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COMPARATIVE ANALYSIS OF PUBLIC AND PRIVATE VETERINARY SERVICES DELIVERY AMONG COMMERCIAL POULTRY FARMERS IN DELTA STATE, NIGERIA

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ABSTRACT:

The effective extension delivery of services (including veterinary) to farmers is considered as a key factor influencing the sustainable productivity in the livestock sector. Therefore, it is important to view extension for sustainable development in an institutional strengthening context; including the enhancement of extension organizations in both the public and private sectors. This study comparatively analyzed the private and public veterinary services delivery among commercial poultry farmers in Delta State, Nigeria. A multi-stage sampling procedure was employed for this study. Fifty percent of 112 (56) who patronize private veterinary service delivery and fifty percent of 92 (46) who patronize public veterinary service delivery were randomly selected giving a sample size of 102 respondents. Data was collected using well-structured interview schedule. The data was analyzed using frequency distribution, percentages, means, Person Product Moment Correlation, T-test and Chi Square (X^2). The study found that majority 53.6% of respondents who patronized private veterinary services used the battery cage system with 46.4% in egg production indicating cost of veterinary services (mean= 1.71) been ranked first as their major constraint. The most popular source of information on veterinary services available to the respondents was office calls (mean=1.68). Results further revealed that was a significant relationship between flock size and affordability with constraints in access to veterinary services (at $p \leq 0.05$). Independent T-Test shows that there was significant difference ($t=1.737$, $p \leq 0.05$) between private veterinary service delivery and public veterinary service delivery. The study concluded that private veterinary services provider provided better poultry health services delivery compared to public veterinary services delivery in Delta State. Government should therefore provide an environment conducive for the emergence of private veterinary practice and create a level playing field between public and private service providers as well as monitoring and enforcing standards for service delivery and making the necessary information available to the poultry farmers.

Keywords: Analysis, Private and Public, Veterinary services, delivery, poultry farmers

INTRODUCTION

Poor livestock health remains one of the main constraints to sustainable livestock development in many developing countries. Veterinary medicine's primary roots are in agriculture, public health and comparative biology. It is aimed at raising livestock productivity to enhance food security, improve human health by preventing zoonotic diseases, improving human well- being and animal welfare (Adepegba, Apantaku and Oluwalana, 2006). Poultry refers primarily to those species of domestic birds which performs economic services to man by providing him eggs and meat. These poultry birds include Turkey, Guinea fowl, Duck, Geese, Quails, Ostriches and Chickens. Of all the birds, chicken is the mostly reared for commercial purposes. Chicken production is more popular than any class of poultry birds in Nigeria. The demand for information on livestock production is growing, both in the sense of demands expressed by the producers themselves, and in the more general sense of a growing potential for increasing production through the delivery of information.

Veterinary services are animal health services provided by professionals aimed at providing livestock farmers with the following: Animal Health and Disease Control, Product and Market Development and Animal Production and Preservation. The availability and quality of veterinary services can play a key role in increasing the productivity of the livestock sector (Umali, Narrod and Deininger, 1994). Many argued that the presence of readily controlled diseases and the consequent poor performance of the livestock sector is indicative of a weak veterinary service system that has failed to provide the necessary advice and drugs to livestock producers. The state has typically assumed almost sole responsibility for the delivery of veterinary services in Nigeria (Achoja, Ike and Akporhuarch, 2010). Veterinary services can be classified in four categories: (a) Curative services, particularly the diagnosis and treatment to treat diseased animals; (b) Preventive services to stop the emergence and spreading of diseases through vaccination, vector control and control measures, such as quarantine and forced slaughter of affected animals; (c) Production of veterinary pharmaceuticals; and (d) Human health protection, such as sanitary inspection of animal products.

In an effort to attain efficient and quality extension delivery for sustainable poultry production in Nigeria, literature had suggested the need for a pluralistic extension system (Matanmi, Adesiji and Omokore, (2008). Historically in most of Sub-Saharan Africa, the delivery of veterinary services has been the domain of the public sector, with most services been provided free of charge. In Nigeria, the issue of privatization of extension delivery is not entirely a new phenomenon (Dimelu and Madukwe, 2001). However in recent past, most veterinary services have undergone substantial restructuring, with the role of the public sector being sharply reduced due to the budgetary constraints faced by many countries and the increasing pressure from international donors. As a result, private sector delivery of veterinary services is now gaining increasing recognition as an alternative to state provision, with most governments promoting this change, to reduce the financial burden on the state government, and to improve the efficiency of the service delivery and to deliver sustainable animal health services (Chilonder and Van 20001). According to Matanmi, et al., (2008) there has been a campaign for the involvement of the private sector in the provision of extension services because of the drastic cut in its development budgets and the inability of government to bring meaningful extension services to intended users. Akele and Chukwu (2004) observed that extension services offered by the private companies, though sales-oriented and spatially limited to area with commercial farming are better in quality and more effective than the public system. They were of the opinion that private bodies have been found to have brought positive changes and development to the areas where they are involved in providing agricultural extension services.

In the past, public sector extension was severely attacked for not being relevant, insufficient impact, ineffective, and sometimes, not pursuing programmes that foster equity. Other argument against public financed agricultural extension according to Saliu and Ige (2009) is high and unsustainable public cost associated with it. For example, the government of one of the states in Nigeria in 1992 spent about 80% of the total cost for extension services on administration. Furthermore, financial capability to pursue extension services by the government when external funds which most often than not is a major source of funding for this sector in the Third World dries up poses a challenge. Mijindadi (1992) corroborates the position of Saliu and Ige (2009) when he indicted lack of funds amongst others as the chief bane hampering effective public enterprise in Nigeria, public agricultural extension inclusive. However, a major negative characteristic of public extension is that they are non-participatory. Here, technologies are supply driven instead of being demand driven; technologies are designed and are based on what is available and then attempts are made to get these to farmers, needs and preferences are not taken into consideration in the design processes and of these technologies themselves. Adesiji, Akinsorotan and Omokore (2010) also found that less than halve of one hundred and twenty respondents acknowledge public extension services to be efficient. Anandajayasekeram, Dijkman, Hoekstra and Worknel, (2005) went further to state that public funded extension have had a minimal 10% success rate with shrinking budgets, downsizing staff, and limited knowledge of "agriculture" have serious consequences for maintaining public funded programs in the future. Adesiji (2006) found that higher percentage of village extension agents (public) have not had any in-service training and all them have served more than five years. Although, Ajieh, Agwu and Anyanwu, (2008) had observed the problems militating against privatization of agricultural services in Nigeria are; fear of job insecurity among extension staff, insufficiently trained extension personnel, high level of subsistence farming, and inadequate government legislation to back up the privatization process amongst others. Ludwig, (2001) extension programs across the globe are being challenged to consider their impact, relevance and effectiveness in a rapidly changing society.

Despite the growing importance of veterinary extension services as a tool for sustainable livestock (including poultry) production for improving farmers' household welfare, livestock production extension is a field neglected both by policy-makers and by researchers. More so, information about the delivery of extension services of different sector providers to poultry farmers in sector is sparse. It is therefore on this basis that this study seeks to critically investigate and compare the public and private veterinary service delivery among poultry farmers in the study area.

Objectives of the study

The broad objective of the study is to compare the public and private veterinary service delivery among commercial poultry farmers in Delta State. The specific objectives are to; (i) examine the farm characteristics of commercial poultry farms in Delta State; (ii) examine respondents' sources of information on veterinary services in the area of study; (iii) compare the affordability of private veterinary services to that of public veterinary services; (iv) compare the major benefits derived by the commercial poultry farmers from public veterinary services to that of the private veterinary services (v) compare the accessibility of private and public veterinary services among respondents (vi) identify the possible constraints to access of public and private veterinary services faced by commercial poultry farmers in the area of study.

Hypotheses of the study

The following null- hypotheses were tested; $H0_1$**:** there is no significant relationship between farm characteristics and access to veterinary services, $H0_2$**:** there is no significant relationship between respondents' source of information and their access to veterinary service, $H0_3$**:** there is no significant relationship between affordability of veterinary services and access to veterinary services and, $H0_4$**:** there is no significant difference between private veterinary and public veterinary service delivery.

METHODOLOGY

Study Area

The study was conducted in Delta State. Delta state is located in the South-South geo-political zone of Nigeria with a population of 4 098 291 (NPC, 2006). It comprises tribes such as Urhobos, the Ijaw, the Delta Igbos (Anioma) and the Itsekiris. The state lies approximately between latitude 5^0 and 6.45^0 East and latitude 5^0 and 6.30^0 North. It is bounded in the North by Anambra State, in South by the blight of Benin, in the West by Edo State and East by Bayelsa State.

There are two categories of veterinary service delivery in the state: The Public veterinary clinics and the Private veterinary service clinics. The Public veterinary delivery system is managed by the Government while the Private veterinary delivery system is controlled by individuals. Veterinary outreach clinics of the state ministry of Agriculture and Rural Development are located in 26 stations one in each of the 25 Local Government Areas (LGAs) with Ika North LGAs having two stations.

Sampling Technique

A multi-stage sampling procedure was employed for this study. First, the poultry farmers were stratified into; registered members of Poultry Association of Nigeria (PAN) in Delta State and non-members of PAN. There are currently 102 registered poultry farmers with the Poultry Association of Nigeria (PAN) in the state. A list of equivalent number of non-members of PAN (i.e. 102) was also generated by snowball technique giving a total number of 204 poultry famers. The 204 commercial poultry farmers were stratified into those who patronize private veterinary services and those who patronize public veterinary services giving rise to 112 of them patronizing the private veterinary service delivery and 92 of them patronizing the public veterinary service delivery. Fifty per cent 50% (56) of those who patronize private veterinary service delivery and 50% (46) of those who patronize public veterinary service delivery were randomly selected giving a sample size of 102 respondents.

Data collection techniques

Primary data were collected through the use of questionnaires. The questions were designed in such a way as to obtain the desired information from the farmers. The assistance of the field extension personnel from various Local Governments of the Agricultural Development Program were solicited in the administration of the questionnaires.

Data Analysis

Data collected were subjected to both descriptive statistics such as frequency counts, percentages and mean and inferential statistics such as Person Product Moment Correlation PPMC, Chi Square and Independents T-test Analyses were used to test for hypotheses stated above.

RESULTS AND DISCUSSION

Farm Characteristics of Respondents

The result of the analysis in table 1 shows that majority of the respondents (50%) make use of the battery cage systems of housing, and 29.4% of the respondents make use of the deep litter while 20.6% had a combination of both the deep litter and the battery cage systems of housing. Those who patronize private veterinary services, 28.6% make use of deep litter housing system, 53.6% use the battery cage system while 19.6% make use of the two housing systems. Also from the table, 32.6% of those who use the public private veterinary services, make use of deep litter housing system, 35.7% use the battery cage system while 21.7% make use of the two housing systems. The prevalence of the battery cage systems of housing relative to the deep litter system implied that most of the commercial poultry farmers interviewed are involved in egg production and the battery cage system of housing is the most suitable for egg production (Oruseibio, 2002).

Table 1 showed that 46.1% and 15.7% of the respondents are into layer and broiler production respectively. Furthermore, 38.2% of the respondents engage in both broiler and layer production. It was also observed from the table that 46.4% who used the private veterinary service delivery were into egg production, 14.3% broilers production while 39.3% were into both. For those who used the public veterinary service delivery, 45.7% were into egg production, 17.4% broilers production while 37.0% were into both. It is therefore evident that a greater proportion of the respondents are into egg production.

Table 1 also shows that majority (37.5%) of those who used private veterinary services had a flock size which fell within the range of 1501-2500 birds while majority (39.9%) of those who used public veterinary services had a flock size which fell within the range of 501-1500. This shows that those who used private veterinary services had larger flock sizes than those who used public veterinary services. This implies that commercial poultry farmers who patronize private veterinary service providers were more innovative and ready to take risk to invest more into the expansion of their farms.

Table 1: Farm Characteristics of Respondents

Variables	*Categories (%)*	*Private Veterinary (%)*	*Public Veterinary (%)*	*Total (%)*
Type of Housing	Deep Litter	15(26.8)	15(26.8)	30(29.4)
	Battery Cage	30(53.6)	21(45.7)	51(50)
	Both	11(19.6)	10(21.7)	21(20.6)
Total		**56(100)**	**46(100)**	**102(100)**
Poultry Enterprise	Layers	26(46.4)	21(45.7)	47(46.1)
	Broilers	8(14.3)	8(17.4)	16(15.7)
	Both	22(39.3)	17(37.0)	39(38.2)
Total		**56(100)**	**46(100)**	**102**(**100**)
Flock size (number)	501-1500	16(28.6)	21(45.7)	37(36.3)
	1501-2500	28(50)	16(34.8)	44(43.1)
	2501-50001	11(19.6)	9(19.6)	20(19.6)
	Above 5000	1(1.8)	0(0)	1(1)
Total		**56(100)**	**46(100)**	**102**(**100**)

Source: Field Survey, 2012

Sources of information on veterinary services available to the respondents

The result in table 2 revealed that all the respondents (those who used private veterinary services and those who used public veterinary services) were unanimous in their source of information on veterinary services as 85.3% of all the respondents indicated they often get information on veterinary services through office call. The table also shows that 67.7% of the respondents indicated friend and fellow farmers as their source of information on veterinary services. The table also showed that majority of the respondents occasionally received information on veterinary services from radio (96.4%) and (67.4%), television (78%) and (60.9%), and newspapers (38%), and (41.3%), for those who used private veterinary services delivery and those who used public veterinary services delivery respectively.

The table also shows that majority of the respondents occasionally received information on veterinary services from radio (96.4%) and (67.4%), television (78%) and (60.9%), and newspapers (38%), and (41.3%), for those who used private veterinary services and those who used public veterinary services respectively. This agrees with the findings of Orogun (2008) who reported that the Delta State owned media houses were not effective in disseminating agricultural information to farmers in the state. This however is in line with the finding of a study by Onyenkazi and Gana (2009) where private extension system was rated higher than the public extension system.

Table 2: Frequency of receipt of information on veterinary services from various sources

Information Sources	*Categories*	*Private veterinary (%)*	*Public veterinary (%)*	*Total (%)*
Friends(fellow farmers)	Never	0(0)	0(0)	0(0)
	Occasionally	18(32.1)	15(32.6)	33(32.4)
	Often	38(67.9)	31(67.4)	69(67.7)
Total		**56(100)**	**46(100)**	**102(100)**
Radio	Never	0(0)	5(10.9)	5(4.9)
	Occasionally	54(96.4)	31(67.4)	85(83.3)
	Often	2(3.6)	10(21.7)	12(11.8)
Total		**56(100)**	**46(100)**	**102(100)**
Television	Never	1(2.2)	0(0)	1(1)
	Occasionally	44 (78)	28(60.9)	72(70.6)
	Often	11(20)	18(39,1)	29(28.4)
Total		**56(100)**	**46(100)**	**102(100)**
Newspaper	Never	31(55)	19(41.3)	50(49)
	Occasionally	21(38)	19(41.3)	40(39.2)
	Often	4(7)	8(17.4)	12(11.8)
Total		**56(100)**	**46(100)**	**102(100)**
Internet	Never	52(93)	34(73.9)	86(84.3)
	Occasionally	0(0)	10(21.7)	10(9.8)
	Often	4(7)	2(4.3)	6(5.9)
Total		**56(100)**	**46(100)**	**102(100)**
Group discussion	Never	3(5)	9(19.6)	12(11.8)
	Occasionally	51(91)	34(73.9)	85(83.3)
	Often	2(4)	3(6.5)	5(4.9)
Total		**56(100)**	**46(100)**	**102(100)**
Field demonstration	Never	4(7)	13(28.3)	17(16.7)
	Occasionally	48(86)	24(52.1)	72(70.6)
	Often	4(7)	9(19.6)	13(12.7)
Total		**56(100)**	**46(100)**	**102(100)**
Workshop	Never	9(16)	6(13)	15(14.7)
	Occasionally	43(77)	27(58.7)	70(68.6)
	Often	4(7)	13(28.3)	17(16.7)
Total		**56(100)**	**46(100)**	**102(100)**
ADP	Never	0(0)	0(0)	0(0)
	Occasionally	42(75)	42(91.3)	84(82,4)
	Often	14(25)	2(4.3)	16(15.7)
Total		**56(100)**	**46(100)**	**102(100)**
Office calls	Never	0(0)	3(6.5)	3(2.9)
	occasionally	6(11)	6(13.0)	12(11.8)
	often	50(89)	37(80)	87(85.3)
Total		**56(100)**	**46(100)**	**102(100)**

Source: Field Survey, 2012

Sources of information preference on agricultural extension and veterinary services (private and public)

Table 3 shows the order of preference for each of the information sources by the respondents through which they received information on veterinary services. The table shows that office calls, with the highest mean value of 1.82, ranked 1st, meaning it was the most important or preferred source of information to the respondents. Friends/fellow farmers ranked 2nd (Mean score = 1.68). Television and group discussions ranked 3rd and 4th with mean scores of 1.26 and 1.16 respectively. Radio, which is generally considered to be a very vital and most popular source of information,

ranked 5th (mean = 1.07). The low rank for ADP (9th, mean score = 0.62) could be attributed to the fact that office calls (1st) friend/fellow farmers (2nd), television (3rd), group discussions (4th) radio (5th) are more easily accessible sources of information than ADP. Also, in many parts of the developing world it is noted that many farmers have not been properly reached by agricultural extension services (Ehien, Oladele and Ogunfiditimi, 2004).

Table 3 also shows that respondents who used veterinary services from the private providers as well as those who sort theirs from the government were unanimous in their sources of information. Both of them have office calls and friends/fellow famers ranked 1st and 2nd respectively with internet having the lowest rank. This implies that poultry farmers mostly obtain information about veterinary services when they visit veterinary offices. The use of fellow farmers as a major source of information agrees with the findings of Antholt, (1994) who attributed the rise of farmers preferring fellow farmers as source of information to the apparent ineffectiveness of the public extension services in developing countries. It is surprising from the table that the respondents were not getting information from the internet despite their level of education. This may be because veterinary service providers do not make use of the internet in passing information across to poultry famers

Table 3: Sources of information preference on agricultural extension and veterinary services (private and public)

		Agric. Extension (Public)		Agric. Extension (Private)		Vet. Service Private &Public	
S/N	Information source	Mean score	Rank	Mean score	Rank	Mean Score	Rank
1.	**Friends(fellow farmers)**	1.43	2	1.68	2	`1.68	2
2	**Radio**	1.21	5	1.02	5	1.07	5
3	**Television**	1.45	3	1.45	3	1.26	3
4	**Newspaper**	1.09	6	1.22	4	0.62	8
5	**Internet**	0.76	10	0.21	10	0.22	10
6	**Field demonstrations**	0.77	8	0.86	7	0.96	7
7	**Workshop**	0.54	7	0.52	5	1.02	6
8	**Group discussions**	1.23	4	0.92	6	1.16	4
9	**ADP**	0.49	9	0.24	9	0.42	9
10	**Office calls**	1.72	1	1.74	1	1.82	1

Source: Field Survey, 2012

Affordability of veterinary services

From the table 4 below, veterinary services that is mostly affordable to commercial poultry farmers in the study area included vaccination (99%), treatment of diseases (98%), sales of drugs and vaccines (79.4%) and debeaking (77.4%). Inspection of poultry product was the least affordable. The high affordability of treatment of livestock diseases, management of poultry diseases, consultancy services and sales of drugs to poultry farmers may be because they are the prominent veterinary services needed by commercial livestock farmers.

Less than half (48%) of the respondents who used private veterinary services indicted that debeaking was highly affordable to them. Few (27%) of them also indicated high affordability for vaccination, sales of drugs and vaccines (21.4%) treatment of diseases (21.4%) and diseases diagnoses (19.6%). This reveals respondents' expression of high cost of private veterinary services. However from the table, vaccination (73%), disease diagnoses (75.0%), inspection of

poultry products (54.2%) treatment of diseases (50%), debeaking (48.0%) and sales of drugs were moderately affordable among commercial poultry farmers who used private veterinary services. For those who used public veterinary services, vaccination (52.2%) treatment of disease (47.8%), inspection of poultry products (32.1%) and educating and training of poultry workers (30.4%) were highly affordable while sales of drugs and vaccines (76.1%), treatment of diseases (52.2%), vaccination (45.7%) and disease diagnoses (41.3%) were moderately affordable. Vaccination, treatment of diseases, inspection of poultry products and training of poultry farmers were highly affordable because the government subsidizes these services. Ahuja and Redmond (2001) reported that that poor livestock owners value good veterinary services tremendously and are not averse to paying for them. It appears that the ability and willingness to pay for veterinary services is not the primary inhibiting factor to poultry healthcare seeking.

Table 4: Affordability of Veterinary Services among Respondents

Veterinary service	*Categories*	*Private Vet (%)*	*Public Vet (%)*	**Total (%)**
Vaccination	Not Affordable	0(0)	1(2.2)	1(1)
	Moderately Affordable	41(73)	21(45.7)	2(60.8)
	Highly Affordable	15(27)	24(52.2)	39(38.2)
Total		**56(100)**	**46(100)**	**102(100)**
Debeaking	Not Affordable	2(4)	21(45.7)	25(24.5)
	Moderately Affordable	27(48)	17(37)	44(43.1)
	Highly Affordable	27(48)	8(17/4)	35(34.3)
Total		**56(100)**	**46(100)**	**102(100)**
Treatment of Diseases	Not Affordable	2(3.6)	0 (0)	2(2)
	Moderately Affordable	28(50)	24 (52.2)	52(51)
	Highly Affordable	12(21.4)	22 (47.8)	36(35.3)
Total		**56(100)**	**46(100)**	**102(100)**
Sales of drugs and vaccines	Not Affordable	17(30.4)	4(8.7)	21(20.6)
	Moderately Affordable	26(46.4)	35(76.1)	61(59.8)
	Highly Affordable	26(46.4)	7(15.2)	19(18.6)
Total		**56(100)**	**46(100)**	**102(100)**
Disease diagnosis	Not Affordable	28(50)	12(26.1)	40(39.2)
	Moderately Affordable	25(54.3)	10(17.9)	26(25.5)
	Highly Affordable	9(19.6)	18(32.1)	27(26.5)
Total		**56(100)**	**46(100)**	**102(100)**
Inspection of poultry products	Not Affordable	29(63)	33(58.9)	62(60.8)
	Moderately Affordable	9(19.6)	6(10.7)	15(14.7)
	Highly Affordable	8(17.4)	17(30.4)	35(34.3)
Total		**56(100)**	**46(100)**	**102(100)**
Educating/training of poultry workers	Not Affordable	42(75)	7(15.2)	49(48.0)
	Moderately Affordable	11(19.7)	4(8.7)	15(14.7)
	Highly Affordable	3(5.4)	35(76.1)	38(37.3)
Total		**56(100)**	**46(100)**	**102(100)**

Source: Field Survey, 2012

Benefits derived from services received by commercial poultry farmers

Table 5 showed that the majority of the respondents derived benefits from management of poultry diseases (99%), treatment of livestock diseases (99%), provision of drugs to poultry farmers (99%) as well as consultancy services (84.3%). Table 5 also showed that most notable benefits indicated by those who used private veterinary services were management of poultry diseases (75%), treatment of livestock diseases (73.2%), adequacy of staff (62.5%), consultancy

services to poultry farmers (57.1%), timeliness of operation (57.1%), and provision of drugs to poultry farmers (53.6%). Notable benefits for those who used public veterinary services were: management of poultry diseases (64.9%), educating and training of farmers (60%), advisory services (52.2%) and provision of drugs to poultry farmers (41.3%). The table revealed that greatest benefits derived by respondents include: treatment of poultry disease, management of poultry diseases, provision of drugs, and consultancy services with mean values of 1.78, 1.72, 1.58 and 1.53 respectively.

Table 5: Benefits of services received by commercial poultry farmers

List of benefits	*Category*	*Private Vet (%)*	*Public Vet (%)*	**Total (%)**
Advisory services	No Benefit	10(17.9)	2(4.3)	12(11.8)
	Low Benefit	30(53.6)	20(43.5)	50(49)
	High Benefit	16(28.6)	24(52.2	40(39.2)
		56(100)	**46(100)**	**102(100)**
Management of Poultry disease	No Benefit	0(0)	1(2.2)	1(1)
	Low Benefit	14(25)	13(28.3)	27(26.5)
	High Benefit	42(75)	32(64.9)	74(72.5)
		56(100)	**46(100)**	**102(100)**
Treatment of poultry disease	No Benefit	0(0)	1(2.2)	1(1)
	Low Benefit	15(26.8)	40(87)	55(53.9)
	High Benefit	42(73.2)	5(10.9)	47(46.1)
		56(100)	**46(100**	**102(100)**
Provision of drugs for Poultry farmers	No Benefit	0(0)	1(2.2)	1(1)
	Low Benefit	26(46.2)	25(54.3)	51(50)
	High Benefit	30(53.6)	19(41.3)	49(48)
		56(100)	**46(100)**	**102(100)**
Adequacy of staff	No Benefit	13(23.2)	40(87)	53(52)
	Low Benefit	8(14.3)	3(6.5)	11(10.8)
	High Benefit	35(62.5)	3(6.5)	38(37.3)
		56(100)	**46(100)**	**102(100)**
Consultancy services	No Benefit	13(23.2)	3(6.5)	16(15.7)
	Low Benefit	8(14.3)	31(57.4)	39(38.2)
	High Benefit	32(57.1)	12(26.1)	44(43.1)
		56(100)	**46(100)**	**102(100)**
Market information	No Benefit	18(32.1)	21(45.7)	39(38.2)
	Low Benefit	29(51.8)	13(28.3)	42(41.2)
	High Benefit	9(16.1)	12(26.1)	21(20.6)
		56(100)	**46(100)**	**102(100)**
Educating / Training of farmers	No Benefit	22(39.3)	4(8.7)	26(25.5)
	Low Benefit	20(35.7)	14(30.4)	34(33.3)
	High Benefit	13(23.2)	28(60.9)	39(38.2)
		56(100)	**46(100)**	**102(100)**
Timeliness of Operation	No Benefit	4(7.1)	24(52.2)	28(27.5)
	Low Benefit	20(35.7)	20(43.5)	40(39.2)
	High Benefit	32(57.1)	2(4.3)	34(33.3)
		56(100)	**46(100)**	**102(100)**

Source: Field Survey, 2012

Respondent's access to veterinary services

Data analysis in table 6 revealed that all the respondents had access to veterinary services. Commercial poultry farmers who used private veterinary services indicated highest accessibility (83.9%) for treatment of diseases, followed by vaccination (82.6%), debeaking (73.2%) and sales of drugs and vaccines (73.2%). This implies that basic veterinary services needed by poultry farmers are readily available at the private veterinary centres to poultry farmers when they

needed them. On the contrary, majority of those who used public veterinary services indicated low access for vaccination (80.4%), debeaking (54.3%) and disease diagnosis (43.5%). Majority of them also indicated moderate access for treatment of disease (67.4%) and sales of drugs and vaccines (67.4%). A high percentage of those who used public veterinary services indicated that they had high access to sanitary inspection of poultry products (56.5%) and educating and training of poultry workers.

Table 6: Respondent's access to veterinary services

Veterinary services	*Category*	*Private Vet (%)*	*Public Vet (%)*	**Total (%)**
Vaccination	No access	0(0)	0(0)	0(0)
	Low access	3(5.4)	37(80.4)	40(39.2)
	Moderate access	7(12.5)	2(4.3)	9(8.8)
	High access	46(82.6)	7(15.2)	53(52)
		56(100)	**46(100)**	**102(100)**
Debeaking	No access	0(0)	0(0)	0(0)
	Low access	1(1.8)	25(54.3)	26(25.5)
	Moderate access	14(25)	0(0)	14(13.7)
	High access	41(73.2)	21(45.7)	62(60.8)
		56(100)	**46(100)**	**102(100)**
Treatment of diseases	No access	0(0)	0(0)	0(0)
	Low access	0(0)	0(0)	0(0)
	Moderate access	9(16.1)	31(67.4)	40(39.2)
	High access	47(83.9)	15(32.6)	62(60.8)
		56(100)	**46(100)**	**102(100)**
Sales of Drugs and Vaccines	No access	0(0)	0(0)	0(0)
	Low access	0(0)	21(43.5)	21(20.6)
	Moderate access	15(26.8)	31(67.4)	46(45.1)
	High access	41(73.2)	14(30.6)	55(53.9)
		56(100)	**46(100)**	**102(100)**
Disease Diagnoses	No access	0(0)	0(0)	0(0)
	Low access	3(5.4)	20(43.5)	23(22.5)
	Moderate access	39(69.9)	2(4.3)	41(40.2)
	High access	14(25)	13(28.3)	27(26.5)
		56(100)	**46(100)**	**102(100)**
Sanitary Inspection of Poultry products	No access	0(0)	0(0)	0(0)
	Low access	30(53.6)	8(17.4)	38(37.3)
	Moderate access	21(37.5)	12(26.1)	33(32.4)
	High access	5(8.9)	26(56.5)	31(30.4)
		56(100)	**46(100)**	**102(100)**
Educating and Training of Poultry Worker	No access	0(0)	0(0)	0(0)
	Low access	22(29.3)	10(21.7)	32(31.4)
	Moderate access	18(32.1)	10(21.7)	38(37.3)
	High access	15(26.8)	26(56.5)	41(40.2)
		56(100)	**46(100)**	**102(100)**

Source: Field Survey, 2012

Constraints faced by commercial poultry farmers in accessing veterinary services

Table 7 showed the mean score and ranks of the various constraints faced by commercial poultry farmers who patronize private and public veterinary services. Among poultry farmers who patronized private veterinary services, results in the table revealed that cost of veterinary services was ranked 1st, lack of awareness 2nd, Inadequate veterinary officers 3rd. This indicates the high price of veterinary services supplied by private providers. This may be as a result of lack of

awareness and inadequate veterinary officers that were ranked 2nd and 3rd respectively. This can be agreed about how important the cost veterinary services are to poultry industry in the study area. This finding follows theoretical expectation since private services are operated by private veterinary personnel for maximum profit. Privatization, entails paying the appropriate (full) price for the services (Achoja et al., 2010). The least constraint they face is distance to veterinary office.

On the other hand, Table 7 shows that poultry farmers who patronize the public veterinary service delivery indicated that the major constraint they faced was non-availability of drugs with mean value of 1.71. This implies that poultry farmers do not get prescribed drugs from the state owned veterinary offices this will make them fall back to the private providers thereby paying exorbitant prices for the prescribed services. Ndugu (2005) reported that lack of maintenance and operational funds, adequate transport and supply of drugs coupled with under-pricing of services has resulted in the poor performance of state delivery services.

Table 7: Mean scores and ranks of constraints faced by commercial poultry farmers who patronize private and public veterinary services

Constraints	*Mean score (Private)*	*Rank*	*Mean Score (Public)*	*Rank*
Cost of veterinary services	1.71	1	0.91	3
Lack of awareness	1.00	2	0.62	5
Inadequate veterinary officers	0.91	3	0.96	2
Fear of taking risk	0.67	4	0.48	7
Inadequate personnel	0.34	5	0.54	6
Non availability of drugs	0.28	6	1.71	1
Distance to veterinary office	0.24	7	0.82	4

Source: field survey, 2012

Hypotheses testing

Hypothesis 1: There is no significant relationship between farm characteristics and access to veterinary services.

Results of Pearson Product Moment Correlation (PPMC) analysis in table 8 showed that there was significant relationship between flock size and access to Veterinary Services ($r= 0.776$, $p \leq 0.000$). This means that farmers with larger flock size will have greater access to veterinary services. This may be because poultry farmers will do all they could to prevent loss due to disease outbreak considering the huge investment they have made into the farms. This is also in line with Idire (2007) who reported a significant relationship between flock size and access to veterinary services.

Table 8: PPMC analysis between flock size and access to veterinary services

Characteristics	*r - value*	*p – value*	*Decision*
Farm size	0.776	0.000	Significant

Source: Field Survey, 2012 Significant at $p < 0.05$

Further analysis with Chi-Square in table 9 revealed that both private and public vet services providers type of poultry enterprise and type of poultry housing have no significant relationship with access to veterinary services (x^2=2.299, $p \geq 0.317$) and (x^2= 0.196, $p \geq 0.999$) respectively. This implied that access to veterinary services by respondents does not have anything to do with the type of poultry house they make use of (battery cage, deep litter or both) and the type of poultry enterprise whether layers, broilers or both.

Table 9: Chi-Square analysis between farm characteristics and access to veterinary services

Characteristics	*D.f*	*X^2 Value*	*p - value*	Decision
Poultry enterprise	2	2.299	0.317	Not significant
Type of poultry house	2	0.196	0.999	Not significant

Source: Field Survey, 2012
Significant at $p < 0.05$

Hypotheses 2: There is no significant relationship between the affordability of Veterinary services and Access to Veterinary Services.

From table 10 the result of the PPMC indicated that at 0.05 level of significance, affordability has a significant relationship to access to veterinary services (r= 0.572, $p \leq 0.000$) and (r= 0.012, $p \leq 0.039$) for private and public veterinary services respectively. It thus means that the affordability of all the listed veterinary services have a direct effect on the respondents' access to veterinary services. Therefore, the higher the affordability of these veterinary services the greater the access to them and vice versa.

Table 10: PPMC analysis between affordability and access to veterinary services

Characteristics	*r - value*	*p - value*	*Decision*
Affordability (private Veterinary Services)	0.572	0.000	Significant
Affordability (public Veterinary Services)	0.012	0.039	Significant

Source: Field Survey, 2012 Significant at $p < 0.05$

Hypothesis 3: there is no significant relationship between constraints and access to veterinary services

PPMC analysis in table 11 shows that at 0.05 level of significance, constraints has a significant relationship to access to veterinary services (r= -0.433, $p \leq 0.000$) and (r= -0.352, $p \leq 0.000$) for private and public veterinary services respectively. It thus means that all the identified constraints collectively have a direct bearing on commercial poultry farmers' access to veterinary services. Therefore, the more constrained they are, the lesser their access to veterinary services and vice versa. This finding agrees with earlier report of Ndugu (2005) who asserted that the various attempts made by organizations to improve commercial poultry production were with different problems such as the rising cost of veterinary services.

Table 11: PPMC analysis between affordability and access to veterinary services

Characteristics	*r - value*	*p - value*	*Decision*
Constraints (private Veterinary Services)	-0.433	0.000	Significant
Constraints (public Veterinary Services)	-0.352	0.000	Significant

Source: Field Survey, 2012 Significant at $p < 0.05$

Hypothesis 4: There is no significant difference between private and public veterinary service delivery Delta State.

Table 12 shows that there was a significant difference ($t=1.737$, $p \leq 0.046$**)** between private and public veterinary services in the study area. This means that differences exist in their affordability, sources of information, constraints, benefits and access. Achioja et al., (2010) reported that even though poultry farmers were constrained by the high cost of private veterinary services they still prefer it because they access their major veterinary needs from the private services providers. It can be concluded from this study that the private veterinary service delivery is more accessible than the public veterinary service delivery.

Table 12: t-test analysis for test of difference between public and private veterinary services

Veterinary system	*Frequency*	*Mean*	*t-value*	*Sig.*	*Decision*
Private	56	16.30	1.737	0.046	Significant
Public	46	15.24			

Significant at < 0.05

Source: field survey, 2012

CONCLUSION

Based on the results of this findings, private veterinary services provider provide better poultry health services than public veterinary services. Private veterinary services demonstrated this by providing better benefits such as provision of advisory services, management of poultry services, and better access to vaccines, debeaking services, treatment of diseases and consultancy services to commercial poultry farmers, although public veterinary services only provide better access to training on poultry management, marketing information and sanitary inspection services. It can be deducted that there are variation in services provided by private and public veterinary extension services in the study area.

Findings revealed that majority of respondent raises moderate number of both layers and boilers housed in battery cage. This means that respondents had adopted good management practices of raising poultry birds. If veterinary extension services are delivered poultry farmer would be ready to for sustainable production of poultry birds. Findings also showed that group discussion, field demonstration, workshop and office call were more often or in some cases occasional medium of giving information on veterinary service in private extension providers as compared to public extension provider. Such mediums of communication could sustain the high productivity of poultry production as they were more participatory. Participation is an attribute of successful and sustainable extension. Participation through the inclusion of farmers can be a more efficient way to achieve the goals of the extension programme. It can also be a goal in itself to give farmers more opportunities to influence their own future as well as acquire more power in the society. Results further showed that veterinary services such as; treatment of diseases, diseases diagnosis, sales of drugs and training of poultry worker were not affordable with private extension providers as compared to public extension where debeaking, inspection of poultry productions were not affordable among majority of respondents. This implies that services rendered by private veterinary extension were more costly as compared to public veterinary extension provider. This factor of unaffordable services could also be hindrance to sustainable poultry production in the study area.

Higher percentage of respondent indicated that management of poultry disease, treatment of poultry disease, provision of drugs for poultry farmers and consultancy services from private veterinary extension providers were of high benefit as compare to public extension provider where the only enjoy advisory services and education/training of poultry farmers were of high benefit. This means that both private and public veterinary extension providers were contributing more to sustainable poultry production in the study area. Non availability of drug and inadequate veterinary extension officers and cost of veterinary services were the top constrained faced by poultry extension farmers. This is no doubt that no sustainable development can take place in poultry production without easy availability of drugs at affordable cost through adequate veterinary officers to poultry farmers.

RECOMMENDATIONS

In order to enhance veterinary services delivery to commercial poultry farmers for sustainable poultry production in the study area.

- The study shows that private sector was more involved in the provision of major veterinary needs of poultry farmers in the state. Government should therefore provide an environment conducive to the emergence of private veterinary practice and create a level playing field between public and private service providers as well as to provide support to veterinarians wishing to venture into private veterinary practice to allow sustainable poultry production.

- Modality should be put in place by government and relevant agencies to recruit more qualify veterinary officers to meet up with the increasing number of poultry farmers and ensure that veterinary drugs are always available in the state owned veterinary offices.

- Cost of veterinary services was the major constraint faced by those who used services from the private sector, it is recommended that the state could tackle this by setting, monitoring and enforcing standards for service delivery and making the information available to the public. Such policy would reform veterinary extension delivery system by private or public provider to ensure sustainable poultry production in the study area.

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