DETERMINANTS OF RATE OF ACCESSIBILITY TO PRODUCTIVE RESOURCES AMONG POULTRY FARMERS IN OBOWO LOCAL GOVERNMENT AREA, IMO STATE, NIGERIA: A GENDER SITUATION ANALYSES

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Abstract

Access to resources implies the ability to use resources and or benefits and make short- term decisions on these resources. Inadequate productive resources/ inputs is an obstacle to agricultural growth. Thus, accessing productive resources such as land, modern inputs, technology, education and financial services is a critical determinant of agricultural productivity. Hence, the study estimated the rate of gender accessibility to productive resources in poultry farming in Obowo Local Government Area of Imo State, Nigeria. It employed the multistage sampling technique to obtain data from one hundred and twenty respondents with structured questionnaire and the data were analysed using descriptive and inferential (multiple regression model) statistics. The result of the multiple regression analysis showed that among the variables tested; flock size, household size, years of experience, and annual income significantly affected rate of male poultry farmers' accessibility to poultry productive resources at varied levels of significance with an R^2 of 61.2%. Similarly, their female counterparts' rate of accessibility were significantly influenced by age, household size, membership of co-operatives, participation level and annual income at varied levels of probability with an R^2 of 74.4%. The study recommended that poultry farmers should be encouraged to belong to groups as this will help them access productive resources like credit from both government and non- governmental organizations.

Keywords: accessibility, determinants, gender, productive resources

Introduction

Poultry is categorically recognized as the livestock of the poor, and poultry production is part of most small holder farming systems. In sub-Saharan Africa, 85% of rural households keep poultry to supplement their main sources of livelihood (Sonaiya, 2007). In Nigeria, poultry farming is a common activity carried out by households both in rural and urban areas either for family consumption (subsistence) or for sale. For poultry business to thrive, there is need for resources like land, labour, capital and inputs like feeds, drugs, poultry accessories (feeding and drinking troughs) etc. Sida (2003) referred to resources as means and goods including those that are economic, like household income, productive like land, equipment, agricultural inputs (including labour) and opportunity to leadership and decision making, information, organization and time. Access to resource implies the ability to use resources and or benefits and to make short- term decisions on these resources. According to FAO (2011), access to productive resources such as land, modern inputs, technology, education and financial services is a critical determinant of agricultural productivity. Access to resources is one of the elements of women's empowerment and a base for the attainment of the sustainable development goals. Many international conferences have been held to improve rural women's equitable access to land in recent years. In 2007, the 4th World Congress of Rural women held in South Africa emphasized the need to give women equal access to productive resources including the right to land ownership and property, capital, appropriate technologies, market and information (Shahnaj, 2008). According to World Bank and ONE (2014), women face structural bias in access to agricultural inputs. Survey data indicates that female farmers are less likely to use improved seed varieties and purchased inputs (e.g. fertilizers) than men; reflecting their limited access to productive resources.

Despite the considerable participation, involvement and rendering of diverse services, women's role in livestock

production has often been underestimated or ignored (IFAD, 2007). Saito and Spurling (2000), observed that despite the significant role of female farmers, their level of productivity is reduced because agricultural technology has been manufactured on the assumption that farm management decisions are supervised, controlled and co-ordinated by men. This assumption leads to several other challenges as regards the success of female farmers' conditions: inability of agricultural extension workers to contact them; inaccessibility to credit inputs; inability to access important technological information; and limited incentive to increase productivity. Okoh, Rahman and Ibrahim (2010) noted that most policies designed at making agro-technological inputs available to female farmers in Nigeria were in actual fact directed towards men. However, it is evident that despite the associated benefits accruable from women participation in household livelihood, women face numerous challenges in agricultural participation such as under valuation of their potentials in agricultural production and activities due to lack of economic value placed on their work; problem of gender inequality in accessing production resources; and marginalization in the affairs of the nation, while the male/men's contributions are seen as central and sole focus of attention.

Women do not get the same access as men to critical farm resources and services such as farm land, credit and improved input due to cultural, traditional and sociological factors (Tangka, Jabbar, and Shapiro, 2000). Therefore, it could be concluded that women across Nigeria and Africa at large are disadvantaged relative to men for various reasons which are yet to be ascertained. Although, women carry out the leading role in poultry related activities, they gain less access to production improvement techniques than men; hence an attempt to improve productivity in rural poultry farming suffers (Alem, 2017). Therefore, identifying the factors that determine rate of gender accessibility to poultry production resources in Obowo LGA of Imo State became imperative. The objectives of the study were to ascertain the rate of accessibility and analyze the factors that determine the rate of gender accessibility to poultry productive resources in the study area.

Methodology
This study was carried out in Obowo LGA of Imo State, Nigeria. Its headquarters is in Otoko; housing 14 communities. It lies between latitude $4^{\circ}45'$ and $7^{\circ}15'$North and Longitude $6^{\circ}50'$ and $7^{\circ}25'$ East of the Greenwich meridian. The population of Obowo LGA was 117,432 persons with the 2006 census, and a projected population of 161,700 persons in 2016. It has a population density of $1.648/km^2$ and covers a land mass of $98.12km^2$ (NBS, 2018). Obowo experiences both rainy and dry seasons; the rainy season begins in April and lasts until October with annual rainfall varying from 1,500mm to 2,200mm. An average annual temperature above 20°C (68.0 °F) creates an annual relative humidity of 75%, with humidity getting to 90% in the rainy season. The major occupation of the people

include; farming and fishing. Obowo people produce a large quantity of palm oil, kernel, local baskets and brooms. The people of Obowo are into livestock production, ranging from goat, sheep, piggery and poultry production which is one of the reasons for selecting it as a study area. Crops produced include; Cucumber, Tomatoes, Yam, Cocoyam, Fluted Pumpkin, Okra and Cassava. Multistage sampling technique was employed in the selection of respondents for this study. This involved three (3) stages. In the first stage, a random selection of six (6) communities out of fourteen communities was done. In the second stage, two villages were randomly selected from each of the communities earlier selected giving a total of twelve villages. In the third stage, 5 male and 5 female poultry farmers were randomly selected from each of the twelve (12) villages, giving a total of 60 male and 60 female poultry farmers (120). Data were collected with well-structured questionnaire and analysed with the mean score and multiple regression model which was employed by Okoh *et al.* (2010) in similar study.

Model Specification
The multiple regression equation in its linear form is explicitly expressed thus;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon$$
Where;
Y = Rate of resource accessibilty(%)
X_1 = Age of men/women (years),
X_2 = Flock size (number),
X_3 = Household Size (number),
X_4 = Experience in poultry farming (years),
X_5 = Co-operative membership (dummy 1 = Yes, 0 = No
X_6 = Level of Participation in farming (dummy 1 = high, 0 = low),
X_7 = Income (N)
While β_1-β_7 are coefficients to be determined and ε is the error term

Results and Discussion

Rate of Accessibility to Poultry Farm Resources by Gender
The rate of accessibility of male and female poultry farmers to poultry farm resources are presented in Table 1. The result shows that majority of the male and female poultry farmers had access to labour (91.6% and 87.0%), access to improved chicks (87.6% and 81.6%), and good water supply (87.6% and 72.4%) respectively. The result also shows that more than half of the female poultry farmers had access to vaccines (67.0%), credit facilities (64.0%) and extension services (64.6%) compared to their male counterparts (74.4%, 78.0%, 82.4%). This shows a variation in the rate of access to poultry production resources by gender which also reflected in the grand mean (male = 4.18 and female = 3.61). A similar result was observed by Rahman *et al.* (2007) that women had above 50% access to only resources like labour and good water, whereas, their access rate was below 50% for resources such as

improved chicks, conventional feeds, vaccines and drugs, credit facility as well as extension services.

Analysis of Factors influencing rate of male poultry farmers' accessibility to poultry production resources in Obowo LGA

In other to analyze factors that influenced the rate of male poultry farmers' accessibility to poultry farm resources, the multiple regression model was estimated and the result presented in Table 2. Among the variables tested, flock size, household size, years of experience and annual income were statistically significant at various probability levels. Specifically, the coefficient of flock size was positive and significant at 5%, implying that the more the number of birds in a poultry farm, the greater the access to productive resources, for instance it will be easier for the farmer to use it as a collateral to obtain credit from financial institutions. This finding corroborates that of Okoh *et al.* (2010) who stated that the higher the flock size, the more the chances of gaining financial resources such as credit facilities. The coefficient of household size was positive and significant at 5.0% level. This implies that as the number of people in a household increases, knowledge, ideas and physical strength will be pooled together for production processes. This is in line with *a priori* expectation and the findings of Solomon (2008) who observed that household size statistically influenced access to productive resources and other activities. The coefficient of years of experience in poultry production was positive and highly significant at 1.0% level. This implies that the higher the years of farming experience of the male poultry farmers, the more they are able to access and efficiently utilize poultry production resources. Agricultural knowledge such as production, operation, and management increases with increase in years of experience. This accumulated skills and knowledge help farmers maximise efficient use of agricultural inputs such as animal feed, drugs, and labour input (Guancheng *et al*., 2015). Olomola (2001) added that years of farming experience positively influenced productivity and efficiency due to prudent access and utilization of production resources overtime arising from acquired practical knowledge through trial and error over time. The coefficient of farm income was positive and significant at 5.0% level. This implies that the higher the income of the male poultry farmers in the study area, the more capital will be available to purchase resources required for their farms. This agrees with the observations of Karlan *et al*. (2012) that when income or finance improves, the farmer can adopt better technologies, purchase inputs, or make other decisions that can improve the efficiency of his business. The result further shows that the functional forms (linear, exponential, semi-log and double log) of the Ordinary Least Square (OLS) regression were statistically significant at 1.0% probability level implying that any of the functional forms was adequate in estimating and explaining the factors influencing rate of male poultry farmers' accessibility to farm resources in the study area. However, semi - log function provided the best fit model and was chosen as the lead equation based on the highest value of the coefficient of multiple determination (R^2), F-ratio and number of significant variables. The F-value (11.720) was significant at 1.0%, implying that the model was good and that the joint effects of all the included variables were significant. The coefficient of multiple determination (R^2) value of 0.612 indicates that the explanatory variables accounted for only 61.2% of the total variation in the analysis.

Analysis of Factors influencing rate of female poultry farmers' accessibility to poultry production resources in Obowo Local Government Area

In analysing the determinants of rate of female poultry farmers' accessibility to poultry production resources, the multiple regression model was used and the result presented in Table 3. From the Table, five variables were significant out of seven included in the model. The variables were age, household size, cooperative membership, participation level and income. Specifically, the coefficient of age was negative and significant at 10.0% level. This implies that the older the female poultry farmers, the less likely they were to access poultry production resources like labour. Physical strength is required in the process of agricultural production. For adults, it increases and culminates in middle age, leading to a greater investment in labour for the same activities performed earlier Guancheng *et al.* (2015). The result disagrees with the findings of Idiong (2005) who noted that as the poultry farmer grows older, she gains more experience in poultry farming, which in turn gives her the ability to combine resource inputs used in poultry production in an optimal manner, given the available technology. Also, Minot *et al*. (2006) noted that age is associated with accumulation of skills, experience and assets which could enhance farmers' accessibility to labour resource. The coefficient of household size was positive and significant at 5.0% level. This implies that increase in household size increases accessibility to poultry production resources. Female poultry farmers with large families especially those with higher number of adult children would have enough family labour for poultry farming activities. This result was expected and conforms to the findings of Isito *et al.* (2016) and Kedir (2007) that large household size could be a source of cheap family labour especially during the peak of farming activities when cost of hired labour is high. However, Ajadi *et al.* (2015) indicated that agricultural productive resources could be tangible (land, labour, capital and raw materials) or intangible (knowledge, ideas and market), hence a larger house hold size will witness a harvest of ideas that will enhance the productivity of the business. The coefficient of membership of cooperative societies was positive and significant at 1.0% level. This implies that group membership enhances accessibility to poultry production resources. Group membership ensures collective production, marketing, training, pooling of resources together and reduction of information asymmetry, thus, reducing transaction costs and ensuring economies of scale. (Rousan, 2007), stated that group participation helps to ensure accessibility to

credit, equipment and collective marketing which is more effective than individual marketing, thus, fostering participation of females in poultry farming. The coefficient of participation level was positive and highly significant at 1.0% level. This indicates that the more female poultry farmers participated in poultry farming, the more their income increased, likewise their access to poultry production resources. This is because increased participation in poultry farming increases the economic status of a female poultry farmer which often plays a significant role in accessing production resources and poultry farming generally (Gwary *et al*., 2015). The coefficient of income was also positive and significant at 5.0% level. This indicates that as the income of female poultry farmer's increases, their likelihood to access poultry production resources increases. This increase in income enables the farmer acquire the necessary resources required for the improvement of her poultry business. Karlan *et al*. (2012) and Cai *et al*. (2009) noted that improved income increases farmers' investment choices and provide them more effective tools to manage risks. It can also help them adopt better technologies, purchase agricultural inputs, or make other decisions that can improve the efficiency of their businesses. The Four functional forms (linear, exponential, double log and semi-log) of the regression model were tried out to determine the model with the best fit. The double-log functional form gave the best fit with an F-value of 3.739 which was significant at 1.0% level, implying that the model was good and that the joint effects of all the included variables were able to explain the variations in the dependent variable. The R^2 and adjusted R^2 values were 0.744 and 0.554 which implies that the variables in the model were able to explain 74.4% of the total variations in the rate of accessibility to poultry production resources by female poultry farmers

Conclusion and Recommendations

Based on the findings, it can be concluded that there was a significant difference in poultry farmers' (male and female) access to production resources. Variables like flock size, household size, years of farming experience and annual income significantly affected the rate of male poultry farmers' accessibility to productive farm resources at various levels of probability. Also, age, household size, membership of co-operative, level of participation and annual income significantly affected rate of female poultry farmers' accessibility to productive farm resources in the study area. Having noted that being members of co-operatives positively affected the rate of female farmers' accessibility to poultry production resources, female poultry farmers are encouraged to join groups as this will help them access productive resources especially financial resources from both government and non-governmental organizations. Also, selling their products as a group enables them take advantage of economies of scale, thereby increasing their income. Extension services are important to increased productivity, development and reduction of poverty. Women should be given the opportunity to have more contact with extension agents. This will help them get new and practicable ideas.

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Table 1: Rate of Gender Accessibility of Poultry Farm Resources in Obowo LGA of Imo State

Resources	Male Poultry Farmers								Female Poultry Farmers							
	Very low	Low	Moderate	High	Very high	Total	Mean	%	Very low	Low	Moderate	high	Very high	Total	mean	%
Labour	-	1(2)	5(15)	12(48)	42(210)	275	4.58	91.6	-	-	13(39)	13(52)	34(170)	261	4.35	87.0
Improved chicks		-	9(27)	19(76)	32(160)	263	4.38	87.6	8(8)	-	8(24)	32(128)	17(85)	245	4.08	81.6
Conventional feeds	1(1)	-	15(45)	15(60)	29(145)	251	4.18	83.6	3(3)	-	34(102)	13(52)	10(50)	207	3.45	69.0
Good water	-	-	6(18)	25(100)	29(145)	263	4.38	87.6	3(3)	1(2)	25(75)	18(72)	13(65)	217	3.62	72.4
Vaccine	1(1)		17(51)	15(60)	27(135)	247	4.12	82.4	5(5)	1(2)	30(90)	16(64)	8(40)	201	3.35	67.0
Credit facility	3(3)	9(18)	12(36)	14(56)	22(110)	223	3.72	74.4	7(7)	2(4)	28(84)	13(52)	9(45)	192	3.20	64.0
Extension service	3(3)	6(12)	13(39)	10(40)	28(140)	234	3.90	78.0	7(7)	3(6)	28(84)	13(52)	9(45)	194	3.23	64.6
Grand mean							4.18								3.61	

Source: Field Survey Data, 2020
Figurers in Parenthesis are the Likert Nominal Score. Decision: mean score of ≥ 3= accessed. Mean score < 3 = not accessed

Table 2: Regression estimates of factors influencing rate of accessibility of male poultry farmer to poultry production resources

Variables	Linear	Exponential	Semi log+	Double log
(Constant)	-7809.372	-534046.046	-68561.481	-2.372
	(-0.287)	(-5.262)***	(-1.337)	(-0.348)
Age	231.012	-6993.432	609.480	0.226
	(0.305)	(-0.267)	(0.475)	(0.128)
Flock size	23.800	24021.013	115.638	-0.970
	(0.411)	(1.911)*	(2.362)**	(-1.149)
Household size	4429.451	34774.887	9561.274	1.358
	(1.887)*	(2.025)*	(2.433)**	(1.177)
Experience	231.086	-6111.110	1541.530	0.797
	(0.945)	(-0.698)	(4.842)***	(1.355)
Cooperative membership	-1894.165	-531.924	17678.096	0.878
	(-0.096)	(-0.034)	(0.497)	(0.832)
Participation level	-243.114	-9093.109	-11226.119	-0.737
	(-0.014)	(-0.599)	(-0.313)	(-0.723)
Income	0.110	40922.423	0.425	0.847
	(3.122)**	(4.882)***	(2.496)**	(1.504)
R^2	0.361	0.565	0.612	0.140
Adjusted R^2	0.274	0.506	0.560	0.025
F-ratio	4.188**	9.630***	11.720	1.213

*Source: Field Survey data, 2020. *** Significant at 1.0% level,** Significant at 5.0% level , * Significant at 10.0% level. +lead equation*

Table 3: Regression Estimates of Factors Influencing rate of accessibility of female poultry farmers' to poultry production resources

Variables	Linear	Exponential	Semi log	Double log+
Constant	6176.211	8.759	28020.312	13.163
	(4.967)	(32.722)***	(3.293)**	(7.262)***
Age	15.021	0.003	-823.789	-0.178
	(1.933)*	(0.375)	(-1.750)*	(-1.856)*
Flock size	-105.740	-0.027	-242.966	-0.063
	(-0.612)	(-0.727)	(-0.545)	(-0.668)
Household size	47.235	-0.006	408.964	0.098
	(-0.268)	(-0.161)	(2.611)*	(2.869)**
Experience	-0.907	0.000	-2695.427	-0.543
	(-2.546)*	(-2.476)*	(-0.498)	(-1.379)
Cooperative membership	8200.299	0192344	2101241	46218.99
	(1.905)*	(0.24)	(1.785)*	(3.08)***
Participation level	2.396	0000205	099029	11702.76
	(2.82)***	(2.31)**	(3.53)***	(3.74)***
Income	203.916	0.045	474.290	0.107
	(2.201)*	(2.259)*	(2.003)*	(2.120)*
F-ratio	2.634*	2.513*	3.648**	3.739***
R^2	0.464	0.414	0.654	0.744
Adjusted R^2	0.201	0.189	0.333	0.554

*Source: Field Survey data, 2020. *** Significant at 1.0% level,** Significant at 5.0% level, * Significant at 10.0% level. +lead equation*