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Willingness of Youths to Participate in Agricultural Activities: Implication for Poverty Reduction

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Abstract

In Nigeria, agriculture plays a significant role in growth and development of the economy. To sustain this development however, an active population comprising the youths should be encouraged to participate effectively in agricultural activities. Many factors are responsible for the low participation of youths in agriculture. An empirical study was therefore conducted between October, 2015 and March, 2016 to determine the factors influencing the willingness of youths in Ibiono Ibom Local Government Area of Akwa Ibom State, Nigeria to participate in agricultural activities. With the aid of questionnaire, primary data were obtained from 150 youths using the multi-stage sampling procedure. Data were analyzed using the univariate probit regression model. Results of analysis revealed that age of the youths was positively significant ($P < 0.05$) implying that youths with many years of experience were more likely and willing to participate in agricultural activities and programs. Findings also showed that household income and membership in social groups were significant ($P < 0.10$) and ($P < 0.05$) and directly influenced the willingness of youths to participate in agricultural activities. Furthermore, results revealed that the size of household members was significant ($P < 0.05$) and negatively influenced youths willingness to participate in agricultural activity. Policies aimed at encouraging membership and involvement of youths in social groups and increasing their incomes through participation in farming investments and activities would be a sensible option.

Keywords

Willingness, Youths, Probit, Activities

1. Introduction

Youths are very important resources for every nation especially for sustaining agricultural productivity which is an important sector for development (Naamwintome and Bagson, 2013) and the youths being important stakeholders in the development ladder need to be included in policy formulation. Unfortunately, this category of people is virtually left out in policy and program considerations. Before now, youths were gainfully employed in agricultural production, and engaging them in agriculture has been a prominent issue among development stakeholders and policy makers as there is growing concern globally about young people's disenchantment in agriculture. Agriculture provides a means of livelihood for an estimated 65%-70% of the

Nigeria's population and has consistently made over 40% annual contribution to country's GDP (output) over the last five years and is the major driver of the non-oil sector of the economy, contributing about one-third of annual economic growth. According to NBS (2012), it also contributed majorly to the 7.68% expansion of the Nigerian economy in 2011. Mashindano *et al* (2011) also reported that agriculture remains an important source of national income for most developing countries. But in recent years, there has been increased interest in agriculture by various stakeholders as a key driver of development, poverty reduction and food security (IFAD, 2010; FAO, 2011). According to IFAD (2011), the growth generated by agriculture is more effective (than growth in other sectors) in reducing poverty and generating greatest improvement for the poorest people particularly in poor agriculture-based economies. But,

Adefalu *et al* 2009; Kwenye and Sichone (2016) argued that in order to sustain growth and prevent jeopardy in the sector, the bulk of agricultural production efforts should not be left in the hands of aged subsistence farmers who are presently the major farming population. Etim *et al* (2011) reported that rural-urban drift and the movement of young people away from agriculture are making labor increasingly scarce and is a major constraint to expanding the scope of production by small-scale resource poor farmers. Rapid urbanization has also led to a reduction in rural populations where labor is domiciled. According to Etim and Edet (2013), with the influx of people into peri-urban and urban areas from rural communities, many urban dwellers are still malnourished as the absorptive capacity in cities is low while there is labor deficit in rural populace. As a result, farming is now done by aged people and children who barely have the strength to carry out laborious task. Cook (1996) noted that the productivity level of these aged farmers cannot meet the food and fiber requirements of the rapidly increasing population as they are likely to phase out on account of age. Compared to the aged population, youths are the ideal catalysts for agricultural transformation and developmental change given their greater ability and willingness to adopt innovations and technology which are critical to changing the agricultural sector (Kwenye and Sichone, 2016). It therefore becomes imperative that youths should be actively involved in agriculture. Ahaibwe *et al.*, (2013) suggested that fostering youth involvement in agriculture is a worthwhile investment. Although, the participation of youths in agriculture is fundamental for economic development and poverty reduction (World Bank, 2008), the factors influencing the willingness of youths to participate in agricultural activities is not clearly comprehended in Nigeria. Consequently, to address this knowledge gap, an investigation to determine the factors influencing the participation of youths in agriculture was conducted.

2. Methodology

The study was conducted in Ibiono Ibom Local Government Area of Akwa Ibom State. It lies within the humid tropical rain forest zone with annual rainfall of 2000 – 3000mm. Ibiono Ibom lies between latitude 5°08' and 5°18'N of the equator and longitude 7°52' and 8°04'E of the Greenwich meridian. It is located in south-East of Nigeria and has a population of approximately 189,640 people (NPC 2006). It is bounded in the North by Ini local Government Area of Akwa Ibom State and Arochukwu Local Government Area of Abia State in the East by Itu Local Government Area, in the West by Ikono Local Government Area and in the South by Uyo Local Government Area. The area is predominantly agrarian. The major ethnic group is Ibibio. There are 2 distinct seasons viz: the rainy season and short dry season. The predominant occupations of the people are farming, trading and crafting. Their cultural heritage include: Akata, Ebre, Ekpe, Ukwa, Obon.

Multistage sampling procedure was employed. First, three

(3) out of the 9 clans in Ibiono Ibom Local Government Area were randomly selected. The second stage sampling involved the selection of 10 villages per clan. The third stage involved the selection of 5 youths per village to make a total of 150 youths.

Primary data were used for this study and intensive survey provided the basic cross sectional data from 150 youths in the study area. Data were collected from youths for a period of 6 months using questionnaire. Primary data included data from household income, demographic, socio-economic and farm specific variables.

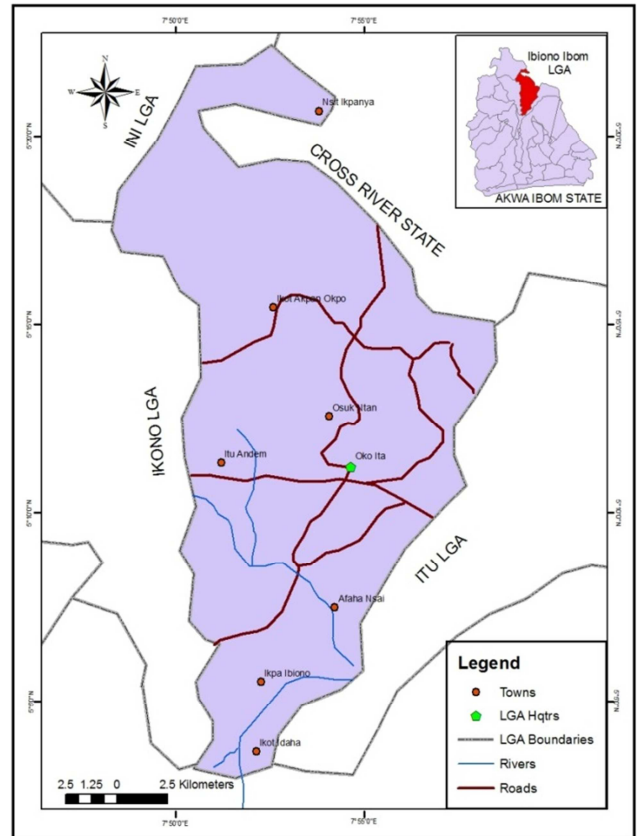


Figure 1. Map of study location.

2.1. Theoretical Model

A univariate Probit regression model was used to identify critical factors most likely to affect the willingness of youths to participate in farming activities. This model has found several empirical applications in the literature (Falusi, 1975; Rahm and Huffman, 1984; Halui 1990; Etim and Benson, 2016). Probit model is mathematically represented as

$$\Phi(\beta x_i) = \int_{-\infty}^{\beta x_i} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{t^2}{2}\right) dt$$

Where $-\infty (\beta x_i)$ is normally distributed and represents the probability that the *i*th individual will participate in a given activity, β is a vector of unknown coefficients; X_i is a vector of characteristics of the *i*th individual; *t* is a random variable distributed as a standard normal deviate, *exp.* is the exponential function. The probability of participating in a

new agricultural activity is the area under the standard normal distribution curve lying between $-\infty$ and βx_i . The larger the value of βx_i , the more likely an individual is willing to participate in a new agricultural activity.

2.2. Empirical Specification

The univariate PROBIT model is used to identify key factors likely to affect youth's willingness to participate in a new agricultural activity. Identification of key factors reported by youths to affect their decision to participate in a new farming activity would be useful for product development, adoption and commercialization.

The empirical model for willingness to participate in a new agricultural activity is specified as

$$Y_i^* = P(Y_i = 1) = \beta x_i + \epsilon_i$$

Where Y_i is the "willingness to participate (WTP) in a new agricultural activity; Y_i^* is the estimated value of Y_i ($Y_i^* = 1$) if $Y_i > 0$, and ϵ_i is the error term which follows a normal distribution (mean $\mu = 0$, variance $\sigma = 1$). P is the probability function, β is the vector of parameters to be estimated. X_i is the matrix of explanatory variables that affects the i th youth's decision to be willing to participate in a new agricultural activity.

The dependent variable Y_i or WTP takes a value of 1 for farmers who are willing to participate in a new farming activity and 0 otherwise.

Table 1. Description of Variables used in the Analysis of the Willingness of youths to Participate in Agricultural Activities.

Dependent WTP	Willingness to participate in Agricultural activities (1=yes, 0 = no)
Sex	Sex of the farmer (1 = male, 0 Female)
Age	Age of the farmer in years
Marital Status	Marital status of the farmer (1 = married, 0 if otherwise)
Education	Number of years of formal education
Household Size	Number of family members
Membership Social Group	Membership of social organization (1 = yes, 0 = no)
Household Income	Amount of Income to household in naira
Access to credit	Access to credit facilities (1 = yes, 0 = no)

2.3. Test of Collinearity of Variables Used in the Model

Multicollinearity is one of the important econometric problems of cross sectional data analysis. In this study, multicollinearity was tested between the dependent variable and independent variables to ensure the consistency and unbiasedness of the Tobit model estimates. The variance inflation factor (VIF) was employed. The VIF has a minimum possible value of 1.0. Value greater than 10 indicates a probably collinearity problem between the dependent variable and the independent variable under consideration. VIF was estimated using the formula stated below.

$$VIF_j = 1 / \{1 - R_j^2\}$$

Where R_j^2 is the multiple correlation coefficient between dependent variables j and the independent variable under consideration.

3. Results and Discussion

Table 2. The variance inflation factor (VIF) test result for multicollinearity of variables used in the analysis.

Explanatory variables	VIF estimates
Age	2.129
Education	3.611
Household Size	4.002
Household income	1.822

Table 2 present the VIF test result for multicollinearity between the dependent variable and the explanatory variables

used in the Tobit equation. The result revealed that there was no significant collinearity between the explanatory variables and the dependent variables in the model. The result implies that the estimates of the Tobit model have minimum variance, consistent and probably unbiased.

Determinants of Youths Willingness to Participate in Agricultural Activities

The Akaike information criterion (AIC) shows whether the distributions best fit the data in the model. The smaller the AIC, the more preferred the model (Stata Corp, 2007). The AIC in the analysis was 26.49 suggesting that the distribution best fits the data in the model.

Education has a coefficient of 0.0095 and significant ($P < 0.10$). This implies that youths who have acquired some form of education are more likely to adopt and participate in new farming activities earlier and faster than the uneducated ones. This result is synonymous with earlier empirical studies by Madukwe, (1995); Ayannale and Bamire, (1996); Etim et al, (2013); Etim and Benson, (2016). Result of this study support the hypothesis that human capital plays a positive role in the acquisition and evaluation of new ideas (Etim and Edet, 2013), and that education hastened the timing and willingness to participate and adopt new farm technology (Weir and Knight, (2000); Martins et al., (2010). Studies by Nkamleu and Adesina (2000) in Cameroon; Bacha et al (2001) and Zegeye et al (2001) in Ethiopia; Chirwa (2005) in Malawi; Chianu and Tsujii (2004) in Nigeria. Abdulai and Huffman (2005) in Tanzania; Lapar and Pandey (1999) in Philippines are also in conformity with the result of this study.

Age could have either a positive or negative effect on the willingness of youths to participate in new agricultural

programme or activity. Younger youths are more likely to adopt new ideas and participate in farming activities and vice versa. In this study, as shown in table 3, age is positively signed and significantly ($P < 0.05$) impacts on the willingness of youths to participate in new activities. In this study, age indexes experience and services as evidence for human capital implying that youths with more years of experience acquired accumulated years of observation and experimentation with various agricultural techniques are more likely to adopt new ideas and willing to participate in new agricultural activities faster than youths with less experience in farming. Result of this study corroborate earlier findings by Ofuoku et al (2008); Etim and Okon (2013); Khai et al (2008); Aye and Mungatana (2010) and Etim and Benson (2016) who documented that increased experience in farming may also enhance critical evaluation of the relevance of better production decisions including efficient use of productive resources. The marginal effect of age is 0.0170 implying that a unit increase in age of the youth will result in 1.7 percent rise in the probability or willingness to participate in new agricultural activity.

The variable household income has a coefficient of 4.4345E-07 and is positively significant ($P < 0.01$). This implies that youths in families with higher incomes were likely to adopt new ideas and willing to be involved in new agricultural activities. The marginal effect of household income of 0.0963 imply that a unit increase in household income of youths will result in 9.63 percent increase in the probability or willingness to participate in new agricultural activity. Similar findings was obtained in a recent and empirical study by Etim and Benson (2016) in their study of vegetable farmers willingness to pay for organic fertilizer in the humid tropic.

The coefficient of household size is negative and significant ($P < 0.05$) signaling that youths in larger sized families are less likely to adopt new ideas and participate in new agricultural activities and vice versa. The marginal effect of 0.0169 suggests that a unit increase in household size will reduce the probability or willingness of youths to participate in new agricultural activities.

Table 3. Probit Model Estimates of the determinants of willingness of youths to participate in agricultural activities.

Variable	Coefficient	Standard error	z-test	P-value
Constant	0.9354	0.1773	5.2751	0.0001**
Sex	0.0391	0.0555	0.7041	0.4814
Age	0.0138	0.0058	2.3869	0.0170**
Household income	4.4345E-07	2.6663E-07	1.6631	0.0963*
Membership in social groups	0.0231	0.0094	2.457	0.0231**
Access to credit	0.0493	0.0687	0.7174	0.4713
Diagnostic Analysis				
Log-Likelihood	-4.24488	Akaike criterion 26.48978		
Schwarz criterion	48.88750	Hannan – Quinn 35.51766		

Note: *, **, *** represent significance at 10% 5% and 1%

The coefficient of membership in social group is positive and significant ($P < 0.05$). This implies that youths who are members of social organizations were more likely to participate in new agricultural activities and vice versa. The marginal effect of 0.0231 means that a unit increase in membership of social organization will increase the willingness of youths to participate in farming activities. Result corroborates the finding of Nkamleu (2007) who found that membership to groups may enable youths to learn about a technology via other farmers and from other development agencies.

4. Conclusion

The study analyzed the factors that affect the willingness of youths to participate in new agricultural activities. Using the probit model analysis, biased and consistent estimates were obtained. Results revealed that most important factors affecting the willingness of youths to participate in agricultural activities were age, household income, household size and membership in social groups. Findings revealed that younger youths will be more willing to participate in new farming activities faster than older youths. Also, youths who earned higher incomes had a higher probability of participating in new agricultural activities than those who earned lesser income. Policy decisions aimed at increasing the incomes of youths particularly the poorest of the poor should be pursued.

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