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Access and utilization of veterinary services by rural poultry farmers in Umuahia Agricultural Zone of Abia State, Nigeria

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Abstract

*The study provided empirical evidence on access and use of veterinary services by poultry farmers in Umuahia Agricultural Zone of Abia State, Nigeria. The study specifically described the socio-economic characteristics of poultry farmers, investigated the level of access of veterinary services by the poultry farmers, ascertained the level of use of veterinary services by poultry farmers and identified the constraints in the access and use of veterinary services by poultry farmers in the study area. A multi- stage sampling procedure used in selecting 120 poultry farmers for the study. Data were collected using structured questionnaire and field observations. Data obtained were analyzed using frequency distribution, mean and percentages as well as Tobit regression analysis and Pearson's Product Moment Correlation coefficient. Findings indicated that poultry farmers had high access and use of veterinary services. Result of Tobit regression revealed that socio-economic variables of the respondents were determinants of access and use of veterinary services. The coefficients of age (0.0259**), farming experience (0.0314***) farm size (0.2511***) and household size (0.3023) significantly influenced use and access of veterinary services by poultry farmers. The correlation coefficients (r) of 0.58 which was positive and within coefficient limit of ±0.30 ±0.69 indicate strong association between accessibility and use of veterinary services by poultry farmers. The study concludes that farmers in the study area are receiving veterinary services. The study therefore recommends that relevant stake holders should step up their effects towards effective delivery veterinary services to farmers in other to increase their production*

Keywords: Accessibility, utilization, veterinary services, socio-economic and constraints.

Accès et utilisation des services vétérinaires par les éleveurs de volailles ruraux dans la zone agricole d'Umuahia, dans l'État d'Abia, au Nigéria

Résumé

L'étude a fourni des preuves empiriques sur l'accès et l'utilisation des services vétérinaires par les éleveurs de volailles de la zone agricole d'Umuahia, dans l'État d'Abia, au Nigéria. L'étude a spécifiquement décrit les caractéristiques socio-économiques des éleveurs de volailles, étudié le niveau d'accès des éleveurs de volailles aux services vétérinaires, vérifié le niveau d'utilisation des services vétérinaires par les éleveurs de volailles et identifié les contraintes liées à l'accès et à l'utilisation des services vétérinaires par les éleveurs de

*volailles de la zone d'étude. Une procédure d'échantillonnage à plusieurs étapes utilisée pour sélectionner 120 éleveurs de volailles pour l'étude. Les données ont été collectées à l'aide d'un questionnaire structuré et d'observations sur le terrain. Les données obtenues ont été analysées à l'aide de la distribution de fréquence, de la moyenne et des pourcentages, ainsi que de l'analyse de régression Tobit et du coefficient de corrélation du moment du produit de Pearson. Les résultats ont indiqué que les éleveurs de volailles avaient un accès et une utilisation élevés des services vétérinaires. Le résultat de la régression Tobit a révélé que les variables socio-économiques des répondants étaient des déterminants de l'accès et de l'utilisation des services vétérinaires. Les coefficients d'âge (0,0259**), d'expérience agricole (0,0314***), de taille de l'exploitation (0,2511***) et de taille du ménage (0,3023) ont influencé de manière significative l'utilisation et l'accès aux services vétérinaires par les éleveurs de volailles. Les coefficients de corrélation (r) de 0,58 qui étaient positifs et dans la limite du coefficient de ±0,30 ±0,69 indiquent une forte association entre l'accessibilité et l'utilisation des services vétérinaires par les éleveurs de volailles. L'étude conclut que les agriculteurs de la zone d'étude bénéficient de services vétérinaires. L'étude recommande donc que les parties prenantes concernées intensifient leurs efforts pour fournir des services vétérinaires efficaces aux agriculteurs d'autres pays afin d'augmenter leur production.*

Mots-clés: Accessibilité, utilisation, services vétérinaires, socio-économiques et contraintes.

Introduction

Livestock farming is a source of employment and livelihood in Nigeria Nwagu, (2018). This class of animals include: cattle, sheep, goats, pigs and poultry. Nigeria's livestock resources are estimated to be 13, 885, 813 cattle, 34, 453, 724 goats, 22, 092, 602 sheep, 3, 406, 381 pigs, and 104, 247

Poultry Tewe, (2018). From these figures, poultry accounted for 58.2 percent of the total livestock production. Poultry species comprise of chicken or fowl, turkeys, ducks, guinea fowls, geese and pigeons. Poultry sector plays essential role in the development of Nigerian economy and serves as safety net supplying ready cash in emergency needs of families. Prevalence of diseases in Nigeria has drastically affected the productivity and performance of poultry numbers Njoku, (2022). Due to this devastating outcome of poultry diseases, animal protein output has not been able to meet the nation's demand.

The prevention, cure and control of poultry diseases are frequently reoccurring problem at local and national domains. Veterinary services are animal health care services which include treatment of diseased animals and control of production limiting disorders, preventive measures, provision of drugs, vaccines and breeding additives and human health protect on and inspection of animal product to livestock it is necessary that proper administration and management to enhance breeding and production are available and utilized.

Poultry production is an essential subsector in Nigerian economy carried out by households to supply a variety of foods and non-food products. Veterinary services practice for poultry production involve diagnosis, treatment, breeding vaccinating quantitative and slaughtering protecting and inspection for the welfare of animals and for farmers enhance a productivity which usually brings about direct action taken by veterinary extension services and poultry farmers.

In Nigeria the loss of poultry exists at higher rate than in developed countries and at times such production losses ranges between 30 and 40 percent Mbah and Njoku, (2021).Veterinary services in collaboration

with extension services include services such as proper deworming, vaccination, nutrition, environmental sanitation, disease prevention, control and treatment and use of modern technologies and extension education to farmers.

Outreach clinics and extension/training centers are located in different communities where services and extension education such as advisory, treatment, training and control are provided to poultry farmers Simonyan, *et al.* 2010). The adoption of veterinary and extension practices are key components to the success of poultry production Adesiji Omokore, 2018). Access and use of veterinary extension services are considered as a vehicle for reducing poverty among small holder poultry farmers. More so, input supply and adoption of improved technologies or innovation such as proper feeding, proper housing and routine health management practices are essential for profitable poultry production. Chilonder Van, 2018).

Studies indicate that most poultry production activities in Nigeria are located in rural areas which are not accessible to veterinary and extension services hence poultry farmers resort to quacks that wreak havoc on the industry by using expired vaccines, fake drugs and wrong prescriptions for treating diseases Dimelu, and Madukwe, (2017). Lamented the prevalence of sub-standard and low-quality drugs and vaccines in Nigerian markets which are ignorantly bought and used by poultry farmers (Doss, 2018).

Most rural households in Abia State depend on poultry production as a major means of livelihood. Dimelu and Madukwe, (2017) stated that the provision of veterinary services is key to the success of poultry production. Njoku, (2022) affirmed that the adoption of veterinary extension services is a tool for sustainable poultry production for families, and nation's food security, Worried by the fact that in Umuahia Agricultural zone, despite the proliferation of veterinary extension services, it is not certain whether the small holder poultry farmers have access to veterinary services; the study sets out to investigate the level of access to veterinary services by poultry farmers in Umuahia Agricultural zone of Abia State, Nigeria. The specific objectives of this study were to;

i. profile the socio-economic characteristics of poultry farmers in the study area.
ii. ascertain their level of access to veterinary extension services
iii. ascertain the level of use of veterinary extension services by poultry farmers

Identify the constraints to access and use of veterinary services in the study area.

Materials and Methods

The study area lies within latitude 5^0 47N and longitude 7^0 23E and 6^0 12 North of Equator and 8^0 02 East of Greenwich Meridian respectively in South-East, Nigeria (Simonyan, *et al.* 2010). It has five (5) extension blocks, which is further divided into circles.

The agricultural zone occupies an area of 6,320km^2 and bounded by Imo state in the West; Akwa Ibom State in the east and Aba in the south. The projected population stood at 1,370,744 persons as at 2020 with an annual growth rate of 2.7 percent (NPC, 2020). The study population consisted of all rural poultry farmers in Umuahia Agricultural Zone of Abia State and data were collected using structured questionnaire. The study made use of multi-stage purposive sampling procedure in choosing the samples size of One hundred and twenty (120) respondents.

Umuahia Agricultural zone consists of twelve (12) extension blocks namely: Omoba, Nvosi, Owerrinta, Isiala Ngwa, Mbansi, Ntigha, Umuahia urban, Umuopara, Ohuhu, Ibeku, Ubakala and Ikwuano. These extension blocks are

formed from five local Government Areas that make up Umuahia Agricultural zone. The five Local Government Areas are: Umuahia North, Umuahia South, Isiala Ngwa North, Isiala Ngwa South and Ikwuano Local Government Areas. (Abia State Agricultural Development Programme, 2022) Multistate sampling

The first stage involves a purposive selection of Umuahia agricultural zone. The choice of Umuahia Agricultural zone was informed by the notable position of the zone in poultry production (Abudu *et al* (2014).

The second stage involved selection of two (2) agricultural extension blocks (namely: Ikwuano and Umuopara out of the (12) twelve blocks in Umuahia Agricultural zone. This choice was also informed by the intensity of poultry farming and increased extension contact in the area. The third stage involved the random selection of three (3) circles from the each of the selected extension block making a sum of (6) six circles. In the fourth stage each of the 3 cells, four sub-circle was sampled giving a total of (24) sub-cells and finally, (5) poultry farmers were randomly selected from each of the (24) sub-cells.

Data were analyzed using frequency, percentage, mean and Tobit regression analysis and Pearson's product moment correlation coefficient (PPMCC).

Objectives i and iv were realized using Tobit regression analysis and Pearson's product moment correlation coefficient (PPMCC).

Objectives i and iv were realized using. From the data that was collected using four (4) point Likert-typed rating scale of very often (4), often (3), rarely (2) and never (1). The mean level of access to veterinary extension services was obtained by adding 4+3+2+1 = 8 and dividing by 4 to get a mean score of 2.50. Any mean score less than (<) 2.50 were adjudged low level of access while any mean score greater than (>) 2.50 was considered high level of access to veterinary services.

Objective iii was actualized using mean score on the data obtained using 4-point Likert type scale of very often (4), often (3), rarely (2) and never (1). The mean level of use ability of veterinary extension services was obtained by adding 4+3+2+1 = 8, which was divided by 4 to get a mean score of 2.50. Any mean score greater than (>) 2.50 was considered high level of use while mean score less than (<) 2.50 was deemed low level of use of veterinary extension services.

In view of the variables of interest, two hypotheses were stated Ho_1 There is no relationship between socio-economic characteristics of the poultry farmers and use of veterinary services in the study area.

Ho_2 There is no relationship between accessibility to veterinary services and use-ability of veterinary services by poultry farmers.

Relationship between access was established using the Tobit regression model as specified below

$Ti^x = B^T X + ei$ - + eqn (1)

Yi = O if li = T - - - eqn (2)

Yi = /if/ > T - - - - - eqn (3)

Where:

Y represent dependent variable which measures

I is latent variables that indics of access

T observed threshold level

X estimated error term

The log likelihood of use ability is given as implicitly specified

$Y = f(x_1 x_2 x_3 x_4 - - - - - - x_{13} + ei)$

Where

Y = Use (measured by mean score of respondents)

X_1 = marital status (dumny variable 1 = married, otherwise = 0)

X_2 = age of respondent (years)

X_3 = household size (numbers)

X_4 = education level (years in school)

X_5 = cooperative (members = 1 otherwise = 0)

X_6 = access to credit (access =1 otherwise = 0)

X_7 = farming experience (years)
ei = error term
The Pearson's Product Moment Correlation Coefficient (PPMCC) was used to test whether there is significant difference between means of access to veterinary extension services by poultry farmers with associated and mean of use by the farmers without association. PPMCC was further tested using t-test of significance as expressed

$$\text{PPM CC(r)} \frac{n\Sigma xy - (\Sigma x)\,\Sigma y}{\sqrt{n(\Sigma x)^2 - (\Sigma x^2)\,(\Sigma y^2)\,n}}$$

Where:
r = correlation coefficient
y = access to veterinary services (mean)
x = use of veterinary services (mean)
n = sample size (no of respondents)
t = test of significance on the correlation coefficient model specified

$$t = \frac{rx\sqrt{n - 2}}{1 - r^2}$$

Where
t = test of significance
r = correlation coefficient
n = number of respondent

Results and discussion

Table 1: Socio-economic distribution of respondents

Variable	Frequency (N = 120)	Percentage (%)	Mean (x)
Age (years)			
20 – 30	17	14.2	
31 – 40	21	17.5	42.8
41 – 50	47	40.8	
51 – 60	29	24.2	
61 – 70	6	5.0	
Marital status			
Single	17	14.2	
Married	103	85.8	
Household (number)			
1 – 5	54	45.0	
6 – 10	60	50.0	
11 – 15	3	2.5	6 persons
16 – 20	3	2.5	
Educational level (years)			
No formal education	20	16.7	
Primary education	35	29.5	
Secondary education	54	45.0	
Tertiary	11	9.2	

Farming experience (years)			
1 – 30	18	15.0	
11 – 20	92	76.7	
21 – 30	9	7.5	19.4years
31 – 40	1	0.8	
Access to credit (X)			
Yes	97	80.8	
No	23	19.2	
Cooperative meniheshy			
Yes	26	21.7	
No	94	78.3	

Source: Field survey, 2022

Table 1 show that 40% of the sampled poultry farmers were within the age range of 41-50 years. This indicates that majority of the poultry farmers are in their active and productive age which would have a positive effect on production. Majorities (85.8%) of the respondents were married and this would have a positive effect on poultry production as many of them have responsibilities of training their children in school. This is in line with Njoku and Obinna, (2020) that marriage is an important factor in individual livelihood as it is perceived to confer responsibility on individuals.

Further analysis showed that 50.0%) of the poultry farmers have household size of 6 to 10 persons. This large family size explains why majority of the poultry farmers use family labour. This finding agreed with Dimelu and Madukwe, (2017) that household members constitute a formidable and significant source of labour in small holders farming.45.0% of the respondents were literate. This could have a positive effect in access to veterinary services and credit. This is in consonance with Njoku and Chibundu, (2022) that increase in education of farmers positively influenced adoption of improved practices. This finding supports that Nwagu (2018) that education enhances farmer's ability to make accurate and meaningful decision. Majority (76.7%) of the respondents have been in poultry farming for about 11 – 20 years. This finding agreed with findings of Njoku and Obinna (2021) that farming experience enhances participation and adoption of improved poultry technologies thereby increasing productivity. Majority (80.8%) of the respondents had access to farm credit. This could be that a good number of them were literate and belong to cooperative societies. This supports the findings of Tewe, (2018). That access to credit enables farmers to exploit their full potentials for increased production. Majority (78.3%) of the respondents were not members of cooperative society. This implies that majority of them would not have access to veterinary services and inputs and technology that enhance production.

Table 2: Respondents mean rating level of access to veterinary services

Veterinary extension services	Very often	Often	Rarely	Never	Sum	Mean ($\overline{X}$)
Treatment of sick birds	65 (260)	35 (105)	18(36)	2(2)	403	3.36
Vaccination	35 (140)	85 (255)	0(00)	0(00)	395	3.29
Fumigation practices	47 (188)	60 (180)	13(26)	0(00)	394	3.28
Routine de-worming	30 (120)	60 (180)	20(40)	10(10)	350	2.92
Inspection of poultry products	25 (100)	73 (219)	11(22)	11(11)	352	2.93
Quarantine training	27 (108)	46 (138)	38(76)	9(9)	555	3.08
Disease diagnosis	65 (260)	41 (123)	14(28)	0(00)	411	3.43
Sale of vaccines/drugs	52 (208)	40 (120)	28(56)	0(00)	384	3.20
Breeding services	78 (312)	42 (126)	0(00)	0(00)	438	3.65
Grand mean (x)						3.24
Bench mark mean ($\overline{X}$)						2.50

Source: Field survey, 2022

The distribution of poultry farmers level of access to veterinary services is presented in Table 2. The table shows that out of nine (9) possible veterinary services investigated in this study, all of them were considered to be accessible by the poultry farmers. These veterinary services included; breeding ($\overline{X}$ = 3.65), disease diagnosis ($\overline{X}$ = 3.43), treatment of sick birds ($\overline{X}$ = 3.36), vaccination ($\overline{X}$= 3.29), sale of drugs/ vaccines ($\overline{X}$ = 3.20), training of poultry farmers ($\overline{X}$ = 3.08), inspection of poultry products ($\overline{X}$ = 2.93), and routine de-worming of birds ($\overline{X}$ = 2.92), This finding implies that veterinary services were readily accessible to the poultry farmers and they had high level of access of these services.

The table further revealed a grand mean access of 3.24 indicating that respondents generally accessed veterinary services in the study area.

Table 3: Mean rating of respondents' use of veterinary service

Veterinary services	Very often	Often	Rarely	Never	Total	Means ($\overline{X}$)
Treatment of sick birds	60(240)	40(120)	12(24)	8(8)	392	3.27
Vaccination	40 (160)	80(240)	0(00)	0(00)	400	3.33
Fumigation practice	40(160)	60(180)	20(40)	0(00)	360	3.00
Routine de-worming	65(260)	45(135)	0(00)	10(110)	405	3.38
Inspection of poultry pod	25(100)	73(219)	19(66)	0(00)	385	3.21
Training of farmers	10(40)	46(138)	46(96)	16(16)	290	2.42
Disease diagnosis	55(220)	51(153)	19(38)	5(5)	416	3.47
Sales of vaccines/drugs	67 (268)	53 (159)	0(00)	0(00)	427	3.56
Consultancy services	82 (328)	38 (114)	0(00)	0(00)	442	3.68
Grand mean						3.26
Benchmark mean						2.50

Source: Field survey, 2022

The distribution of poultry farmers by their level of use of veterinary services is presented in Table 3. The table shows that poultry farmers had high level of use of veterinary services in the study area. The farmers had the highest level of use of veterinary services with consultancy services ($\bar{x}$ = 3.68), drugs and vaccine ($\bar{x}$ = 3.56) disease diagnoses ($\bar{x}$ = 5.47) training of farmers ($\bar{x}$ = 3.38) treatment of sick birds ($\bar{x}$ = 3.27), inspection of poultry products ($\bar{x}$ = 3.21) and fumigation practice ($\bar{x}$ = 3.00). The poultry farmers also had low level of use of veterinary services in training of farmers (x = 2.42).

This finding agreed with that of (Dimelu and Madukwe 2017) also confirmed intensive use of veterinary services by farmers.

The table reveals a grand mean of use of veterinary service of 3.26. This shows that poultry farmers had high level of use of veterinary services. The reason would be that the mean utilization of veterinary services was above the grand mean utilization of the whole services investigated. This is in line with a priori expectation and supports earlier finds of (Njoku and Chibundu, (2022) who reported that poultry farmers were satisfied with veterinary services provided for them.

Table 6 shows that other constraints to access and use of veterinary services by poultry farmers included; lack of awareness (93.3%), non-availability of drugs (90.0%) fear of taking risk (85.8%), distance to veterinary office (85.8%), inadequate veterinary personnel (75.8%) low level of education (75.0%) poor service delivery (72.5%) conservation (71.6%) belief (68.3%) people's culture, (72.5%) and co-farmers influence (20.0%).

This finding implies that poultry farmers encountered several constraints in accessing and using veterinary services in Umuahia agricultural zone. These findings support that of FAO, 2018 that poultry farms are handled with incompetent veterinary operators who could not manage the health management required for effective poultry production.

Table 4: Constraints to access and use of veterinary services by poultry farmers in Umuahia agricultural Zone

Variable	Frequency	percentages
High cost of veterinary services	120	100.0
Lack of awareness	112	93..3
Inadequate veterinary personnel	91	75.8
Fear of taking risk	103	85.8
Non-availability of drugs	108	90.0
Belief	82	68.3
People’s culture	87	72.5
Peer group influence (co-farmer)	24	20.0

Source: Field survey 2022.

Multiple responses recorded
The distribution of respondents' constraints to access and use of veterinary services is presented in Table 4. The table shows that all respondents affirmed that high cost of veterinary services constitutes the major constraint of access and use of veterinary services in the study area.

Table 5: Tobit Regression estimates of determinants of use of veterinary services in Umuahia agricultural zone

Variable	Coefficients	Standard error	t-value
Constant	12.934	1.6671	7.76****
Marital status	-0.3344	0.5648	-0.59
Age	0.0689	0.0259	2.66**
Household size	0.3023	0.1290	2.34
Educational level	-0.0041	0.0652	0.06
Farming experience	0.0984	0.0314	3.13***??
Farm size	1.1459	0.2511	4.56***??
Membership of cooperative	-1.0913	0.7045	-1.55
Access to credit	2.8984	0.7825	3.70***??
Chi-square			48.23***
Pseudo R^2			0.0787
Log likelihood			-282.1771

Source: Field survey 2022

The result in Table 5 shows the Tobit regression estimate of the determinant of utilization of veterinary services by poultry farmers in the study area. The chi-square value of 48.23 was significant at 1% level of probability. This means that the model has a good fit to the data and that the model as specified explained significant non-zero variations in factors influencing utilization of veterinary services. The coefficient of age 0.0689 was significant at 5% level of probability. This means that any increase in age will lead to increase in probability and intensity of utilization of veterinary services

by poultry farmers. This finding agreed with Nwagu, (2018) that younger farmers participated more in use of veterinary services and technologies than their older counterparts.

The coefficient of household size was 0.3023 and positively significant at 10% level of probability.

This means that any increase in household size will lead to increase in probability and intensity of use of veterinary services in the study area. This finding is in line with Njoku and Mbah, (2021) that large household size influence farm production in agricultural enterprises.

The coefficient of educational level (-0.0041) was significant at 1% level of probability. This means that any increase in level of education will lead to increase in the utilization of veterinary services. This finding supports that of Mbah and Njoku, (2021) that highly educated individuals have the ability to adopt improved farming technologies faster than the non-educated ones. This however increases the productivity and income of the educated poultry farmers with subsequent improvement of welfare.. The coefficient of farming experience (0.0984) was positively significant at 1% level of probability. This means that any increase in farming experience will lead to increase use of veterinary services by poultry farmer.

Table 6: Correlation matrix of accessibility and use- ability of veterinary extension services by poultry farmers in Umuahia Agricultural zone.

Variable		Access	Use
Accessibility	Pearson's correlation	1	0.58
	p-value		0.04
	N	120	120
Use -ability	Pearson's correlation	0.58	1
	p-value	0.04	
	N	120	120
	R^2	0.03364	(33.64%)

Source: Field survey, 2022.

Correlation was significant at 0.05 levels (2 tacked).

Table 6 shows the correlation matrix of access and use of veterinary services by poultry farmers in the study area. The result shows a correlation coefficient (n) of 0.58. This means that it is positive and significant at 10% level of probability and within the coefficient limit of E 0.03 and 0.69. This means that access is positively related to use of veterinary service by poultry farmers in Umuahia agricultural zone. Result shows coefficient of determination (R^2) of 0.3364. This means that 33.64% of the variation observed in use of veterinary service by poultry farmers was attributed to access. The table also shows a p-value of 0.04 which was less than the alpha value of 0.05. This implies significant relationship exists between access and use of veterinary service by poultry farmers in the study area.

This finding supports the report of Njoku and Mbah (2021) that correlate coefficient greater than 0.58 is an indication that the discrimination function used in the study provided high significant amount of information required for determining the access and use of veterinary services by poultry farmers.

The coefficient of farm size (1.1459) was positive and significant at 1% level of probability. This means that any increase in farm size will lead to increase in utilization of veterinary service by poultry farmers in the study area.

This is in line with a prior expectation because farmers with large farm size can afford to invest into certain enterprises and hence use and adopt new techniques. This finding agrees with that of Adepegba, Apantaku and Oluwalana, (2020) that small farms it is difficult to adopt or use improved technologies.

The coefficient of access to credit (2.8984) was positive and significant at 1% level of probability. This means that increase in access to credit will result in increased utilization of veterinary services by poultry farmers.

This finding agrees with that of Mbah and Njoku, (2021) that increase credit facilities will lead to positive utilization of poultry technologies in Imo State, Nigeria.

Conclusion

The study found out that poultry farmers in Umahia have access to veterinary services although high cost of veterinary service tend to reduce the use of veterinary services by the poultry farmers.

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