Evaluation of the Adoption of Improved Village Chicken Production Technologies in Ivo Local Government Area of Ebonyi State, Nigeria

Author's Details: [1]Ume, S I, [1]Okorokwo, M.O, [2]Onwujiariri, E B and [3]Agu,C I

.[2]Department of Animal ProductionTechnology. Federal College of Agriculture Ishiagu, Ivo Local Government Area Ebonyi State, Nigeria, [2]Department of Animal Health and Production. Enugu State Polytechnic Iwollo, Enugu State of Nigeria.

Corresponding Author; umesmilesi@yahoo.com

Abstract

Evaluation of the adoption of improved village chicken production technologies in Ivo Local Government Area of Ebonyi State, Nigeria was studied. The specific objectives of of the study were to; (i)describe the socioeconomic characteristics of the farmers, (ii) assess the level of village chicken production technologies adoption by the farmers, (iii)identify the breeds of local chicken reared by the farmers, (iv)determine the effect of the farmers' socio economic characteristics on their technology adoption, and (v) identify the constraints to village chicken production in the study area. Purposive and multi stage random sampling technique were used to select 100 farmers for the detailed study. Data for this study were collected through the use of a structured questionnaire and oral interview. Percentage response was used to address the objectives I, ii, iii and v and Tobit analysis was used to address the objective iv of the study. The results showed that majority of the respondents were married, youthful, fairly educated and well experienced. The result of level of technology adoption, also showed that housing of bird was most adopted by the farmers, while the least was use of artificial hatchery. In addition, majority of the respondents raised their birds through extensive system. Furthermore, determinant factors to the technology adoption were age, educational level, farming experience and extension contact. Most of the farmers in the study area, as well reared normal feather, followed by frizzle and the least was naked neck. Furthermore, technology too costly, inadequate information on village chicken management technology, high cost of feeds and concentrates, poor access to veterinary assistance, inadequate extension contact and high cost of drugs and medication were among limiting factors to the adoption of improved village chicken production technologies in the study area. The need to increase farmers' access to credit, extension contact and education were recommended.

Keyword; *Adoption, Improved, Village, chicken, Production, Technologies, Farmers*

Introduction.

Indigenous chickens strains is a common terminology given to those birds with characteristics features of being kept in the extensive system, scavenging in the free- range, have no identified description, multi – purpose and unimproved (Dauda, et al 2010). Furthermore, Village chicken requires low capital investment, little space for rearing, kept by poor resource women farmer and could thrive well under harsh conditions (Bourzat and Saunder, 2007)

In Africa, they are called family chickens, bush chickens, African hen, bush hen or Sahel chickens (Bessei,2007; CTA,2009; Andrew, 2011), and found throughout the rural areas of most developing countries as secondary to the major farming activities such as crops, cattle, sheep and goat production (ANRPD, 2005).

Indeed, rural poultry is an important element in diversifying household food security as chicken is a major source of animal protein, contains cancer-protective vitamin B, niacin, provides 72.0% of the daily value for niacin, source of vitamin B6 which is vital for energy production (Abdelqader, *et al* 2007; Aini, 2011). Furthermore, its meat is preferred in some rural and urban areas because of its better texture and strong flavour as compared to those of commercial chickens (Bell, *et al* 2009). The chicken egg contains proteins, with the egg white containing riboflavin; a yolk contains fat and 1.33gm of cholesterol per 100 gm and source of vitamin A and B, calcium, phosphorous, lecithin and iron (Boki, 2003). Moreover, the birds in some parts of Africa are raised to meet the obligation of hospitality to honoured guests, for religious and cultural rites and source of income to the rural farmers (Aboe, *et al* 2006).

.In most of the sub- Saharan Africa, village chicken production are faced with numerous challenges, include poor health, poor feeding, improper housing, and low production rate in terms of eggs, slow growth, low hatchability and mortality (Acharya and Kurmar, 2002; ANRPD, 2005;). Nevertheless, local chicken has the potential of increasing their productivity if , adequately managed in items of proper feeding, veterinary care and good housing (Kabatange and Katule, 2009). In the face of the aforementioned problems, it becomes imperative to explore interventions that could enhance the birds' production and productivity in order to avoid its possible extinction considering the fact that it forms an indispensible component of rural economy (Boki, 2003).

In line to that thought, several innovations (such as rearing of chicks in enclosures to avoid problems of predators before weaning, artificial brooding, use of supplementary feed to enhance their growth and artificial hatching of birds) have been developed in Nigeria through research and disseminated to the farmers by extension service arm of Agricultural Development Programme (ADP) for onward adoption (Nkematu, 2005). The adoption of technologies as opined by Ume, *et al* (2018) is important component of agricultural productivity, food security and sustainable economic growth. However, the adoption behaviour of farmers in general according to studies (Rogers, 2003; Unammah, 2003; Oladele, and Kareem, 2005; Onyenweaku, *et al* 2010; Ume, *et al* 2015)are affected by their personal and socioeconomic characteristics and these variables vary among localities and agricultural practices. The pertinent question now is, what are the personal and socio economic variables that affect farmers in Ivo Local Government of Ebonyi State, Nigeria. To answer the question posed above, this study was designed to evaluate the adoption of improved village chicken production technologies in the study area. The determination of factors influencing the adoption of technology could go a long way in aiding policy makers and extension planners for further modifications of the system. The study could further serve as source of research information for scholars for further studies in related subjects. The study also provides useful information for agricultural extension agents for effective dissemination of information to farmers.

Specifically, the objectives of the study are to;

(i)describe the socio economic characteristics of the farmers,

(ii)identify the breeds of local chicken reared by the farmers,

(iii)determine the effect of the farmers' socio economic characteristics on their technology adoption,

(iv)identify the level of village chicken production technologies adoption by the farmers and

(v) identify the constraints to village chicken production in the study area.

Materials and Methods

The study was carried out in Ivo Local Government Area (LGA) of Ebonyi State, Nigeria. It is located in latitude $5^0$56' and $6^0$59N'of equator and longitude 7031' and 7041E of Greenwich meridian. Its rainfall ranges from 1500-2500mm temperature range of 28-45oc and moderate relative humidity of 65%. Ivo Local Government Area comprises of two clans (Ishiagu and Akaeze), 22 villages and with Isiaka as administrative headquarters. Ivo Local Government Area is bounded in the North by Ohaozara, Aninri and Awgu Local Government Areas in the south by Bende and Afikpo south Local Government Areas; in the east by Onicha Local Government Areas and in the West by Umunneochi and Isiukwuato Local Government Areas of Abia State. It has areas of land of 360 sq km2 with population of 220,919 people (NPC 2006). The people are agrarians and still engage in other economic activities such as hunting, petty trading, civil services, vulcanizing motor mechanics, salon and tailoring

Multi-stage random sampling and purposive selection technique were used to select sub-circles and respondents. In the first stage, Ishiagu one of the two towns that made up of Ivo Local Government Area was purposively selected. This could be because of lots of farmers in the study area are into local chicken business and the study area is proximity to the researcher. Secondly, ten villages were selected from thirteen villages that make up the town. Finally, ten farmers were randomly selected from each of the towns. This brought to a total of one hundred (100) farmers for the detailed study. Well structured questionnaire and oral interview were used to collect information about the objectives of the study. Percentage response and Tobit model analysis were used to analyse the objectives.

Tobit Model Analysis

Tobit model was developed by Tobin and could be expressed according to Tobit(1957), as

$$Y^* = x\beta + e \quad \ldots\ldots(26)$$

Where β is a vector of unknown coefficient, x is a vector of independent variables, e is an error term that is assumed to be independently distributed with mean zero and a variance of S^2. Y* is a latent variable that is unobservable. If the data for the dependent variable is above limiting factor, zero is this case; Y is observable as continuous variable. If Y is the limiting factor, it is held at zero. This rushing is presented mathematically in the following two equations.

$$Y = Y^* \text{ if } Y^* > Y_0,$$

$$Y = 0 \text{ if } Y^* < Y_0 \ldots\ldots(27)$$

Where: Y_0 is the limiting factor. There two equations represent a censored distribution of the data. The Tobit model can be used to estimate the expected value of Y as a function of a set of explanatory variables (x) weighed by the probability that $Y_i \geq 0$ (Oladele, 2005).

Maddala, (2003) shows that the expected intensity of adoption

$$\sum(Y) \text{ is } \sum Y = x\beta\, f(z) + \alpha f(z) \text{ and } Z = x\beta/\sigma \ldots\ldots(28)$$

Where f(Z) is the cumulative normal distribution of Z, f(Z) is the value of the derivative of the normal curve at a given point (unit normal density). Z is the Z score for the area under the normal curve and S is the standard error of the error term. The coefficients for variables in the model, β do not represent marginal effect directly but the sign of the coefficient will give the researcher information as to the direction of the effect.

The adoption of village chicken rearing technology can be represented as: $y = f(x_1,x_2,x_3,x_4,x_5,x_6,x_7,x_8,x_9,x_{10} \ldots xn + e)$...…(29)

Where: y = technology adoption (1 for yes, 0, otherwise)

x_1 = farmers age (in years),x_2 = farmers level of schooling (yrs), x_3 = no. of extension visits (no.), x_4 = household size (No.), x_5 = flock size (No). x_6 = farming experience (Years)

x_7 = Gender (1 for male, 0, otherwise), x_8 = Raising System (dummy), e = error term.

Results and Discussion

Table 1 shows that 62.0% of the respondents for the study were female, while 38.0% were male. The implication is that village chicken production is female dominated enterprise. Furthermore, 1.0% of the respondents was less than 20 years, 42.0% were between the age ranged of 21-40 years, while 55.0% and 2.0% were between the age range of 41-60 years and above 61-80 years respectively. Age of farmers has a profound effect on technology adoption and the effect according to Onyenweaku, et al (2010) is thought to stem from years of observation and experimenting with various technologies, which often results in higher agricultural output, with village chicken production not exceptional.

Table 1 more so, reveals that 6.0% of the respondents had household size ranged from 1 - 3 persons, 47.0%; 4-6 person; 30.0%, 7 - 7 persons and 17.0%; 10-12 person. This finding is consistent with Bamire et al; (2002), who asserted that large family size is associated with more mouths to feed from the household farm output (chicken) with little left for sale. Also, 12.0% of the respondents had no formal education; while 80% had various levels of education. Educational attainment is a desirable condition for agricultural development, as it aids extension services in transferring research results for sustainable food production (Unammah, 2003).

Table 1 posited that majority of the respondents (77.0%) had farming experience ranged from 1-10 years; while 15.0% and 8.0% of the respondents had 11-20 years and 21-30 years farming experiences respectively. Farming experience according to Nwaru, (2006) is an indication of the practical knowledge acquired on how to overcome certain inherent problems associated with rearing for high yield to be achieved. Furthermore, 7.0% of the respondents had flock size of 1-5 birds 8.0%; 6-10 birds, 74%; 11-25 birds and 11.0%; 65-60 birds. Large flock size implies that the farmers operate beyond sustenance level. The low flock size in most rural household could be attributed to annual reoccurring decimal decimation oflocal birds by Newcastle diseases (NCD) and predators (Forssido, 2006). In addition, majority of the farmers (89.0%) raised their birds through extensive system. The birds are grazed on pasture land, and they are provided with shelter for sleeping at night and protection against inclement weather (French, 2003). More so, 5.0% of the sampled farmers reared their birds through intensive system, while 6.0% used semi-intensive system. Extensive system of birds rearing involves low input management as the birds are allowed to scout most of its feed (Katule, 2009).

The result of adoption of village chicken production technologies was summarized and presented in Table 2. 25.0% of the respondents fed their birds with supplementary feed such as maize, dried and grinded cassava, local fish meal and some fresh greens. Aboe, et al (2006) posited that during the dry season, village chicken can quickly develop vitamin deficiency because of the scarcity of succulent vegetables on the range. There is need to supplement their scavenging with other sources of minerals and vitamins like vitalyte. Most of the minerals available for scavenging are not concentrated enough in terms of energy because they contain a lot of crude fibre.

More so, 27.0% of the total respondents housed their birds. Birds are fully confined either in houses or cages and the birds are totally dependent on their owners for their requirements for life sustenance (French, 2003). Moreover, 11.0% of the respondents studied used artificial hatching. Bessei, (2010) reported that incubation can successfully occur artificially in machines which provide the correct controlled environment for the developing chicks with temperature regulations being the most critical. Furthermore, 23.0% of the total respondents used artificial brooding. Brooding of chicks could be through the use of a mother hen, foster hen, a lanthern, kerosene brooder, charcoal stove or charcoal placed in a metal container. If a foster hen is used, condition it for a day by giving it new chicks; where a lantern brooder or other heat source is used, place it in a cardboard box with ventilation holes upon a signal sack or wood shavings (Boki, 2003). This finding agreed with Casewel and Gunawane, (2006) who posited that extotic hybrid cocks help to improve the poor quality traits associated with local breeds.The poor quality traits as asserted by Katule, (2009). are slow growth rate, low hatchability and small body size.

Table 3 showed that 83.0% of the respondents reared normal feather. This finding is in conformation with Ibe, (2009) who posited that the normal feather performs better than the naked necked and frizzle in terms of body weight and body conformation and often used for breeding improvement of most native chicken population. Moreso, 70% of the respondents reared naked neck, which although commands very poor market but has advantage of low feed consumption and tolerant to high ambient temperature which is regarded as the most inhibitory factor to poultry production in hot climate (Katule, 2009; Bell and Abdou, 2015). In addition, 75% of the total respondents reared frizzle. Studies show that frizzle according to Bell, *et al*, (2008) has superiority in some production characteristics such as high growth rate and extensive muscle development and amongst others compared to other breeds.

Statistical test shows that the age of farmer as in Table 4 was significant at 10% and had indirect relationship to adoption of village chicken production technologies. This finding agrees with Andrew, (2011) who opined that individual's innovativeness, motivational and adoptive decreases as one is advancing in age.

The coefficient of household size was significant at 10% and positively related to the dependent variable. This findings is in consistent with Aini, (2011), who noted that relatively large household size has an obvious advantage in terms of farm labour supply in rearing management practices of the poultry production. This assertion contradicts Bamire et al; (2012), who reported that large household size that is predominantly dependents are more of consumers than producers.

The coefficient of educational level was positive and significant at 1% level, which agrees with the *apriori* expectation. Education tends to make people more receptive to innovation, risk averse and prudent in local fowl resources management, which would have positive influence on their outputs (Ume *et al*, 2009)

As expected, the coefficient of extension contact had direct relationship with technology adoption in village chicken and significant at 5%..Extension agent helps to disseminate information on the mode of application or usages of the technology as well as the availability of the technological inputs and the essences of new technologies in order to enhance farmers' output (Acharya and Kamar, 2012). In addition, extension agent through acting as a link between the innovators (Researchers) of the technology and users of that technology, could help to reduce transaction cost incurred when passing the information on the new technology to a large heterogeneous population of farmers (French, 2003).

Table 5 shows that majority (91.0%) of the respondents reported that the technology is too costly as constraints to adoption of improved village chicken production technologies. These technologies are not for poor resource farmers, of whom incidentally is the village chicken rearing population, consequently low productivity ensue.

Also, 67.0% of the respondents reported problem of Inadequate information on village chicken management technology, as these could help to increase survival rate of the chicks for high income to amass (Centre for Tropical Agriculture (CTA, 2009). High cost of feeds and concentrates were reported by 87.0% of the respondents. The high cost of grains and other feeding ingredients of birds could be attributed to the alternative uses of grains for human consumption and industrial uses; (Katule, 2009). As well, 91.0% of the respondents identified poor access to veterinary assistance as problems of optimizing their output. In most developing countries, veterinary post is urban based and in effect, very few rural farmers have access to this service (Bell, 2009).

The problem of inadequate extension contact was reported by 83.0% of the total respondents. This could be as a result of the refusal of extension agents to reside in the rural areas, inadequate mobility of the extension staff to meet up with their fixed visit schedules with the farmers and high extension - farmers ratio, consequently, low technology adoption (Ume, *et al* 2009). This finding is in line with Oladele and Kareem (2006) who opined that extension is medium for information dissemination in most developing countries. High cost of drugs and medication was reported by 75.0% of the farmers interviewed as a problem to adoption of village chicken production technologies. These drugs apart from being costly, most of them are substandard (Dauda, *et al*, 2010).

Too, low level of education was reported by 77.0% of the respondents as a limitation to adoption of village chicken production technologies. Okoye and Onyenweaku (2008) reported that education makes individuals to be more receptive to adoption of improved innovations and prudent in resource management for high production and productivity..

Furthermore, 63.05 % of the respondents reported on problem of poor access to credit as hindrance to the farmers from increasing their number of birds they raise. More so, credit helps farmers to procure exotic hybrid chickens, feed concentrates and other material inputs. Ume *et al* (2009) posited that most farmers could not have adequate access to credit because of their inabilities to provide the mandatory collaterals as demanded by lending agencies. Several works (Adene and Oguntade 2006, Acharya and Kamar, 2012, Ibe, 2013) were in line with this assertion.

Conclusion and Recommendation

The major conclusions drawn from the study were: Most of the respondents were females, aged, had moderate household size, experienced and had no formal education. In addition, normal feather was the most popular type of local breeds reared through extensive system. As well, the level of formal education, extension contact, age, gender, occupation and farming experience were the major determinant factors to the adoption of improved village chicken production technologies in the study area. Also, the constraints to improved village chicken production were technology too costly, high cost of feeds and concentrate, inadequate information on village

chicken management technology, poor access to veterinary assistance, inadequate extension contact, high cost of drugs and medication low level of education and poor access to credit.

Based on the results, the following recommendations were proffered;

(1)There is need for policies options aimed at increasing farmers' access to credit facilities, veterinary assistance, and extension contact by appropriate government authority.

(2) Jobless youths should be encouraged to adopt village chicken production as vocation, since the enterprise requires low capital inputs.

(3) Extension services should be made more efficient and effective to meet with the needs of the farmers through motivation of the change agents.

(4) Farmers must be exposed to adult education, seminars and conferences and workshops in order to enhance their skills and prudency in resource use.

(5)Experienced farmers should be encouraged to remain in production through provision of farm inputs at subsidised prices by Ministry of Agriculture and Natural Resources and any other appropriate government agencies

(6) This study has shown that gender dominated village chicken production in the study area. Therefore, policies and programmes that would favour women in the redistribution of agricultural inputs should be put in place.

(7)There is need to increase farmers' access to credit through microfinances and commercial banks at affordable interest rate and collateral

References

i. *Abdelqader A. Wollny CA, Gauly M (2007) Characterization of Local Chicken Production Systems and their potential under different levels of management practice in Jordan. 39:155-164.*
ii. *Aboe PAT, Boa-Amponsem K, Okantah S.A, Buler E.A, Dorward PT, Bryant M.J. (2006) Free-range village chickens on the Accra Plains. Ghana. Their husbandry and productivity, Tropical Animal Health and Production. 38:235-248.*
iii. *Adams, M.E. (2011). Agricultural Extension in developing countries. International tropical Agriculture series. 98 p.*
iv. *Adene D.F and Oguntade, A.E. (2006). The structure and importance of the commercial and village based poultry industry in Nigeria. FAO (Rome). 120pgs.*
v. *Acharya, R.M. and Kumar A. (2012). Performance of Local birds in South Asia Indian Poultry Industry yearbook. 7th edition.*
vi. *African Network for Rural Poultry Development (ANRPD). (2005). Smallholder rural poultry and sustainable development in Africa empowering women, generating income employment and improving nutritional status. African Network for Rural Poultry Development Workshop, Addis Ababa, Ethiopia, June 4-13.*
vii. *Aini I. (2011). Indigenous Chicken production in South-East Asia. World Poultry Science Journal, 46:25-132.*
viii. *Alene, A.D., Poonyth, D. and Hassan, R.M. (2013); Determinant of adoption and intensity of use of improved yam varieties in the central high lands of Ethiopia. South African Journal of Agricultural Economics 12(2); 234 – 2254*
ix. *Andrews, P. (2011). Rural Poultry Development in the Gambia. In Proceedings, CTA Seminar on Smallholder Rural Poultry Production, Thessaloniki, Greece, 9-13 October, Vol. 2., P.81-85.*
x. *Banire, A.S., Fabiyi, Y.L. and Manayong, V.M. (2012); Adoption pattern of fertilizer technologies amongst farmers in the ecological zones of South Western Nigerian. A tobit analysis. Australian Journal of Agricultural Research 53, 901-910.*

xi. *Bell, J.G. (2009). Strategies for the control of Newcastle disease in village poultry flocks in Africa. Proceedings International Seminar on Smallholder Rural Poultry Production 9-13, 2000, Thessaloniki, Greece, 1:138-143.*

xii. *Bell J.G and Abdou I (2015) Dynamics of village poultry production in the Keita region of Niger. Nigerian Journal Animal Production. 22: 141-144.*

xiii. *Bell, J.G., Fotzo, T.M., Amara, A. And Agbede, G (2008). A controlled trial of heat resistant V4 vaccine against Newcastle disease in village poultry in Cameroon. African Network for Rural Poultry Development Newsletter, 5(1): 3-7.*

xiv. *Bessei, W. (2007). Poultry production and extension in developing countries. In Proceedings 18th World Poultry Congress, Nagoya. Japan, September, 4-9, pp. 156-160.*

xv. *Boki, K.J. (2003) Poultry in Tanzania-with emphasis on small-scale rural poultry. Proceedings of the Workshop on Possibility for Smallholder Poultry Projects in Eastern and Southern Africa held on Morogo, Tanzania May 22-25.*

xvi. *Bourzat, D. and Saunders, M. (2007). Improvement of traditional methods of poultry production in Burkina Faso. In Proceedings, CTA Seminal; 3rd International Symposium on Poultry Production in Hot Climates, Hame 1n, Germany, June 12. Kuala Lumpur, Malaysia ACIAR Proceedings ACIAR monograph No. 39:25-28.*

xvii. *Centre for Tropical Agriculture (CTA) (2009). Improved practices in rearing indigenous chicken. CTA Practical Guide Series No. 4.*

xviii. *Creswell, D.C. and Gunawane, B. (2006). Indigenous Chicken in Indonesia: production characteristics in an improved environment. Research Institute for Animal Production, Bogor, Indonesia. Report 2:9-14.*

xix. *Dauda C. Kughur P.G. and Biam C.K. (2010) Adoption of Pig Production Technology by farmer in a Makurdri LGA of Benue State. Proceeding of the 44th Annual Conference of Agricultural Society of Nigeria. Ladoke Akintola University of Technology. Ogbonosho Oyo State in order to Avoid possible extinction.*

xx. *Forssido, T. (2006). Studies on the meat production potential of some local strains of chickens in Ethiopia. (PhD thesis) Justus-Leibig University, Giessen, Germany.*

xxi. *French, K.M (2003). Practical Poultry Raising. Peace Corps Information collection and Exchange, pp. 135-168. Washington, DC.*

xxii. *Ibe, S.N (2013). Growth performance of norma, frizzle and naked neck chickens in a tropical environment Nigeria Journal of Animal Production. Vol. 20:25-30.*

xxiii. *Kabatange, M.A. and Katule, A.M. (2009). Rural Poultry Production Systems in the United Rebublic of Tanzania. In E.B. Sonaiya, ed. Rural poultry in Africa. Proceedings of an International workshop on poultry production, Ile-ife, Nigeria, 13-16 November, 2009: 171-176. .*

xxiv. *Katule, A.M. (2009). Studies on prospects of improving the performance of the local chicken population in Tanzania by crossbreeding. PhD thesis of Sokoine University of Agriculture, Morogoro, United Republic of Tanzania.*

xxv. *Maddala, G.S. (1983): Limited dependent and qualitative variables in Econometrical, Cambridge University Press; pp. 24 – 36.*

xxvi. *Nkematu, J.M (2005): Anambra State Agricultural development extension report for the 17th annual south east zonal research extension farmer input linkage system (REFILS) workshop held NRCRI, Umudike, November 19-23rd.*

xxvii. *Nwaru, F.N., (2006): Gender and relative production efficiency in food crop farming in Abia State of Nigeria. The Nigeria Agriculture Journal, vol. 34pp 1-10.*

xxviii. Okoye, B.S. and Onyenweaku, C.E (2008); Economic efficiency of small holder cocoyam farmers on Anambra state, Nigeria. A translog stochastic frontier cost function approach Mendel Journal 5 (33) 5-7.

xxix. Oladele, O.I. (2002). The importance of farmer's adoption of new agricultural technologies. Journal of Central European Agriculture; 6(3); 250-256

xxx. Oladele, I.O. and Kareem A.I. (2005). Adoption rate and discontinued of selected arable crop technologies among farmers in Oyo State of Nigeria. Journal of social science; 6(2): 27-30.

xxxi. Onyenweaku C.E., Okoye, B.C and Okorie, K.C. (2010), Determinants of fertilizer adoption by rice farmers in Bende Local Government Area of Abia State, Nigeria. Nigeria Agricultural Journal. 6; 21- 26.

xxxii. Rogers E.M., (2003). Diffusion of innovation and adoption categories, edited, www.yahoo.com.

xxxiii. Tobin, J. (1957): Estimation of relationship for limited dependent variables. Econometrics; 26:25-27.

xxxiv. Ume, S.I, Arene, J.C and Okpukpara, B.C (2009); Adoption of improved crop production technology in Anambra State, Nigeria. Training and visit system approach "Farm Management Association Nigeria" 20th Annual National Conference held at Jos, from 23rd- 26th 0ctoberNigeria.

xxxv. Unamma, R.P.A. (2003). Agricultural technology generation and transfer strategies for food security. Proceeding of the 6th Annual Zonal South Extension Farmers Input linkage System (REfLlS) Workshop South and South Zone of Nigeria 12-23 November, 2005.

Table 1: Distribution of the Respondents According to Socio economics Characteristics

Variable	Frequency	Percentage
Gender		
Male	38	38.0
Female	62	62.0
Age		
Less than 20	1	1.0
21-40	42	42.0
41-60	55	55.0
61-80	2	2.0
Household Size		
1-3 persons	6	6.0
4-6 persons	47	47.0
7-9 persons	30	30.0
10-12 persons	17	17.0
Level of Education		
No formal education	12	12.0
Primary school	46	46.0
Secondary school	30	30.0
Tertiary	17	17.0
Farming Experience		
1-10 years	77	77.0
11-20 years	15	15.0
21-30 years	8	8.0
Flock Size		
1-5	7	7.0
6-10	8	8.0
11-25	74	74.0
26-50	11	11.0
Raising System		
Extensive System	89	89.0
Intensive System	5	5.0
Semi-Intensive System	6	6.0

Source, Field Survey; 2017

Table 2: Adoption of Village Chicken Production Technologies

Technology	**Adoption**		**Non-Adoption**	
	Frequency	**(%) age**	**Frequency**	**(%) age**
Use of Supplementary feed	25	25.0	25.0	75.0
Housing of birds	27	27.0	27.0	73.0
Use of artificial hatchery	11	11.0	11.0	89.0
Use of artificial brooding	23	23.0	23.0	77.0
Use of exotic hybrid cocks	20	20.0	20.0	80.0

Source: Field survey, 2017

Table 3: Distribution of the Respondents According to Types of Local Birds Reared

Types of Local birds	**Frequency**	**Percentage (%)**
Normal feather	83	83.0
Naked neck	70	70
Frizzle	75	75
Total	**100**	**100**

Source: Field survey, 2017
***Multiple Responses**

Table 4. Result to Tobit Regression Model Analysis

Variables	**Coefficient**	**Standard error**	**t-test**
Constant	3.0654	0.9576	3.20**
Age	23.9933	49.9489	-2.08*
Gender	7.1690	11.9661	-1.67*
Flock Size	-0.9457	0.8898	-1.04NS
Household size	-6.2241	2.8200	-2.21*
Level of formal education	0.0047	0.0006	8.33***
Farming experience	0.2129	0.6631	0.32NS
Access to credit	-5.6252	2.9157	-1.93
Extension contact X_9	4.230	2.004	2.57**
Number of observation	= 100		
LR Chi2 (C)	= 28.35		
Prob > Chi2	= 0.0007		
Pseudo R2	= 0.3361		

Source: Field survey, 2016
Note, figure in parenthesis are the t-test *. **, *** are 10%, 5% and 10% level of significant respectively.

Table 4 Constraint to Adoption of Village Chicken Production Technologies

Factors	**Frequency**	**Percentage (%) age**
Technology too cost	91	91.0
Inadequate information on village chicken management technology	67	67.0
High cost of feeds and concentrates	87	87.0
Poor access to veterinary assistance	91	91.0
Adequate extension contact	83	83.0
Religious belief	0	0.0
Naked neck high cost of drugs and medication	75	8.075.0
Low level of education	77	77.0
Poor access to credit	63	63.0

Multiple responses
Source: Field survey, 2017