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FARM-LEVEL DETERMINANTS OF ACCESS TO LAND BY ARABLE CROP FARMERS IN IKWUANO LOCAL GOVERNMENT AREA OF ABIA STATE, NIGERIA

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ABSTRACT

This study was carried out to examine the farm-level determinants of access to land by arable crop farmers in Ikwuano Local Government Area of Abia State, Nigeria. A multistage sampling technique was used to select 80 arable crop farmers from four autonomous communities. Data were analysed using descriptive statistics and Logit regression model. Result from the descriptive statistics showed that (55%) of the farmers were male headed, majority of the farmers had secondary education; while farm size was relatively low. With respect to the methods of land ownership and acquisition, the result revealed that majority of the lands for arable crop farming were owned or acquired through inheritance (92.5%), communal (72.5%) and purchase (50%) respectively. Consequently, the level of access to land for arable crop farming showed that 42% of respondents had moderate access, 35% had high access, while 22% had low access to land for arable crop farming. The result of the logit regression indicated that age, sex, household size, number of years spent in school, cooperative membership and credit amount significantly influenced access to land by arable crop farmers. Communal land ownership and male dominance were identified as constraints to access to land for arable crop farming in the study area. The study therefore, recommended strengthening of relevant institutions so as to enable farmers' access required land for arable crop farming without gender disparity.

Key words: farm-level, determinants, land access, arable crops and Logit

INTRODUCTION

The basis of agricultural production and the most important production factor for farmers is land. Land is a very strategic socio-economic asset, particularly in poor societies where wealth and survival are measured by control of, and access to land (Titilola and Jeje, 2008). Marie *et al.* (2014) noted that, land is the most important economic resources most particularly for developing countries with largely rural populations and most people earn a living through agriculture. It has remained an important factor of production since the creation of man and a fundamental factor of production in the agricultural sector all over the world and provides a basis for crop production in Nigeria and sub-Saharan Africa. Secure access to productive land is critical to millions of poor people living in rural areas and depending on agriculture, livestock or forests for their livelihood. It reduces their vulnerability to hunger and poverty; influences their capacity to invest in their productive activities and in the sustainable management of their resources; enhances their prospects for better livelihoods; and helps them develop more equitable relations with the rest of their society, thus contributing to justice, peace and sustainable development, International Fund for Agricultural Development, IFAD (2008). Access to land and tenure security have a marked effect on expectations of a return on an investment of both labour and capital and many development thinkers have attributed the weakened incentives to invest in agriculture to the poor access to land and land ownership title (Migot-Adholla and Bruce, 1994). If farmers do not have secured land rights, they will have few incentives to engage in sustainable agricultural production or to consider the long-term environmental impact of over-exploitation of land's nutrients (Oyekale, 2012). Mintzer (2010) and Henri-Ukoha *et al.* (2014) asserted that most farmers work on small parcels of land that are either leased to them or have been acquired through family bonds or purchase. But all too often, they are not given the means to produce as much as they want.

IFAD (2008) noted that rural poverty is strongly associated with poor access to land, either in the form of landlessness or because of insecure and contested land rights. Secure rights to land are

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also a source of financial security, as collateral to raise credit or as a transferable asset that can be sold, rented out, mortgaged, loaned or bequeathed. Moreover, secure access to land creates incentives for the user to invest labour and other resources in it, so as to maintain or enhance its value and sustain its productivity, and to access social and economic development opportunities.

Land access and tenure security has long been identified as one of the key elements necessary to bring about higher levels of investment and access to credit, for identifying agricultural production, facilitate reallocation of production, encouraging better natural resource management and sustainable development and allow economic diversification and growth. Lack of access to land through ownership or secured tenure affects agricultural productivity. If farmers do not have secured land rights, they will have little or no access to credit or the benefits of membership.

Therefore an understanding of the farm-level determinants of access to land among arable crop farmers will provide policy makers with information to improve land accessibility that can contribute to increasing food production potential among arable crop farmers. The study specifically examined the socioeconomic characteristics of arable crop farmers; identified the methods of land ownership and acquisition; estimated the level of access to land by arable crop farmers; estimated the determinants of access to land by arable crop farmers, and identified major constraints militating against land access and acquisition in the study area.

MATERIALS AND METHODS

The study was carried out in Ikwuano Local Government Area (LGA) of Abia State, Nigeria. The local government lies between longitudes 7.34° and 7.56°E and Latitudes 5.26° and 5.43°N in the tropical rainforest area of the south eastern Nigeria, and 122 metres above sea level. The local government has an area of 281km^2 and a population of 137,993 (NPC, 2006). It also has a land mass of about 600000km^2. It is made up of about 28 communities and is bounded by Ini LGA of Akwa Ibom State by the West and Umuahia North, on the North by Bende LGA and Umuahia South LGA, on the South by Itoro LGA of cross river state, and on the east by Ikono and Oforo LGAs in Akwa Ibom State. The people of Ikwuano engage mainly in farming, accounting for about 85% of the entire population while petty trading and transport business occupies the minor sector. Ikwuano has a vast area of arable land; her soil is very rich and good for agriculture. In most parts, the soils are of sandy loam to clay, well aerated and well drained. Major crop cultivated are cassava, rice, melon plantain, banana etc while livestock such as sheep, goat and poultry are reared in the area. A multi-stage sampling technique was employed in selecting 80 respondents for the study. The first stage involved the random selection of four autonomous communities from the LGA. The second stage involved the random selection of two villages from each selected community making a total of 8 villages for the study while the final stage involved the random selection of 10 arable crop farmers from each of the selected villages which gave a total sample of 80 arable crop farmers used for the study. Data for the analysis were obtained basically from primary sources. Data collected were analyzed using simple statistical tools such as means and percentages, as well as econometric model such as the Logistic regression model.

Logit regression model was employed to estimate the determinants of access to land by arable crop farmers in the study area. The functional form of logit model is specified as follows (Gujarati, 2004):

$$Pi = E\left(Y = \frac{1}{Xi}\right) = \frac{1}{1+e^{-(\alpha + \beta Xi)}} = \frac{1}{1+e^{-(Zi)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

For ease of exposition, the logit becomes a linear function of different explanatory variables:-

$$L_i = \ln\left(\frac{Pi}{1 - Pi}\right) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_{2\ldots\ldots+} \beta_9 X_9 \ldots\ldots \beta_n X_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

where, Y is measured as:

$$\frac{\text{Area of Land Farmed (ha)}}{\text{Area of Land Needed for Farming (ha)}},$$

P_i is the probability of having access to land,
$1 - P_i$ is the probability of non- access to the land
L_i is the logit,
X_i is a vector of explanatory variables such as
X_1- Age (Years)
X_2 - Sex (Male = 1, Female = 0),
X_3 - Household Size (Number)
X_4 - Education (years)
X_5 - Objective of farming (Commercial = 1, Subsistence = 0)
X_6 - Co-operative membership (Member = 1, Otherwise = 0)
X_7 - Farming Experience (Years)
X_8 - Annual Income (₦)
X_9 - Access to Credit (Yes = 1, Otherwise = 0)
β_n is a vector of parameters to be estimated. It should be noted that the estimated coefficients do not directly indicate the effect of the change in the corresponding independent variables on probability (P) of the outcome occurring. Rather the coefficients indicate the effect of individual explanatory variables on its log of odds L_i (Neupane *et al*., 2002). Therefore, to indicate the effect of explanatory variables on the odds, the odds ratio is an appropriate tool.

RESULTS AND DISCUSSION

The Socio-Economic Characteristics of the Respondents in the Study Area

The socio-economic profile of arable crop farmers is shown in Table 1. The result showed that (55%) of the farmers were male household heads while (45%) were female household heads. This implies that arable crop farming in the study area is primarily male dominated. This could be due to the cultural and religious background of most African communities that still put women's enterprise under their husbands' care as a form of submission. This agrees with the study of Bamire (2010) and Tsue *et al.* (2014) on the effects of tenure and land use factors on food security among rural households in the dry savannas of Nigeria, where majority (92.5%) of the respondents were males.

The age distribution of the respondents showed that 20% were between 40-47 years, 58-54 years, and 55-61years, respectively; while 25% and 15% of them were between the ages of 34-47 and 27-33 years respectively. The mean age was 41.3 years which implies that majority of the farmers were within the active and economic age bracket of between 27-61years. The result agreed with the findings of Ogunwale (2000), Ezedinma and Otti (2001) and Tsue *et al.* (2014) that the mean age of farmers in Nigeria was between 45-48 years. The level of education of the farmers suggests that majority (60%) of them attended secondary school, 15% of the respondents had primary education, 20% of them had tertiary education while 5% of them had no formal education. The mean years spent in school was 11.6 years implying that majority of the arable crop farmers in Ikwuano LGA had formal education and could read and write. Household size of the respondents showed that 40% of the arable crop farmers had household size of between 4 and 6 persons, 25% of the arable crop farmers had household size of between 1 and 3 persons, 20% had household size of between 7 and 9 members while 15% had household size of 10 and 12 members. The mean household size was 6 persons implying that arable crop farmers in the study area have moderate household size. With the moderate household size, it is expected that arable crop farmers should have access to the required land needed for farming in the study area. This tends to agree with Obamiro *et al.* (2003) who reported that the average number of people in a farm household was seven. The farm size distribution of the respondents showed that 40% had farm size of between 0.5-0.9 hectares, 25% had between 1-1.4 hectares, 23.75% had between 1.5-1.9 hectares, while 2.5% and 8.75% of the respondents had between 2.0-2.4 hectares and 2.5-2.9 hectares, respectively with mean farm size of 1.28 hectares. This suggests that land-man ratio in the study area is below the national average of 2.5 hectares and that majority of the arable crop farmers are subsistence farmers.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percentage
Sex (HH Head)		
Male	44	55
Female	36	45
Age (HH Head)		
27 – 33	12	15
34 – 40	20	25
40 – 47	16	20
48 – 54	16	20
55 - 61	16	20
Mean $\bar{X}$ = 41.3		
Level of Education (HH Head)		
No formal Education	4	5
Primary	12	15
Secondary	48	60
Tertiary	16	20
Mean $\bar{X}$ = 11.6		
Household Size		
1 – 3	20	25
4 – 6	32	40
7 – 9	16	20
10-12	12	15
Mean $\bar{X}$ = 6		
Farm Size		
0.5 – 0.9	32	40
1.0 – 1.4	20	25
1.5 – 1.9	19	23.75
2.0 – 2.4	2	2.50
2.5 - 2.9	7	8.75
Mean $\bar{X}$ = 1.28		
Access to Credit		
Access	25	31.25
No Access	55	68.75
Farming Experience		
4-9	20	25
10-16	45	56.25
17-22	15	18.75
Mean $\bar{X}$ = 11.85		

Source: Field Survey, 2017 HH=Household Head

The distribution of the respondents according to access to credit showed that majority (68.75%) had no access to credit while 31.25% had access to credit facility in the study area. The low percentage of farmers with access to credit facility could result to low access to arable land since land is needed as a security for granting credit to prospective borrowers. The farming experience of the respondents showed that majority (56.25%) of the arable crop farmers had 10-16 years of farming experience, 25% had 4-9 years farming experience, while 18.75% had 17-22 years of farming experience. The mean farming experience was 11.85 implying that the respondents were experienced farmers, hence, they had over the years acquired enough farming experience needed to access the number of land needed for farming. This conformed with the work of Tsue *et al.* (2014), which indicated that the majority of arable crop farmers had an experience far above 10 years.

Methods of Land Ownership and Acquisition

The method of land ownership and acquisition in the study area is presented in Table 2. From Table 2, the major form of land ownership and acquisition was through inheritance (92.5%), communal (72.5%) and purchase (50%). Land ownership by inheritance is prevalent and has always been a dominant form of land ownership in Africa. This is in line with Ekenta *et al.* (2012) who found that land inheritance was the most common ownership

structure among male farmers while females purchased land used in agricultural production. Other forms of land acquisition as observed in the study area included; lease holding, (26.2%), pledge (4.2%), sharecropping (3.3%), and grant (2.5%).

Level of Access to Land by Arable Crop Farmers

The level of access to land by arable crop farmers is shown in Table 3. The level of access to land was categorized as high, moderate, and low access respectively using the index of land access generated. The result indicates that 42% of the arable crop farmers had moderate access to the land they needed for farming, 35% had high access to the land they needed for farming, while 22% had low access to the land they needed for farming. The high percentage of farmers with moderate access to land they needed for farming suggests that not all farmers have access to arable land.

Table 2: Method of land ownership/acquisition

Method of land ownership	Frequency*	Percentage%
Inheritance	74	92.5
Communal	58	72.5
Purchase	40	50
Grant	2	2.5
Lease holding	21	26.2
Pledge	9	4.2
Sharecropping	7	3.3
Total	211	

Source; Field Survey, 2017 Note * Multiple responses

Table 3: Level of access to land of arable crop farmers

	Level of access	Frequency	Percentage%
0.1-0.3	High	28	35
0.4-0.6	Moderate	34	42
0.7-1.0	Low	18	22
Total		80	100

Source: Field Survey, 2017

Table 4: Logistic estimate of access to land by the arable crop farmers in the study area

Access	Coefficient	Standard Error	Z	P>|z|
Age	.2366511	.1164392	2.03	0.041*
Sex	1.627878	.3528659	4.61	0.000***
Household Size	-.221708	.1124747	-1.97	0.094*
Years Spent in School	.1729794	.0329737	5.25	0.000***
Objective of Farming	.6212006	.8248716	0.75	0.451
Cooperative Membership	2.602403	1.388662	1.87	0.076*
Farming Experience	.0722917	.0607337	1.19	0.234
Annual Income	8.83e-07	4.42e-06	0.20	0.842
Credit Access	1.214536	.5745272	2.11	0.036*
Constant	-13.36118	6.00313	-2.23	0.026
Log Likelihood	-12.895202			
Number of observation	80			
Pseudo R^2	0.6187			
Chi Square	9.33***			

Author's Computation, Stata 12 Note: * significant at 10%, *** significant at 1%

Determinants of Access to Land by Arable Crop Farmers in Ikwuano LGA, Abia State

The determinants of access to land by arable crop farmers in Ikwuano LGA of Abia State is presented in Table 4. Logit regression model was employed to estimate the determinants of access to land by arable crop farmers in Ikwuano, Abia state, Nigeria. The model showed a good fit with a number of significant variables with log likelihood of -12.89 and Chi Square value of 9.33***. The result showed that age, sex, household size, number of years spent in school, cooperative membership, and access to credit significantly influenced farmers' access to arable land in the study area.

The coefficient of age of the household head was positive and significantly related with access to land by arable crop farmers at 10% Level. This implies that older farmers more often than not have greater access to land for arable crop farming than younger ones. The coefficient of sex of the household was positive and significant at 1% level, thus indicating that male headed households had greater access to land for arable crop farming in the study area. This suggests existence of gender disparity in land distribution in the study area. The coefficient of household size of the respondent was negative and significant at 10% level. This implies that larger households have experience more difficulty in acquiring land for arable crop farming in the study area. Also, given the large household size of some families, available land are distributed among the large number making access to land needed for farming cumbersome.

The coefficient of number of years spent in school was positive and significant at 1% indicating that more educated farmers are more likely to have access to land for arable crop farming than less educated rural farmers. This implies that increase in the level of education leads to increased access to arable land needed for farming by the farmers in the study area. As noted by Gutu *et al.* (2012), household heads with higher level of education have better level of planning, access and understanding of early warning information, better decision making skills during natural shocks, alter agricultural operation and higher access to land relative to others. The coefficient of membership of co-operative society was positive and significant at 10% level of probability. Co-operatives and other similar societies play important roles in advancing the interest of the individuals and collective members and as such may help members to acquire and access arable land. The coefficient of access to credit was also positive and significant at 10% level of probability. This is in line with *apriori* expectation that with large farm land credit institutions are likely to lend credit to prospective farmers that may want credit to boost their production.

Table 5 Constraints to arable land acquisition in the area

Constraints	Frequency*	Percentage	Rank
Communal land ownership	55	68.75	1st
Male superiority in land sharing	35	43.75	2nd
Present land ownership structure	25	31.25	3rd
Government encroachment	11	13.75	5th
High price of land	10	12.5	6th
Cultural barrier	5	6.25	7th
Lack of collateral to access credit for land purchase	20	25	4th

Source: Field Survey, 2017 Multiple responses*

Major Constraints to Access to Land

Major constraints militating against land access and acquisition in the study area is presented in Table 5 The result on Table 5 shows the following perceived constraints to land access by arable crop farmers in Ikwuano LGA of Abia State: lack of collateral to access credit for land purchase (25%), Cultural barrier (6.25%), High price of land (12.5%), Government encroachment (13.75%), Present land ownership structure (31.25%), Male superiority in land sharing (43.75%) and communal land ownership (68.78%). The result evidently indicates that the major constraints to access to land were communal ownership system of land and Male superiority in land sharing. This agrees with Deininger *et al.* (2014) who identified weak protection of rights in practice, large gaps in female land access, and limited outreach and effectiveness of institutions to record rights and adjudicate disputes as major constraints to land acquisition in 10 African countries and contrary to Adamu, (2014) who found that financial constraint and shortage of land were the main factors affecting land acquisition among the farmers in Osun State. On the other hand, male superiority in land sharing and land ownership structure adversely constraint farmer's access and use of land for agricultural purposes. This view was stressed by Nwadiaro and Okoroafor (2011) when they reported that potential farmers especially women are denied many of their fundamental rights (including access and use of land) for no other reason.

CONCLUSION

From the result it can be deduced that access to land and land distribution is skewed against women, though it was moderate for both men and women. Also majority of the respondents had no access to credit facility as a result their access to arable land and farm sizes were very low. The major method of land ownership was through inheritance and communal. It was also found that men had more access to arable land than women and that as ones age increases his/her access to land improves also. Large household size was found to be inversely related to access to land, while higher education of the farmers was found to be directly related to access to land. Farmers that belong to one or more cooperatives and had higher years of experience had more access to arable land than those that belong no-where.

RECOMMENDATIONS

- The study recommends the boosting of agricultural extension services in the area as farmers who are more educated and informed will have more access to land than otherwise.
- Local government councils should grant land use rights to both men and women in rural communities to improve their access and use of land for agricultural purposes.
- Group formation and membership should be promoted and encouraged to enhance women purchasing power through access to credit, and common voice in accessing communal lands.

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