

# EFFECT OF SOCIAL CAPITAL ON FOOD SECURITY AMONG RURAL FARMING HOUSEHOLDS IN ABIA STATE, NIGERIA

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## ABSTRACT

The study analyzed the effect of social capital on food security of rural farming households in Abia State, Nigeria with specific focus on measuring social capital dimensions among the rural farming households; determining the food security status of the households; analyzing the influence of socioeconomic characteristics of the respondents on food security and estimating the effect of social capital on food security. Multi-stage sampling technique was adopted in the selection of 120 households as respondents from whom information and data were elicited using structured and pretested questionnaire. Analysis of data was done using multiplicative index, food security index, Probit model and Pearson Product Moment Correlation Co-efficient. The result of the multiplicative index of core social capital dimensions posted an average aggregate social capital index of 45.14, indicating a slightly below average performance. This aggregate index was decomposed into cash contribution (83.94), meeting attendance index (76.26), decision making index (31.42), labour contribution index (21.83) and density of membership (16.40). The distribution of food security indices showed that the majority of the rural households which accounted for 89.17% of the sampled population posted food security of index of less than two. The analysis of factors that influenced food security using probit model showed that coefficients of age, sex, marital status, household size and income were statistically significant at different probability levels. However, the effect of social capital on food security using correlation analysis recorded a correlation coefficient of 0.101 that was not statistically significant, implying absence of any significant relationship between social capital and food security in the study area. It is therefore recommended that the rural farming households should be encouraged to form and participate in cooperatives where opportunities for the access to social capital abound.

**Keywords:** Social capital, food security index, rural, farming households

## INTRODUCTION

Aside shelter and clothing, food is a major necessity of life. However, the achievement of food security for all remains a huge challenge for several developing countries. Hunger in sub-Saharan Africa is persistent as it is widespread (FAO, 2006). Out of the estimated 923 million under nourished people in world, about 200 million reside in sub-Saharan Africa (FAO, 2009). Food insecurity ranks topmost among the development problems facing Nigeria with a population of over 160 million (NBS, 2014).

The level of food insecurity has steadily been on the increase since 1980s, and despite the millennium development goal target to eradicate extreme poverty and hunger by 2015, available statistics cast doubt on the achievement of this goal by 2015 across numerous countries of the world. Food security exists when all people, at all times have physical, economic and social access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The basic minimum level of nutrient

requirement has been determined by the Food and Agriculture Organization to be 2450 kcal of energy per capita intake (FAO, 2007).

The problem of food insecurity in the country is largely associated with low productivity and poverty. It then becomes imperative that Nigeria urgently takes action to cope with immediate needs for food and build a stronger food system that can respond to future challenges. At the household level, food security implies adequate access to food over time. Food access is a function of the physical, social and policy environment which determine how effectively households are able to use their resources to meet their food security objective; however a number of factors such as income, educational level and household size are known to affect household food security as they directly affect economic access and the sustenance of such access. An examination of social capital may offer insights into ways to decrease the prevalence of food insecurity and hunger in Nigeria, especially amongst rural household settings.

Social capital refers to the institutions, relationship and norms that shape quality and quantity of a society's social interactions. It is the glue that holds a society together. Also, social capital is the relationship of different people that come together to achieve what they cannot achieve as individuals. According to Coleman (1988), social capital can take three forms: firstly, obligations and expectations which depend on the trustworthiness of the social environment; secondly, the capacity of information to flow through the social structure in order to provide a basis for action and thirdly, the presence of norms accompanied by effective sanctions.

There is growing empirical evidence that social capital has the potential to mitigate food insecurity in many developing countries in time of financial hardship, food shortages, unreliable rainfall or severe illnesses, various studies in Africa have shown that in social capital that people have access to make a big difference in their abilities to surmount these adverse events (Mtika, 2001). In current literature however, there has been very little emphasis on the role that social networks play in mitigating food insecurity in Nigeria. Furthermore, there is little empirical information on the relationship between various dimensions of social capital and food security status of households. Consequently, this study therefore empirically analyzed the effect of social capital on food security status of the rural farming households in Abia state, Nigeria.

## **METHODOLOGY**

The study area is Abia State. Abia is one of the 36 states in Nigeria created in 1991 from part of Imo State. It is located in the south-east geopolitical zone of the country. The State lies between longitude  $04^{\circ} 45'$  and  $06^{\circ} 07'$  North and Latitude  $07^{\circ} 00'$  and  $08^{\circ} 10'$  East. (NPC, 2007). Administratively, it has 17 Local Government Areas, three Senatorial districts and three agricultural zones. The climate of the state is tropical with 2 seasons namely rainy season which starts from March to October; and dry season which commences from November and ends in February. The inhabitants are predominantly Igbos, who practice Christianity and African Traditional Religion, and produce crops like cassava, yam, maize, okro, cocoa, oil palm etc and they also rear animals like pig, goat, sheep fowl etc. A multistage sampling technique was adopted for this study. First, two agricultural zones namely Aba and Umuahia were randomly selected from the three agricultural zones of Aba, Umuahia and Ohafia; next is a random selection of one Local Government Area from each of the selected agricultural zone; followed by a random selection of an autonomous community from each of the selected Local Government Area; and a random section of 3 villages from each of the selected autonomous community; finally, 20 rural farming households were

randomly selected from each of the selected villages bringing a total of 120 households as respondents for the study. Analysis of data involved use of multiplicative index to analyze the social capital dimensions while food security index was employed in realizing food security status.. Food security was measured by classifying households into food secure and food insecure households. A similar index was used by Omonona and Agoi (2007) and specified as follows:

$$f_i = \frac{\text{per capita food expenditure for the } i\text{th household}}{2/3 \text{ mean per capita food expenditure of all households}}$$

Where:  $f_i$  = food secure  $i$ th household

$f_i \geq 1$  = food secure  $i$ th household

$f_i \leq 1$  = food insecure  $i$ th households

A food secure household is therefore, whose per capita monthly food expenditure fall above or is equal to two third of the mean per capita food expenditure. On the other hand, a food insecure household is those whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure (Omonona and Agoi 2007).

Objective (iii) was analyzed using Probit model. Probit model constrains the estimated probabilities to be between 0 and 1 and relaxes the constraints that the effect of the independent variable is constant across different predicted values of the dependent variable. This is normally experienced with the linear probability model (LPM). The probit model assumes that while we only observe the value of 0 and 1 for the variable  $y$ , there is a latent unobserved continuous variable  $y^*$  that determine the value of  $y$ . The other advantages of the probit model include; believable error term distribution as well as realistic probabilities (Nagler, 1994).

The probit model is specified thus:

$$Y_i^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + e_i$$

And that:

$Y_i = 1$  if  $Y^* > 0$

$Y_i = 0$  otherwise

Where:  $y$  = vector of dependent variable (1 for food secure households, 0 for food insecure household)

$X_s$  = vector of explanatory variables

$\beta$  = probit coefficients to be estimated

$e$  = error term

The explanatory variables are;

$x_1$  = Age of the households head (years)

$x_2$  = Sex (male = 1, female = 0)

$x_3$  = Marital status (married = 1, single =0)

$x_4$  = Household size ( Number)

$x_5$  = Years of farming experience (years)

$x_6$  = Income (naira)

$x_7$  = Education level (years)

$x_8$  = Social capita index

Objective (iv) was achieved using Pearson Product Moment Correlation Co-efficient. The formula is as follows;

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x)^2 (\sum y)^2}}$$

Where:  $r_{xy}$  = correlation co-efficient  
x = Social capital index  
y = Food security

Social capital index would be computed using a multiplicative index of the five social capital dimensions (density of association, decision making index, cash contribution index, labour contribution index and meeting attendance index) and normalized to a maximum value of 100 (Oni, 2011).

**Density of membership:** This is measured by the number of active household membership in existing associations. A complete inventory of all associations will be made at local level institutions, each household will then give that inventory and asked which associations they are members. In other words, the proportion of membership of associations by individuals is found and rescaled to 100.

**Decision making index:** It has been argued that associations which follow a democratic pattern of decision making are more effective than others. The questionnaire will ask association members to evaluate subjectively whether they were “very active” “active” or “not very active” “passive” “very passive” or not participating in the group’s decision making. This response will be scaled from 4 to 0, respectively and averaged across the three most important groups in each household. The summation will be calculated from subjective responses from the households’ members on their rating in participation in decision making in three important associations to them. The responses will be averaged across the three associations and multiplied by 100 for each household.

**Cash contribution index:** This will be achieved by taking records of payment of membership dues and other contributions. The summation of the total cash contributed to the various associations which the household belong will be calculated. The actual contribution for each household will be rescaled by dividing the amount of the maximum fee in the data and multiplying the resultant fraction by 100.

**Labour contribution index:** This is the number of days that individual members belonging to the institution claimed to have worked for their institutions. This represents total members of man-hour’s day’s work by household members. This will be also rescaled to 100 using the same method of cash contribution.

**Meeting attendance index:** This index will be measured by finding the number of times members of association actually met as a group over a period of time. This is obtained by scheduled meetings of the associations. The value is multiplied by 100.

**Aggregate social capital index:** This will be obtained by the multiplication of density of membership, meeting attendance index, labour contribution index, cash contribution index and decision making index. The resultant index is renormalized to maximum value of 100.

## RESULTS AND DISCUSSION

### Measurement of social capital among rural households

The measurement of social capital was done by obtaining multiplicative index of core social capital dimensions namely density of association, heterogeneity and participation in decision making, cash and labour contributions and meeting attendance normalized to a maximum value of 100. This is in line with Oni *et al* (2011). From the result in Table 1, it could be observed that among the social capital dimensions analyzed, cash contribution posted a mean of 83.94. This indicates high promptness of the households’ response to cash contributions in the study area. This attribute underlines the degree of regard accorded to cash related activities by households in the area. This was followed closely by meeting attendance index which recorded an appreciable high mean of 76.26. The result is similar to the findings of Oni

*et al* (2011) who had a mean of 72.61 for meeting attendance index and this stresses the innate desire of the rural households to voluntarily come together for mutual benefits.

Other social capital dimensions in their order of importance as reported by the result include decision making index, labour contribution and density of membership. These dimensions posted infinitesimally low values as mean because out of 120 (sample size), decision making index, labour contribution and membership of density had mean values of 31.42, 21.83 and 16.40 respectively. The implication is that they make minimal contributions to the aggregate social capital index and need to be improved upon. According to Tabi (2009) and Kangogo (2013), it is widely recognized that efficient and equitable groups are those that allow participation of members in the decision making processes, as well as the sharing of benefits and costs. Incorporating members in group decision making, different segments of the society feel the need to pool resources within groups which has more capability to voice their needs.

With a mean value of 45.14 as aggregate social capital index, there is an indication that the rural households need to enhance their social capital frontiers. From the decomposition of the social capital index, it was glaring that most of the dimensions are far below average and these account for the low aggregate social capital index posted for the rural households.

### **Distribution of Aggregate Social Capital Indices of the Rural Households**

The results from Table 2 showed that the aggregate social capital indices ranged from 20.00 to 79.99 and majority of the rural households which accounted for 51.67.0% had an index within 40.00 – 59.99.

### **Determination of the food security status of the households**

To realize the food security status of the households, the food security index employed by Omonona and Agoi (2007) and Nwachukwu (2013) was applied and the result presented in Table 3

From the result, it could be observed that the majority of the rural households which accounted for 89.17% of the sampled population posted food security of index of less than 2. With the classification of Omonona *et al* (2007), those with an index of less than one are not food secure, while those with an index higher than one are food secure. On the basis of this food security taxonomy and a minimum of 0.80, it implies that majority of the rural households have an index that is higher than one and hence, food secure. However, given that the cluster around 0.00-1.99 was overwhelming, there is an indication that most of the households have infinitesimally low food security status. Only a little above 10 percent seem to enjoy a relatively high food security status. According to Makinde (2000), most of the origins of food insecurity have an element of economic access to food, directly or indirectly. Economic access is not limited to monetary access; it includes access to land, to credit, to education and to health service, that food security is more a problem of whether or not food can be accessed. The study further showed that food insecure people are usually not able to meet their needs from the market.

### **Influence of Socio-Economic Characteristics of the Respondents on Food Security**

The results of the Probit Model presented in Table 4 shows that among the variables tested, coefficients of age, sex, marital status, household size and income were significant at different probability levels. Specifically, age marital status and income are statistically significant at 1 percent level of probability and possesses positive coefficients.

The positive coefficient of age implies that older household members have higher probability of being food secure. This result is plausible and anticipated given the fact that incomes of these older members of the households are likely to be higher as a result of longer stay on their public or private endeavors, following the assumption of life cycle hypothesis (Arene, 2008). According to Arene and Anyaeji (2010), the lifecycle hypothesis stipulated that current spending is primarily a matter of expected income which in principle is similar to a higher expected income and thus, implies a higher level of current consumption and lower level of current savings. This assertion consolidates the posture of the positively signed coefficient of income. In terms of marital status, its positive coefficient indicates that the married among the sampled households have the probability of enjoying a higher food security status than their unmarried counterparts. This result is in tandem with Haliu and Regasse (2007) who recorded a positive coefficient for marital status and contrary to the findings of Aidoo *et al* (2013) who posted a negative sign for the variable.

The coefficient of sex posted a positive sign and significant at 10 percent level of probability. Although it was sparingly significant, the result implies that male members of the households have a higher probability of being food secure than their female members. This is plausible since male members seem to dominate employment in all sectors and as such pursue income generating ventures more readily. However, household size recorded an expected negative sign implying that increasing household size reduces the probability of having an enduring food security status. This is literally implied on the understanding that an increased household size imposes pressure on the available food in the face of stagnating income. This outcome is consistent with a study conducted by Sikwola (2008) in Zimbabwe who recorded a similar result. The diagnostic statistics, chi-square is significant at one percent level of probability and this confirms the overall significance as well as the explanatory power of the model.

#### **Estimation of the effect of social capital on food security**

To actualize the effect of social capital on food security correlation analysis was performed and the result is presented below in Table 5. From the result, the Pearson correlation coefficient posted a value of 0.101 and not statistically significant. This is an indication that there was no significant relationship between social capitals and food security in the study area. This result is probably plausible because the level of social capital and its contributory dimension among the households were not deep enough to ensure food security. This collaborate the posture of the probit result where the aggregate social capital index variable was not significant. This further explains why the households posted aggregate social capital index (ASCI) of 45.14, a value that is less than average.

### **CONCLUSION**

The study analyzed the effect of social capital on food security of rural farming households in Abia state, Nigeria. The study has shown that majority of the rural farming household 89.17 percent have a food security index less than 2. While the Pearson Product Moment Correlation Co-efficient value of 0.101 posits that there is no significant relationship between social capital and food security in the area. It is therefore recommended that the rural farming households should be encouraged to form and participate in cooperatives where opportunities for the access to social capital abound; Family planning programmes should be intensified to curb the expansion of household size of rural farmers which results in food insecurity. Finally, income support policies should be promulgated and enforced in the rural areas as the rural dwellers seem to face more of food security problems than their urban counterparts.

**Table 1: Summary statistics of social capital dimension of the rural households**

Social Capital Dimension	Minimum	Maximum	Mean	Rank
Density of Membership	6.60	30.00	16.40	5 <sup>th</sup>
Meeting Attendance Index	25.00	100.00	76.26	2 <sup>nd</sup>
Cash Contribution	3.30	100.00	83.94	1 <sup>st</sup>
Decision Making Index	20.00	40.00	31.42	3 <sup>rd</sup>
Labour Contribution	8.30	66.60	21.83	4 <sup>th</sup>
Aggregate Social Capital Index	20.28	65.32	45.14	

Source: *Computed from field survey (2013)*

**Table 2: Distribution of Aggregate Social Capital Indices of the Rural Households**

Income (N)	Frequency	Percentage
0.00 – 19.99	0	0.00
20.00 – 39.99	51	42.50
40.00 – 59.99	62	51.67
60.00 – 79.99	7	5.83

Source: *Field survey (2013)*

**Table 3: Distribution of Food Security Indices**

Food Security Index	Frequency	Percentage (%)
0.00 – 1.99	107	89.17
2.00 - 3.99	11	9.17
4.00 – 5.99	0	0.00
6.00 – 7.11	2	1.66
<b>Total</b>	120	100.00
Minimum Food Security Index	0.80	
Maximum Food Security Index	6.63	

Source; *Field survey (2013)*

**Table 4: Distributions of factors influencing food security**

Explanatory variable	Coefficient	Standard errors	z- statistic
Age of households head	0.037***	0.006	6.167
Sex	0.045*	0.019	2.368
Marital status	0.035***	0.009	3.889
Household size	-0.57 *	0.26	-2.192
Experience	-.009	.006	-1.541
Income	8.449***	1.494	5.732
Education	-.040	0.37	-1.081
Intercept	-1.950***	0.383	-5.087
ASCI	.001	0.003	0.316
Chi-square	254.626**		

Source: *Computed from field survey data (2013)*

**Table 5: Distribution of Effect of Social Capital on Food Security**

	ASCI	FSI
ASCI Pearson Correlation	1	.101
Sig. (2-tailed)		.272
N	120	120
FSI Pearson correlation	.101	1
Sig (2-tailed)	.272	
N	120	120

Source: *Computed from field surety (2013)*

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