

# INVESTIGATING BENEFITS EFFECTS OF SOCIAL NETWORKS AMONG RURAL FARMERS: IMPLICATIONS ON HOUSEHOLDS' FOOD AND NUTRITION SECURITY IN OYO STATE, NIGERIA

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**Abstract:** The traditional agricultural system commonly practiced by smallholder farmers in rural areas across major farming zones in Nigeria render them vulnerable to lower output, income fluctuation and by extension food and nutrition insecurity. Exploiting the power of social ties viz-a-viz social network has been identified as an important strategy and intervention needed to help the poor rural farmers to improve their living conditions through exchange and diffusion of innovative farming techniques is central to improve and sustained agricultural productivity; and by extension, improved food security status. It is on this basis that this study investigated the benefits effects of social networks among the rural farmers with emphasis on households' food security status. Multistage sampling technique was used to select a sample of 297 respondents from whom responses bothering on personal profile, farm-based features and social networks formation were elicited. Data analysed with descriptive statistics revealed that about 51.85% of the respondents are food secure. The composite score analysis revealed that majority (75.08%) derived moderate level of benefits from their respective social groups. Also, a mean aggregate social capital index value of 25.22% suggests that there is a moderately low level of social capital accumulation among the respondents. From the ordered probit estimates, significant factors which directly influenced the continuum of benefits derived from social groups include: executive status in the social groups ( $p < 0.1$ ), livestock held as asset ( $p < 0.05$ ), decision making ( $p < 0.05$ ), labour contribution ( $p < 0.05$ ), crop held as asset ( $p < 0.01$ ) and meeting attendance ( $p < 0.01$ ). Conversely, household size have an inverse but significant ( $p < 0.05$ ) relationship with the continuum of benefits derived from social networks.

By implication, there is need for evolution of policies that support systematic and organised social groups' formation. This is a very fundamental factor to facilitate the achievement of Goal 2 of the United Nations, Sustainable Development Goals.

**Key words:** Social networks, Food security, Rural farmers, Composite score, Ordered probit model, Nigeria

## INTRODUCTION

The development of any nation especially the developing ones is premised on access to the required quantity and quality of food by its citizenry at the appropriate time period (Tantu *et al.* 2017). According to Gebre (2014), hunger and starvation are consequences of food deprivation. Food security pointers as outlined by FAO (2008) include "availability of food, economic and physical access to food, adequate food utilization and sustainably having access to adequate food"; this suggests

that achieving better food security feet requires having physical access so also is the economic capability to secure adequate food. Any deviation from this may consequently suggest food insecurity status. Thus, food insecurity exists "when all people, at all times, lack secure access to sufficient amounts of safe and nutritious food that meets and guarantee their dietary needs and food preferences for an active and healthy life" (Worku, Azeb and Akilew, 2014). Any deviation from the normal notion of food security perhaps suggests food scarcity, limited purchasing

power and/or household vulnerability to food utilization (Worku, Azeb and Akilew, 2014). Mustaqim (2013) stated that household food insecurity can be expressed as being chronic or transitory in nature. The author described chronic food insecurity as a resultant effect of a prolonged episodes of impoverishment, lack of access to basic productive resources and assets endowment. On the other hand, transitory household food insecurity is conceptualized as an undesirable state primarily caused by “short term shocks and fluctuations in food access and availability, so also are the fluctuation in domestic food production as well as food prices, households’ disposable income and purchasing power”.

According to Worku, Azeb and Akilew (2014), in many developed and developing nations across the world, households’ food insecurity is one of major development challenges. This hitherto threatens the achievement of United Nations Goal 2 of the Sustainable Development Goals (SDGs) which advocates for zero hunger across all strata. In the same vein, Tantu *et al.* (2017) reported the recent findings embedded in Food and Agricultural Organization (FAO) report, that “about 805 million (11.3%) global populations were unable to meet their dietary energy supplies between 2012 and 2014. Tadesse *et al.* (2017) also stressed that, about 791 million people across developing countries live in perpetual deprivation in term of food access and capability to access. This further suggests that about 13.5% of the overall population remain tirelessly underfed”. However, the global community have also adopted SDGs to complement the Millennium Development Goals’ (MDGs) developmental agenda. According to FAO (2016), the new SDGs programme are targeted at reviewing the current challenges of food insecurity, reflecting the continuity as well as consolidation of MDGs’ successes by making it more sustainable and strengthening the goals up until 2030. Despite countless efforts made by many countries to reduce the wanton poverty and food insecurity which also top the SDGs agenda, this menace still persists in most developing nations in Sub-Saharan Africa (SSA) and Nigeria in particular. Also, several agricultural related development interventions have been made by government towards achieving better food security status including introduction of new crop technologies such as fortified

Vitamin A cassava varieties which is often target at key crop (for instance, Cassava) farmers to boost the production output. Therefore, achieving zero hunger and maintaining basic and adequate nutrition for all people at all times remains a huge challenge for several developing countries including Nigeria.

In lieu of these identified problems, social networks according to Roslan, Nor-Azam, and Russayani (2010) has been tagged as an important ‘social safety net’ to facilitate the achievement of common goals at individual and at community levels. Social network is conceptualised according to Durlaf and Fafchamps (2004) as “community relations that affect inter-personal interactions among people which is beneficial in supporting each other”. “The central idea of social capital is that networks and the associated norms of reciprocity have value and this emerges in relationships in many spheres of life such as friendship, kinship ties and school; so also are ethnic, religious and community groups. The rural farmers use social network as a tool for interpersonal relationships for connectivity among each other which in turn facilitate diffusion of vital information and knowledge about new agricultural technology. To corroborate this, Villanueva *et al.* (2015) stated that “social networks is capable of influencing the diffusion of new innovations through social learning, joint evaluation, social influence and collective action processes”.

Bodin and Crona (2009) averred that intra and inter community social ties are critical for the development and welfare of individuals as it facilitates the acquisition of useful information, diffusion of information and the subsequent adoption of innovation. This thus rely heavily on social relationships and networks. Also, the earlier submission of Folke *et al.* (2005) emphasized the contribution of informal networks in many countries especially in developing economies context, where agriculture constitutes a major source of rural livelihood strategy. It was also emphasised that, informal networks often is capable to ameliorate the land tenure issue since there is an assumed cohesion and understanding among farmers; such networks can also enable positive diffusion and uptake of new agricultural innovations and enhance flexibility in farming operations especially when it has to do with farmers to farmers’ intra and inter linked

relationship within and between communities. Recent studies such as Leonard and Vasilaky (2016); Cadger *et al.* (2016); Meinzen-Dick *et al.* (2014); Isaac, (2012); Spielman *et al.* (2011) and Matuschke (2008) have all demonstrated the potential association between social ties and diffusion of new agricultural practices towards achieving sustained food security status. Therefore, social network concept is a key to properly understudy the existence of relationship among the farmers especially smallholders and how beneficial this relationships are in terms of increased agricultural production and to demonstrate the potential consequences in terms of other alternative benefits derived from participation in these social networks and by extension, implication on food security.

## **MATERIAL AND METHODS**

The study area is Oyo State, Nigeria. The climatic condition of the region favours the cultivation of arable crops which position crop farming as the prevalent source of livelihood in the area. The study employed multistage probability sampling techniques to select 300 sample size used from whom necessary information based on study objectives was elicited. Though, responses from only 297 samples were found useful in the final stage of data analyses because of inconsistent information.

Data was analysed through descriptive statistics such as crosstab analysis while composite score technique was used to profile the sampled respondents into different categories based on the level of benefits derived from intra and inter social networks. Ordered Probit model was employed as inferential statistical technique to isolate the dynamics governing the derived benefits levels by rural farmers from social networks and group participation.

## **MODEL SPECIFICATION**

### **Households' Food Expenditure Approach (HFE)**

This involves getting per capita food expenditure of  $i^{\text{th}}$  household divided by  $2/3$  mean per capita food expenditure of all households. This was used to construct food security index and subsequently, FSS of the smallholder farmer households.

The HFE approach was found appropriate and therefore used to measure food security for this study

after a literature review of different approaches. It solves the problem of getting the actual total income of farming households which respondents find difficult to divulge and also solves the difficulties in getting daily calories intake especially in Nigeria. Hence, following Arene and Anyaeji (2010), a distinction was made on household food security status by separating them into those that are food secure and those who are food insecure by means of food consumption expenditure approach which was used to construct food security index.

This is given by:

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

$F_i$  = food security index

when:

$F_i \geq 1$  = food secure  $i^{\text{th}}$  household and

$F_i < 1$  = food insecure  $i^{\text{th}}$  household.

Therefore, any household with monthly food consumption expenses per capita exceeding or equal to two-third of the mean food consumption expenditure per capita is considered to be food secure and if otherwise, such household is considered to be food insecure.

### **Composite score approach**

Following Sirkin (1995) and Salimonu (2007), composite scores was generated from set of ten questions regarding benefits derived from social networks. These scores were used for the categorisation and profiling of respondents into high, moderate and low benefits levels which correspond to censoring values of 2, 1, and 0 respectively. This was achieved through computation of summary statistics to generate these censored values as used in the following interpretations:

High category = Between Mean + Standard Deviation to 10 points

Moderate category = between lower and upper categories

Low Category = Mean – Standard Deviation to 0 point

### **Ordered Probit Model**

According to Wooldridge (2010), this model allows more than two discrete outcomes that are ordered; being a

generalised probit regression. “Ordered probit model is used to model relationships between a polytomous response variable which has an ordered structure and a set of regressor variables. Using the composite score generated from the set of questions developed for the, categorization into high benefit, moderate benefit and low benefit which correspond to censoring values 2, 1, and 0 respectively, the factors influencing the level of benefits derived from social networks were estimated using ordered probit model specified as:

$$y^* = x' \beta + \varepsilon \quad (1) \text{ where:}$$

$x$  and  $\beta$  are standard variable and parameter matrices, and  $\varepsilon$  is a vector matrix of normally distributed error terms. Obviously predicted grades ( $y^*$ ) are unobserved; however, the following was observed:

$$y = 0 \text{ if } y^* \leq 0 \quad (2)$$

$$y = 1 \text{ if } 0 < y^* \leq \mu_1 \quad (3)$$

$$y = 2 \text{ if } \mu_1 < y^* \leq \mu_2 \quad (4) \text{ where:}$$

$\mu_1$  and  $\mu_2$  are the cut off points (intercept shifters) i.e. the threshold variables in the probit model. The threshold variables are unknown and they indicate the discrete category that the latent variable falls into”. Thus, the likelihood for benefit derived from social networks by an individual farmer is given as:

$$YL = [\Phi(0 - X_i \beta)]^{z_{ij}} [\Phi(\mu_1 - X_i \beta) - \Phi(0 - X_i \beta)]^{z_{ij}} [1 - \Phi(X_i \beta - \mu_1)]^{z_{ij}} \quad (4)$$

$$z_{ij} = \begin{cases} 1, & \text{if } \dots y_i = j \\ 0, & \text{otherwise..for } \dots j = 0..1, \dots \text{and } \dots 2 \end{cases} \quad (5)$$

where:

for the  $i^{\text{th}}$  individual,  $y_i$  is the observed outcome and  $X_i$  is a vector of exogenous explanatory variables and the unknown  $\beta_{is}$  parameters are usually estimated by the maximum likelihood estimation technique.  $Y_L$  = level of benefits derived from social networks (2 = high benefit, 1 = moderate benefit, 0 = low benefit),  $X_1, \dots, X_n$  are the hypothesized explanatory variables including farmers and farm based characteristics as well as social networks variables, that is, the social capital dimensions.

### Conceptualisation of Social networks

According to Aker (2007) as well as Adepoju and Oni (2012), membership in social groups, attendance in group meetings and participation actively in groups’ activities through methods of mutual assistance’ are necessary social mesh which provide ‘safety nets’ to members during unforeseen circumstances. The following social capital dimensions were used in this study: attendance in group meetings, diversity of members (%), in-kind contribution in terms of labour supply (man-day), active involvement in decision making index (%), contribution index in cash (₦), density of members in social groups and an interaction variable-aggregate social capital index (%).

### RESULTS AND DISCUSSION

The results of summary statistics of the respondents’ selected socio-economic characteristics and distribution of social networks involvement among rural farmers is shown in Tables 1 and 2 respectively. Table 3 on the other hand presents the summary statistics of the respondents’ social networks dimensions while Table 4 mirrors the profiling of respondents into food security status category. Also, Table 5 presents the distribution of respondents based on the level of benefits derived from their various social networks. The ordered probit and by extension its’ marginal effects estimates of the dynamics governing the levels of benefits derived by rural farmers from intra and inter social networks were presented in Tables 6a and 6b respectively.

Therefore, the result as presented in Table 1 revealed that the respondents’ average age is 49.46 years with an estimated mean years of schooling of 8.33 years. These suggest that the respondents are still within the economic active and productive age while having a foundation (primary school or grade 6) level of education on a general average. In the same vein, average household size of 6.69 members suggests that there exists about 67 persons in every 10 households which looks to be on the high side while out of this, only about 43% are really employed which also suggests an high dependence ratio. That is, on the average, there exist about 29 persons working in every 10 households. Then, average monthly consumption expenditure of ₦17851.75K on food items is somewhat high; considering the fact that, all things

equal, these farmers are expected to be the real production unit rather than buying/consuming unit. Additionally, Table 2 revealed that the subjects mostly belong to either one or many of gender based social groups, cooperative societies, occupational groups as well as religious based associations.

Furthermore, in the analysis of social network dimensions as indicated in Table 3, Six (6) dimensions of social capital were studied; these are: attendance in group meetings, diversity of membership in association (%), in-kind contribution in terms of labour supply (man-day), active involvement in decision making index (%), contribution in cash (₦), density of members in social groups and an additional interaction variable which is aggregate social capital (%). The results revealed that households with an average of about 67 persons in every 10 households belong to at least 4 associations, and have moderately high value of 73.29% index of participation at decision making. This suggest that members of local level institutions attend meetings regularly and as expected, this facilitates their active involvement in decision making.

In addition, there is a moderately low level of heterogeneity in the associations to which households belong at 25.31% which suggests that there is low level of diversity among members in their various associations; this can potentially affect the level of benefit derived from the community local level institution. Meeting attendance of 63.05% represents more than half of the maximum attendance recorded for the households. Surprisingly, there seems to be low value for cash contribution with a mean score of 25.14% of the maximum amount recorded while labour contribution score is 13.45 man-day of the maximum 66 man-day recorded.

The result also revealed the mean aggregate social capital index value of 25.22% which suggests that there is a moderate level of social capital accumulation in terms of membership in association, membership diversity in association, decision making in association, attending meetings, and contributions both in cash and kind among the sampled respondents in the study area; which can potentially boost the food production through the network of kinship ties/ relationship among the people in the study area.

The distribution of households based on food security status as shown in Table 4 revealed that 51.85% of the respondents are food secure while 48.15% are food insecure. This suggests that about half of the respondents are food insecure; this is very close to the findings of Oni *et al.* (2011) who reported that 45% and 55% of the farmers in Ogun State, Nigeria are food secure and food insecure respectively. The slight deviation observed is expected, geographical factor such as location.

The result as presented in Table 5 revealed that about two-third (75.08%) of the respondents derived moderate benefit, while 15.15% fall within the high benefit category and only 9.76% are in the low benefit category. This suggests that majority of the respondents in the study area are in the moderate benefit category. The benefits mean value of 6.40 suggests that an average ten households derive up to about sixty-four benefits from the various social groups and networks they belong to in the study area. This potentially farming techniques boosts social capital formation which drives, exchange of information especially on the uptake, and adoption of improved which by extension.

**Table 1**  
**Summary description of respondents' selected personal and socio-economic characteristics**

<i>Socio-economic variables</i>	<i>Mean</i>	<i>Standard Dev.</i>	<i>Min</i>	<i>Max</i>
Age of the household head (years)	49.46	8.43	24	69
Years of formal education (years)	8.33	5.29	0	18
Household size	6.69	2.37	3	13
Number working member of household	2.89	1.42	1	6
Consumption expenditure on food (₦)	17851.8	8573.82	4300	56600

Source: Data analysis, 2015

**Table 2**  
**Households membership of social networks**

<i>Associations/ Social networks</i>	<i>*Frequency</i>	<i>Percentage</i>
Community Based Association	56	18.86
Gender Association	104	35.02
Age group	26	8.75
Cooperative societies	282	94.95
Social services group	77	25.93
Occupational group	276	92.93
Environmental protection/ Natural Resources group	16	5.39
Religious group	168	56.57
Cultural group	3	1.01
Non-governmental organization	28	9.43

\* The frequency and percentages are not mutually exclusive  
*Source:* Data analysis, 2015

**Table 3**  
**Summary statistics of Social networks/  
capital dimensions**

<i>Socio-economic variables</i>	<i>Mean</i>	<i>Standard Dev.</i>	<i>Min</i>	<i>Max</i>
density of members in social groups	3.93	1.02	2	6
diversity of members	25.31	11.6	13.33	66.67
active involvement in decision-making	73.29	9.63	55.56	88.89
attendance in group meetings	63.05	13.44	31.13	89.58
contribution in cash	25.14	1307.75	800	8000
in-kind contribution (labour)	13.45	17.09	0	66
*aggregate social network index	25.22	11.77	7.70	52.15

*Source:* Data analysis, 2015

**Table 4**  
**Profile of food security status**

<i>Food Security Status</i>	<i>Frequency</i>	<i>Percentage</i>
Food Insecure	143	48.15
Food Secure	154	51.85
Total	297	100

*Source:* Data analysis, 2015

**Table 5**  
**Households' Distribution by Categories of Social  
Networks Benefits Enjoyed**

<i>Categories of social network benefit</i>	<i>Frequency</i>	<i>Percentage</i>
Low benefit	29	9.76
Moderate benefit	223	75.08
High benefit	45	15.15
Total	297	100

*Source:* Data analysis, 2015

**Factors Influencing Levels of Benefits Derived from Social Networks among Rural Farmers: Ordered Probit Estimates**

Table 6 presents the result of the ordered probit model applied to investigate the dynamics governing the derived benefits levels by rural farmers from intra and inter social networks. Three ordered (0, 1, 2) levels of derived benefit that is, (low, moderate and high); which were used as response variable while the choice of the 16 explanatory variables used in the model was guided by the literature. However, only 15 variables were allowed in the model from which only 7 variables were statistically significant at various levels. The empirical estimation of the ordered probit model shows that the significant variables are household size, executive status in association, livestock and crop held as assets, decision-making index, meeting attendance as well as labour (in-kind) contribution. The likelihood ratio chi-square of 48.86 with p-value of 0.0000 and *pseudo* R-squared of 0.1130 (what informed the low *pseudo* R<sup>2</sup> is attributed to the binary nature of the response variable) suggest that the model has a good fit and predictive ability.

Household size is inversely related to the level of benefit derived from the social group and significant at ( $p < 0.05$ ) level of significance; however, an increase in household size will increase the probability to receive low benefit by 0.0106, moderate benefit by 0.0002 and decrease the likelihood of receiving high benefits by 0.0099 as presented in Table 6a and 6b respectively. This result is with mixed feelings; first, considerably large household size could be an opportunity for farmers to access family labor easily while it could also have a consequential spill-over effect on the households' food security status considering the small economies of scale

in which most farmers operate. In a similar manner, this could potentially minimize the chances of maximizing the benefits associated with social group membership; the Adepoju *et al.* (2011). Also, there exists a direct and significant ( $p < 0.1$ ) relationship of executive status with benefit derived from social networks; suggesting that occupying an executive membership position in a social network increases the likelihood of deriving low and high benefits by 0.0411 and 0.0545 respectively while the probability of deriving moderate benefit reduces by 0.0994.

Meanwhile, livestock and crop held in form of asset were found to have a direct and significant ( $p < 0.05$ ) and ( $p < 0.01$ ) relationship with benefit derived from membership of a social network; this suggests that the more asset held in form of livestock and crop by farmers, the more the likelihood of deriving low benefit and the less likelihood of deriving moderate and high benefits. This findings is contrary to expectations but the reason could be as a result of inefficiency and prevalent traditional system of farming in the study area.

In the same vein, decision-making is statistically significant at ( $p < 0.05$ ) and directly related to social networks benefit. This suggests that an increase in the index of decision-making participation reduces the likelihood of receiving high benefit by 0.0023 and increase the likelihood of receiving low and moderate benefits by 0.00007 and 0.0022 respectively; this further suggests that membership of any social networks is a necessary condition but not a sufficient condition to enjoy the maximum benefits; hence, the need for active participation in decision making.

The positive and significant ( $p < 0.01$ ) relationship of meeting attendance with benefit derived from social network web posits that regular meeting attendance in meeting facilitates the level of benefits enjoyed by members. The findings revealed that regular meeting attendance increases the likelihood of receiving moderate and high benefits by 0.0002 and 0.00003 respectively and reduces the likelihood of receiving low benefit by 0.0003. This is a statement of fact that absentee individual stands less chance of deriving maximum benefit from the social networks.

Additionally, the results show a positive and significant ( $p < 0.05$ ) association between labour

contribution and benefits derived. The findings suggest that a unit increase in labour contribution increases the probability of receiving low and high benefits by 0.0003 and 0.0014 respectively and reduce the likelihood of receiving moderate benefit by 0.0015. Suffice to say, it is also not surprising that labour contribution directly affects social network benefit because of the established strong social ties among the farmers. Therefore, the need for contributory efforts on their farming activities, most especially during land preparation, planting, weeding, harvesting; this gesture further facilitates collectively actions and strong interactions among the farmers. Some of these findings are in line with a-prior expectations and findings of Olawuyi and Olawuyi (2015), Adepoju *et al.* (2011), Yusuf (2008) and Okunmadewa *et al.* (2007). Meanwhile, the use of memory estimate occasioned by poor record keeping of the respondents, geographical factor such as differences in location and social capital issues such as heterogeneity contribute to the little deviation from the earlier related findings and a-priori expectations.

## CONCLUSION

There is a commanding evidence that group networks are beneficial to the stability farming households' food security status through varying level of benefits enjoyed from group membership which is considered a very strong tie. Also, it was further revealed that the dimensions of social networks interaction with household food security status is expressed in the level of diversity among members of social groups, participation in decision making and attendance of group meetings. The findings clearly show that interplay between social networks, households' assets and human capital variables can boost households' food security profile and by extension households' welfare. The results also show that social capital networks and relations among smallholder farmers is an important influencing factor towards ending hunger and achieving food and nutrition security as being advocated for in the SDGs, because food is a great weapon to keep the world at peace.

## POLICY RECOMMENDATIONS

The following policy statements are of paramount importance:

**Table 6a**  
**Factors driving the level of benefits derived from social networks**

<i>Social Capital Benefit Categories</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>Z statistics</i>	<i>P &gt;  Z </i>
Gender	-0.3933	0.3734	-1.05	0.292
Age	0.1315	0.0109	1.21	0.228
Marital status	0.3549	0.2348	1.51	0.131
Family size	-0.0809	0.0391	- 2.07**	0.039
Farming status	0.1753	0.1992	0.88	0.379
Executive status in social group	0.2785	0.1621	1.72***	0.111
Ownership of livestock	0.4873	0.2156	2.26**	0.123
Ownership of crop	0.5824	0.1834	3.18*	0.001
Ownership of fishery	-0.3489	0.5211	-0.07	0.947
Density of members in groups	0.0376	0.0826	0.46	0.649
Diversity of members	-0.006	0.0785	-0.77	0.443
Involvement in decision-making	0.0205	0.0087	2.36**	0.018
Attendance in group meetings	0.0181	0.0059	3.06*	0.002
Contribution in cash	-0.0000364	0.0000774	-0.47	0.638
In-kind contribution (labour)	0.01133	0.0054	2.10**	0.036
Cut 1	0.5651	1.0049		
Cut 2	3.2135	1.0269		
LR chi2 (15) = 48.86	Prob > chi2 =	0.0000	Observation	297
Log likelihood = - 191.85619	Pseudo R <sup>2</sup> =	0.1130		
Gender	-0.6316	0.3605	- 1.75***	0.08
Age	0.013	0.0106	1.23	0.219
Marital status	0.3729	0.2275	1.64 ***	0.101
Family size	-0.0881	0.0378	- 2.33**	0.02
Farming status	0.0974	0.1907	0.51	0.61
Executive status in social group	-0.2559	0.1566	- 1.63***	0.102
Ownership of livestock	-0.5259	0.3042	- 1.73***	0.084
Ownership of crop	-0.5726	0.1743	- 3.28*	0.001
Ownership of fishery	-0.1669	0.5045	-0.33	0.741
Aggregate social capital	-0.0048	0.0062	-0.78	0.434
Cut 1	-2.212	0.6241		
Cut 2	0.2615	0.6101		
LR chi2 (10) = 24.88	Prob > chi2 =	0.0056	Observation	297
Log likelihood = - 203.84934	Pseudo R <sup>2</sup> =	0.0575		

\* -  $p < 0.01$ , \*\* -  $p < 0.05$  and \*\*\* -  $p < 0.1$

Source: Data analysis, 2015



**Table 6b**  
**Marginal effect estimates**

<i>Variables</i>	<i>Marginal effect for Y = low benefit</i>	<i>Marginal effect for Y = moderate benefit</i>	<i>Marginal effect for Y = high benefit</i>
Gender	-0.0444	0.0401	0.0160
Age	0.0008	-0.0040	0.0029
Marital status	0.0678	-0.1421	0.0755
Family size	0.0106	0.0002	-0.0099
Farming status	-0.0049	-0.0873	0.0854
Executive status in social group	0.0411	-0.0994	0.0545
Ownership of livestock	0.0461	-0.0068	-0.0825
Ownership of crop	0.0746	-0.0382	-0.0394
Ownership of fishery	-0.0199	0.0035	0.0115
Density of members in groups	-0.0109	0.0192	-0.0076
Diversity of members	0.00006	-0.0003	0.0005
Involvement in decision-making	0.00007	0.0022	-0.0023
Attendance in group meetings	-0.0003	0.0002	0.00003
Contribution in cash	-0.00002	-0.00002	0.00003
In-kind contribution (labour)	0.0003	-0.0015	0.0014
Gender	-0.033	-0.0009	0.0578
Age	0.0009	-0.0034	0.0023
Marital status	0.0726	-0.1388	0.0601
Family size	0.0098	-0.003	-0.0063
Farming status	0.0074	-0.0846	0.0757
Executive status in social group	0.0388	-0.1065	0.0643
Ownership of livestock	0.0492	-0.0359	-0.0428
Ownership of crop	0.0779	-0.0484	-0.0358
Ownership of fishery	0.0016	-0.0021	-0.0048
Aggregate social capital	-0.0011	0.0026	-0.0013

*Source:* Data analysis, 2015

- Connectedness and trust among rural households is essential because the findings revealed that social network is an important tool for information dissemination and coping strategy among the rural poor to deal with the risk and uncertainty associated with income fluctuations.
- High dependency ratio in terms of large household size has significantly shown over time to negatively affect maximization of the benefits derived from social networks and by extension food security status than those with fewer persons, especially in the rural settings where meagre income is prevalent and multidimensional poverty exists. As the outcome

of the study confirms that majority of the respondents perceive large family size as a way to access family labour, labour-saving devices should be promoted along with birth control strategies.

- There is need to demonstrate genuine commitment in form of adequate investment in Nigerian Agricultural sector. Hence, provision of incentives that will motivate households to engage in farming activities is required. This could be achieved through effective and sincere institutional framework such as social protection and pro-poor investment devoid of political interference.

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