | 64.23 |
| >10 | 7 (5.83) | 18.03 | 49.10 | 62.20 | 1,974.89 | 3.00 | 76.50 | 37.82 |

*Figures in parenthesis are the percentage in the group*

*d) Sex and Social Capital Dimensions*

In table 4, the male household heads belong to more associations than their female counterparts with male household heads having 63.3%membership density. However, the associations that the female household heads belong to are more diversified than the male counterpart. The male household heads attended association meetings more than their female counterpart. Also, the male household heads contributed more to the various groups which they belonged with an average cash contribution of ₦7, 813.00 while the female heads contributed ₦5, 455.00. The labour contribution was almost the same. As expected in decision making, the male household heads had a higher index of 81.2 percent as well as with the social aggregate level of 43.06%.

*Table 4 :* Distribution of Respondents Sex and Social Capital Dimensions

| Sex of Household head | Frequency | Membership density index (%) | Heterogeneity index (%) | Meeting attendance index(%) | Cash contribution (₦) | Labour contribution (mandays) | Decision making index(%) | Aggregate social capital(%) |
|---|---|---|---|---|---|---|---|---|
| Female | 34 (28.33) | 36.70 | 55.26 | 47.86 | 5455.88 | 2.18 | 78.00 | 40.56 |
| Male | 86 (71.67) | 63.30 | 45.74 | 50.06 | 7813.00 | 2.17 | 81.25 | 43.06 |

*Figures in parenthesis are the percentage in the group*

*e) Poverty Status (Per Capita Expenditure as proxy) of Sampled Fishing Households*

The analysis of poverty starts with the derivation of the poverty line. This was done based on the monthly expenditure profile of households within the study area shown in Table 5 below.

*Table 5 :* Expenditure of Fishing Households

| Item | Household Per Capita Expenditure (₦) | Percentage of Total Household Per Capita Expenditure (%) |
|---|---|---|
| Food | 24,595.65 | 50.00 |
| Clothing | 1,840.93 | 3.74 |
| Medicare | 2,818.84 | 5.73 |
| Children Education | 3,616.79 | 7.35 |
| Fuel | 2,913.47 | 5.92 |
| Transport | 3,280.31 | 6.67 |
| Remittance | 914.51 | 1.86 |
| Toiletry | 2,744.91 | 5.60 |
| Rent | 4,545.91 | 9.24 |
| GSM | 1,919.98 | 3.90 |
| Total Expenditure | 49,191.30 | 100 |
| Mean Per Capita Household Expenditure (MPCHE) | 4,919.13 | |
| Poverty line (2/3MPCHE) | 3,279.42 | |
| Core poor (1/3MPCHE) | 1,639.71 | |

The table shows that half (50.00%) of the rural household monthly expenditure was spent on food. This was followed by rent (9.24%) and only (7.35%) of the expenditure was spent on children education every month. A poverty line of ₦3, 279.42 (Table 5) was obtained with 54.1% of the respondents spending above this amount hence they were categorized 'non poor'. The 'moderately poor' (39.20%) fishing households were those whose expenditure was between one third of MPCHE, ₦1, 639.71 and ₦3, 279.42. Households (6.70%) with less than ₦1, 639.71 were categorized core poor.

*f) Influence of Social Capital on Poverty of Fishing Households*

Both multiplicative and additive social capital indices were used to determine the influence of social capital on poverty (Expenditure as proxy) of households.



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The use of both multiplicative and additive social capital is hinged on the fact that to date, literature on conceptual and theoretical underpinnings of social capital has not proved the superiority of one over the other Narayan and Prichett (1997), Grootaert (2001), Okunmadewa*et al., (*2007) and Yusuf (2008) used both approaches and concluded that additive and multiplicative variables were valid approaches for introducing social capital in the household behavioral model.

Table 6presents the effect of social capital on fishing households' poverty. The second column of the table is the basic model of household poverty behaviour without any social capital variable. This model shows that about 29.14% of the variations in per capita expenditure of households were explained by the specified human capital and demographic factors. In the third column of the table, the multiplicative social capital variable was introduced. The inclusion of this variable led to slight improvement in the model (adjusted $R^2$ increased from 0.2914 to 0.2940). Along with the demographic variables, aggregate social capital index significantly influences the poverty of households. This shows that a unit increase in social capital would increase household per capita expenditure by 0.10%.The fourth column of table 6reveals the inclusion of six additive social capital variables. These are: density index, index of participation in decision making, heterogeneity index, meeting attendance, cash contribution score and labour contribution. This new model has a better explanatory power as reflected in the adjusted $R^2$ of 0.2998. This disaggregation further revealed the significant effects of meeting attendance, heterogeneity (diversity of association) and decision making on household poverty.

*Table 6 :* Result of the OLS Estimated of Social Capital and Household Poverty

| | Basic Model | With multiplicative social capital index | With additive social capital variables |
|---|---|---|---|
| Intercept | 4.3279 (15.88)*** | 4.3780 (15.91)*** | 4.3751 (15.38)*** |
| Sex of household head | -0.0565 (-1.73)* | -0.0560 (-1.72)* | -0.0395 (-1.18) |
| Age of household head | 0.0055 (0.39) | 0.0043 (0.31) | 0.0055 (0.39) |
| Age square | -0.0001 (-0.28) | -0.0000 (-0.19) | -0.0000 (-0.29) |
| School year | -0.0052 (-1.29) | -0.0060 (-1.41) | -0.0052 (-1.33) |
| Marital status | 0.0584 (-1.10) | -0.0590 (-1.11) | -0.0665 (-1.21) |
| Household size | -0.0441 (-5.46)*** | -0.0437 (-5.43)*** | -0.0428 (-4.98)*** |
| Secondary occupation | -0.0208 (-0.85) | -0.0026 (-0.92) | -0.0309 (-1.22) |
| social capital index | - | 0.0010 (3.19)*** | - |
| Density index | | | -0.0179 (-1.11) |
| Meeting index | | | 0.0005 (4.50)*** |
| Heterogeneity index | | | 0.0004 (3.29)*** |
| Decision index | | | -0.0015 (-1.86)* |
| Cash contribution index | | | 0.0005 (0.05) |
| Labour contribution index | | | 0.0004 (0.41) |
| Number of observation | 120 | 120 | 120 |
| Adjusted $R^2$ | 0.2914 | 0.2940 | 0.2998 |
| F- statistics | 7.99 | 7.20 | 4.92 |

*Figures in parenthesis are t- values ***Significant at 1%, ** Significant at 5% and * Significant at 10%*

g) *Endogeneity Effects of Social Capital using Instrumental Variable*

In the earlier analysis (Table 6), social capital has been treated as exogenous variable. However, membership in social groups is at a cost i.e. time and other resources. It therefore becomes important to isolate the exogenous impact of social capital on household expenditure. Hence social capital was treated as an endogenous regressor. The likelihood of this characteristic was examined with aid of 2SLS (using the ivregress 2sls command in STATA). Earlier studies have always used a common instrumental variable to verify the endogeneity effect of social capital. The instrument commonly used was "trust" as used by Narayan and Prichett (1997), Grootaert (2001), Okunmadewa *et al*. (2007). The limitation of the use of trust as an instrument for social capital was acknowledged by Putnam (2000) and Yusuf (2008). In this study, other instrument for social capital based on the submission of Aker (2005) was considered. The instrument used was membership of religious group and the result is as shown in table 7.



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*Table 7 :* Estimation of Endogeneity Effect of Social Capital

| Variables | Coefficients | t values |
|---|---|---|
| Intercept | 0.2312 | (0.6786) |
| Sex of household head | -0.9468 | (-1.9355) |
| Age of household head | -0.0131 | (-0.0062) |
| Age square | 0.0005 | (0.0451) |
| School year | -0.0420 | (-0.5143) |
| Marital status | -0.2806 | (-0.0147) |
| Household size | -0.2231 | (-3.1252)*** |
| Secondary occupation | 0.1586 | (0.7001) |
| Social capital index | 0.04813 | (4.14)*** |
| Nos of observations | 120 | |
| Wald chi2(2) | 80.16 | |
| Prob> chi2 | 0.2415 | |
| R-squared | 0.4889 | |

*Instrumented: Social capital index*
*Instrument: Membership of religious body*
****Significant at 1%, ** Significant at 5% and * Significant at 10%*

By treating social capital as endogenous; we believe that the correlation between social capital and the error term is not equal to zero. However, the probability of chi2 is NOT < 0.05 (significance at 5% level) as shown in Table 7, and then we can rightly conclude that there is no endogeneity in the model. The exogeneity of social capital is therefore inferred. This result is in line with the findings of Okunmadewa*et al.* (2007), Aker (2005) and Yusuf (2008) and Adepoju and Oni (2012).

## IV. Conclusions and Recommendations

The study provides empirical evidence that social capital had effect on households' poverty. The disaggregation of social capital into six dimensions reveals that participation in decision making, meeting attendance and heterogeneity in social groups influenced household per capita expenditure and consequently improves its welfare hence reducing poverty. It is evidenced from the study that education complements social capital in reducing households' poverty. Membership in religious group was used as an instrumental variable for social capital but there is no bicausality between social capital and poverty. Finally, this conclusion confirms the earlier findings that social capital has significant and positive influence on households' poverty status and is a key input in achieving a higher well-being of members of social groups. Fishing households should be encouraged to participate in social groups (networks), since findings revealed that belonging to social network or group reduces poverty significantly in the study area. There is also a need to enlighten fishing household about the imperativeness of robust human capital development within their household. Social capital as an asset can facilitate access to information useful to the poor and this can have a ripple effect on the economy at large by improving growth and income redistribution, hence should therefore be encouraged.

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