



## **Utilisation and Registration Assessment Status of Chicken Genetic Resources in Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### **Article Information**

#### **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/85634>

**Original Research Article**

**Received 08 February 2022**

**Accepted 17 April 2022**

**Published 04 June 2022**

### **ABSTRACT**

There are sizeable numbers of exotic chickens that are being utilised for commercial production of day-old chicks (DOC), eggs and meat without adhering to the regulation governing the commercial utilisation of livestock breeds in Nigeria. Data was obtained through structured questionnaire on the utilisation and registration status of chicken breeds among the day-old chicks (DOC) Merchants Association in Nigeria. A total of 400 DOC merchants were randomly selected, interviewed on the chicken breeds, types and the promoting companies. The data obtained were subjected to descriptive statistical analysis of simple percentages and proportions. The age of majority DOC merchants ranged between 46 – 55 years for male and 36 – 45 years for female representing 40.91% and 39.44% respectively. The highest educational qualification of the male respondents is Higher National Diploma or First Degree and Ordinary National Diploma for the female respondents representing the percentages of 36.36% and 36.11% respectively. Eight layers, six broilers, two

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dual-purpose, special male and cockerels were identified being utilised for the commercial production of DOC in Nigeria. Similarly, eleven major chicken promoters/breeders' farms and numerous subsidiary promoters were identified. The patronage of DOC by customers is not restricted to Nigeria alone but stretched to other West African Countries. The male and female DOC merchants usually realised the sales volume of 05 to 20 boxes at 27.73% and 38.89% per market day and least of 301 – 500 boxes at the proportions of 0.50 and 0.56 respectively. The chicken breeds used for the production of DOC, eggs and meat should be registered to aid documentation, inventory and also expedite government interventions on the industry.

*Keywords: Chicken genetic resources; poultry descriptor; registration; utilisation; regulation.*

## 1. INTRODUCTION

The poultry industry is a reputed and most organised segment of animal husbandry subsector in Nigeria. According to [1,2], the Nigerian poultry industry is rapidly expanding and has emerged the most commercialised subsectors of Nigerian agriculture with a net worth of N1.6 trillion. Nigerian poultry value chain is growing and fast evolving for people's livelihood of which they are important for nutrition and incomes. The industry comprises about 180 million birds [3] producing up to 300,000 metric tonnes of meat and 650,000 metric tonnes of eggs [2] per year in intensive system with 17,000 commercial holdings [4]. Large number of teeming Nigerian youths are involved in agricultural businesses which generated \$16 billion in 2012 [5] and contributed 25% of agricultural GDP to the Nigerian economy [2]. The demand for poultry products is expanding as a result of population growth.

During the era of African colonisation, various exotic chicken breeds were introduced from Europe leading to extensive mixing with the established indigenous ones [6]. Chicken is one of the poultry species and outnumbers all; it is found throughout the country wherever there is human settlement. According to [4], Nigeria has the second largest chicken population in Africa after South Africa. Undeniably, there are wide variety of chicken populations, categorized to indigenous, exotic and locally adapted chicken breeds in Nigeria. The native chickens are the Yoruba and Fulani ecotypes often classified based on the phenotype and geographical locations; while the exotic counterparts are breeds that have been acclimatised to the local production systems and have the ability to thrive well in the modified conditions; while the locally adapted ones are the ShikaBrown® [7,8] and FUNAAB Alpha® dual-purpose [9] chickens.

[10] in their survey reported sizeable numbers of chickens are reared intensively on a commercial

basis particularly in the southwestern states of Nigeria. In Nigeria, there is a regulation governing the commercial utilisation of livestock breeds (Act of Parliament, 2016) which stipulates registration of both the existing and newly-developed livestock breeds. [1] decried non-regulation of market entry of poultry companies from foreign countries to Nigeria. Sadly, only the ShikaBrown® [7] and FUNAAB Alpha® [9] chickens had been registered in compliance to the act. It is fundamental to assign national codes to both the existing and newly-developed livestock breeds in order to aid the country animal genetic resources' (AnGR) inventory, monitor their status [11] and plan appropriate conservation technique for the resources.

Nonetheless, there are substantial numbers of exotic imported and locally adapted chicken breeds being utilised for the production of day-old chicks, eggs and meat in Nigeria without adhering to the regulation governing the commercial utilisation of chicken breeds in the country. This research work investigated the available chicken breeds being utilised for the production of day-old chicks (DOC), meat and egg; registration status and economy impact in Nigeria and West Africa at large.

## 2. MATERIALS AND METHODS

A structured questionnaire was designed using modified poultry descriptor for registration [12] to obtain data on the utilisation and registration status of chicken breeds among the day-old chicks (DOC) Merchants Association of Nigeria. The questionnaire was sectionalized to five (5) parts; the questions were mostly objectives while some responses were discussive. The study was conducted at Oluyole Ibadan, the market hub of DOC in Nigeria. A total of 400 DOC merchants were randomly selected from the study area to obtain the required data for the study. The questionnaire was administered to both male and female DOC merchants through individual interview. Data on the chicken breeds, types,

customers' locations, sales volume per market day, preferred companies' DOC by the customers, promoting companies were obtained. The data obtained were subjected to descriptive statistics [13] to generate the tables and percentage distribution of the results.

### 3. RESULTS AND DISCUSSION

#### 3.1 Demographic Information of Day-old Chicks (DOC) Merchants' Association of Nigeria

The respondents' demographic information is presented in Table 1. Majority of the male and female DOC Merchants' Association of Nigeria age ranged between 46 – 55 years and 36 – 45 years representing 40.91% and 39.44% respectively. According to NBS [14], the unemployed populations are those in the labour force, people of working age between 15 – 64 years who were willing and actively looking but could not find job. The higher of proportion of the

female respondents substantiated the claim by [15] that 95% of Nigeria farmers feeding the are women. The highest educational qualification of the male respondents is Higher National Diploma or the first Degree and female had Ordinary National Diploma representing the percentage of 36.36% and 36.11% respectively. The study revealed the rate of unemployment in Nigeria could have compelled the respondents to venture to this business, because there is lack of vibrant industries to absorb competent graduates and individuals. Equally, the year of business establishment falls between 6 – 10 years for females and 0 – 5 years for males with a percentage of 33.64% and 36.67% respectively. Majorly the business is privately owned by individual. The obtained value proportions among the DOC merchants in the Southwestern Nigeria confirmed the report of [5] that large number of Nigerian youths are involved in agricultural business. It is imperative for the respondents to earn incomes, contribute to the increase in nation's incomes and development.

**Table 1. Demographic information of day-old chicks (DOC) merchants association of nigeria**

Survey Descriptions	Male		Female	
	Total frequency	%	Total frequency	%
<b>Numbers of day-old chicks (DOC) Merchants assessed n = 400</b>	220	55.00	180	45.00
<b>Age Distribution</b>				
16-25	5	2.27	10	5.56
26-35	37	16.82	25	13.89
36-45	73	33.18	71	39.44
46-55	90	40.91	64	35.60
56-65	15	6.82	10	5.56
>66	-	-	-	-
<b>Educational level</b>				
O'Level	70	31.82	44	24.44
OND/NCE	58	26.36	65	36.11
HND/BSc/B.Agric/B.Tech/B.	80	36.36	56	31.11
Eng	12	5.45	15	8.33
MSc/M.Agric/MBA	-	-	-	-
PhD	-	-	-	-
<b>Year of Business Establishment</b>				
0-5	56	31.82	66	36.67
6-10	74	33.64	39	21.67
11-15	56	31.82	39	21.67
16-20	30	13.64	32	17.78
>21	04	1.82	04	2.22
<b>Type of Business Establishment</b>				
Private owned	220	55.00	180	45.00
Government owned	-	0.00	-	0.00

### 3.2 Breeds of Chicken Utilised for the Commercial Production of Eggs and Meat in Nigeria

There are different categories of chicken breeds that are being utilised for the commercial production of DOC, eggs, meat and their promoters in Nigeria are shown in Table 2 and Fig. 1. They included the layers, broilers, dual-purpose, special male and cockerels; eight (8) pullets were identified including the ISA Brown, Dekalb Amberlink, Bovans Black, Lohmann Classic Brown, Novogen Brown, ShikaBrown®, Oba Black and Black Dominant chickens. Similarly, six (6) identified broiler strains are Arbor Acre Plus, Cobb 500, Ross 308, Hubbard, Oba Marshall and FUNAAB Alpha. Furthermore, the dual-purpose FUNAAB Alpha® and Noiler chickens were also identified and lastly the special male and cockerels being ISA White, ISA Black, Novo White, Lohmann White-Classic and Brown cockerels. In addition, the promoters of these different chicken breeds were also identified and categorised into major and subsidiary promoters. The eleven (11) major chicken promoters are Chi, Amo, Zartech, Agrited, Obasanjo Farm, Olam, Novogen, FUNAAB, NAPRI, Cascada and Nu Breed while the subsidiary promoters are Farm Support, Yammfy, Fidan, Sayed, Tuns and Vertex, NPG, Foresight, Valentine, Daddy, Tosam/Supreme, Crown, Karmadex, Nastech, and so on. [16] highlighted the hatchery operators in Nigeria and

categorised them as one of the important private-sector players in the poultry industry.

### 3.3 Preferred Farms' Day-Old Chicks (DOC) by the Customers in Nigeria and West African Region

The proportion of the preferred farms' DOC by the customers is presented in the Fig. 2. The patronage of the preferred farms' products by the customers varied greatly among the respondents. High percentage of customers loved to patronise the female DOC Merchants who deal in products of Chi, Amo, Zartech, Farm Support, Yammfy, Agrited, Fidan, Sayed, Tuns and Vertex respectively. Consequently, the male DOC Merchants attracted customers that prefer Olam, NPG, Foresight, OFN, Valentine, Daddy and Crown day-old chicks respectively. It could be inferred that the products of the leading companies in the DOC business are been preferred by customers of the female DOC Merchants in Nigeria. The women's knowledge and enormous contributions to agricultural development [17] could have promoted greater patronage for the female DOC Merchants. The study also revealed that 15% male DOC Merchants deal with the Plain Carton (no breeder's farm name) DOC and 14% female DOC Merchants added them to their wares on each market day. [18,5] attributed provision of credits delivery to the unemployed youths will promote entrepreneurial spirit and enhance the



Fig. 1. Some of the chickens that are being utilised for the commercial production of DOC, eggs and meat in Nigeria

**Table 2. Lists of chicken types, breeds and the companies’ promoters in Nigeria**

<b>Chicken types/breeds</b>	<b>Major promoters/breeders’ farm</b>	<b>Subsidiary Promoters/breeder’s farm</b>
<b>Pullets</b>		
ISA Brown	Chicken	Amo, Zartech, Farm Support, Yammfy, Fidan, OFN, Crown, Fol Hope and Tuns.
	Chicken	-
Dekalb Amberlink	Chicken	-
Bovan Nera	Olam	-
Lohmann Classic Brown	Novogen	-
Novogen Brown	NAPRI	-
ShikaBrown®	Obasanjo Farm	-
Oba Black	Nu-Breed	-
Black Dominant		
<b>Broilers</b>	Chicken	Amo, Zartech, Farm Support, Tuns, Sayed, Bachelor, Yammfy, Fidan, Crown Vertex, Sunchi, Valentine and Fol Hope.
Arbor Acre Plus		Olam
	Zartech	Sayed, NPG
Cobb 500	Agrited	Fidan
Ross 308	Cascada*	Defunct Foresight
Hubbard	Obasanjo Farm	-
Oba Marshall	FUNAAB	
FUNAAB Alpha Broiler		
<b>Dual-Purpose</b>	Amo	
Noiler	FUNAAB	-
FUNAAB Alpha®		-
<b>Cockerels</b>	Chicken	
Isa White/Black		Amo, Zartech, Farm Support, Yammfy, Fidan, OFN, Crown, Tuns
Novo White	Novogen	
Lohmann White	Olam	-
Brown cockerel	Chicken	-
		-

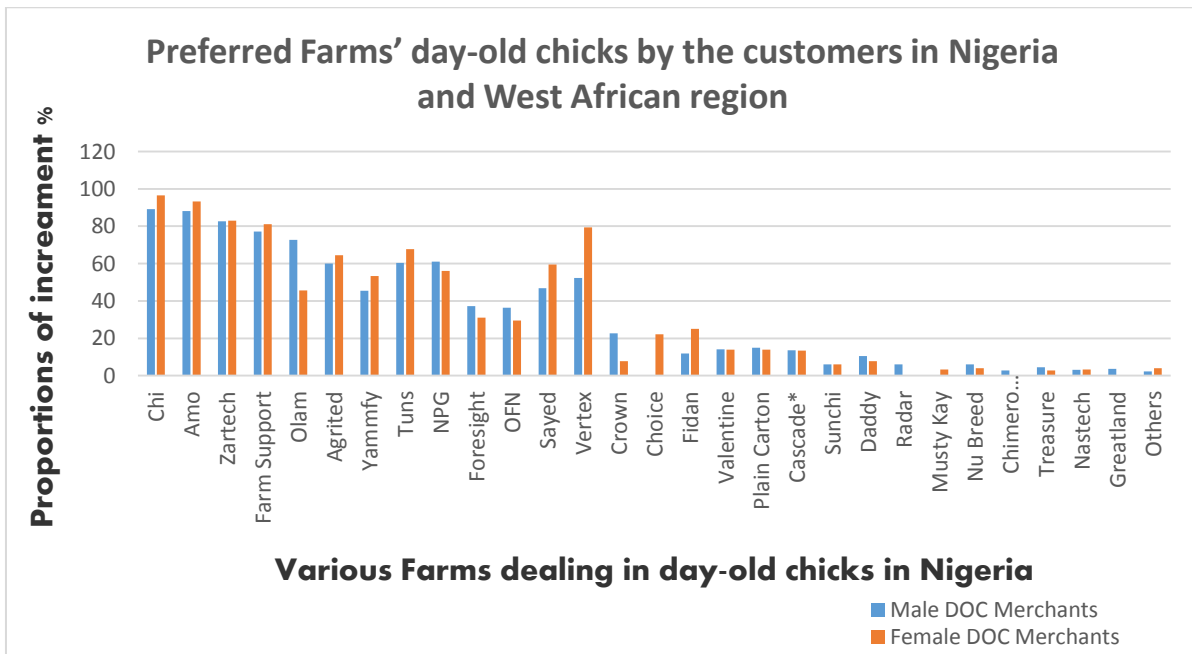
*Cascada\* - Defunct Bnot Hannel*

spread of small and medium enterprises among the Nigerian youths/unemployed. Indigenous DOC’ merchandise is not popular among the DOC Merchants when compared with the exotic counterparts. Both production and sales of indigenous chicks is usually on request, specifically by the Researchers and students.

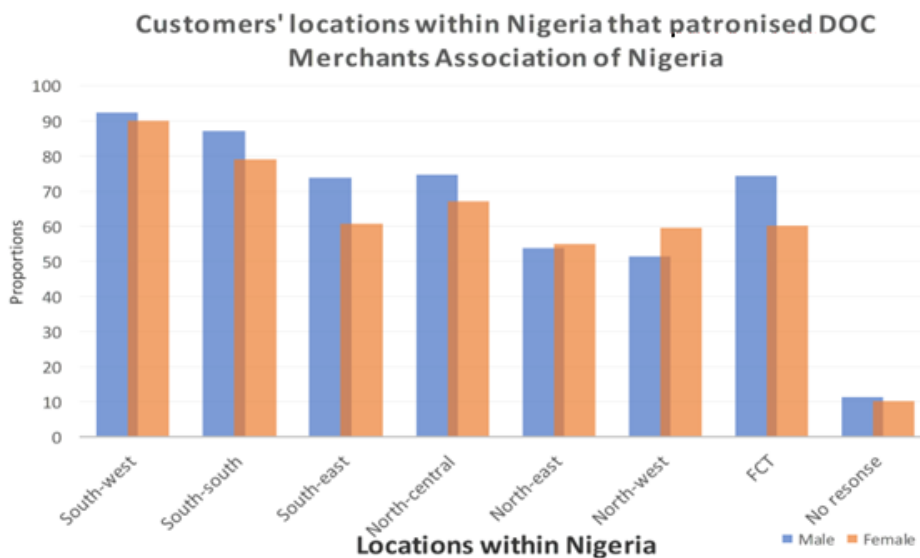
**3.4 Customers’ Locations and Sales Volume Per Market Day**

The patronage of day-old-chicks (DOC) in Nigeria by customers is not restricted to Nigeria alone but stretched to other West Africa Countries as shown in Figs. 3 - 5. In Nigeria, most of the patronage for male DOC merchants usually come from the South-west, South-south, Federal Capital Territory and least of North-west.

Similarly, the female DOC Merchants attracted customers from the South-west, South-south, North-central while the least patronage is from the North-east. The great potential and untapped prospect of empowering youths/unemployed in the poultry sector must have popularized the business in the Southern part of Nigeria. [19] highlighted the availability of viable chicken stocks as one of the factors that greatly influenced poultry production in the Southwestern Nigeria. However, the high rate of insurgency and the prevalent type of animal agriculture which is cattle rearing could have contributed to the low patronage of DOC from the Northern part of the country. [16] reported insignificant commercial poultry activity at the North-east which is affected by Boko-Haram crisis.



**Fig. 2. Preferred Farms' day-old chicks (DOC) by customers**



**Fig. 3. Customers' location within Nigeria that patronised DOC merchants association of Nigeria**

Furthermore, customers from the West Africa region always patronised the market for the purchase of DOC; countries like Cotonu, Cameroon, Chad and least of them came from Niger and Cote d'voire in varied proportions for the male DOC Merchants. The female DOC Merchants attracted more patronage from Togo, Cotonu, Cameroon while the least came from Niger and Cote d'voire. Regional trade within the region was probable and facilitated due to the proximity and the fact that Nigeria has the

second largest population of chicken after South Africa [4].

The sales' volume by the DOC merchants was ranged between 05 and 500 boxes per each market day as shown in Fig. 5. The study revealed the average sales' volume of 05 to 20 boxes; that is 250 to 1000 day-old-chicks are mostly sold by both male and female Merchants at 27.73% and 38.89% per market day and least of 301 to 500 boxes (15,050 to 25,000 DOC)

representing 0.50% and 0.56% respectively. One of the challenges facing the DOC merchants includes inadequate start-up capital and [20] confirmed limited access to financial services as a key challenge to African youths in Agriculture.

It is however evident that the DOC merchants will require interventions in boosting their capital base so as to maximise the huge potential in the poultry industry.

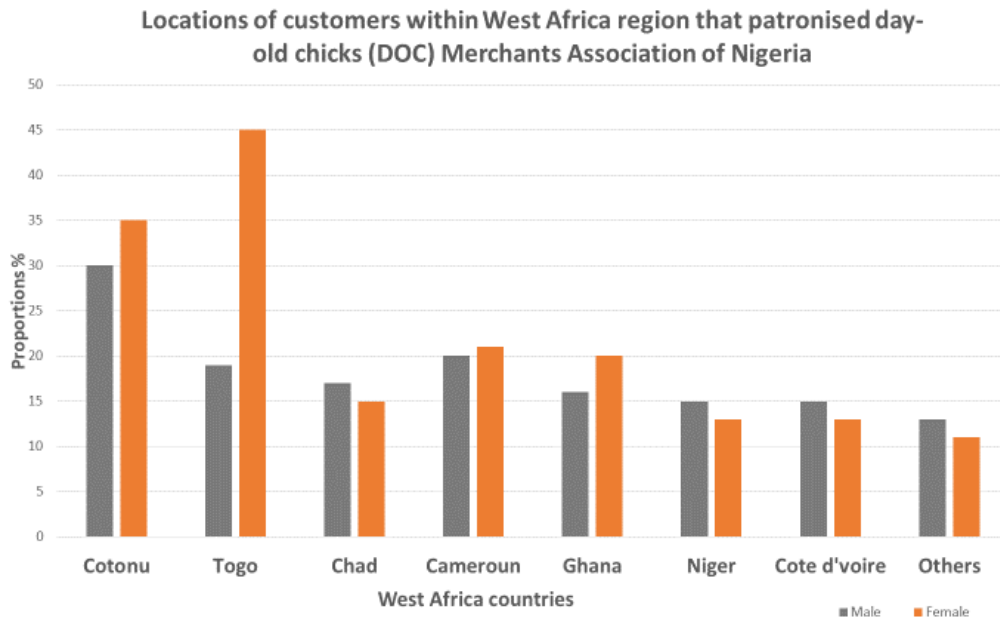


Fig. 4. Customers' location within West Africa region that patronised DOC merchants association of Nigeria

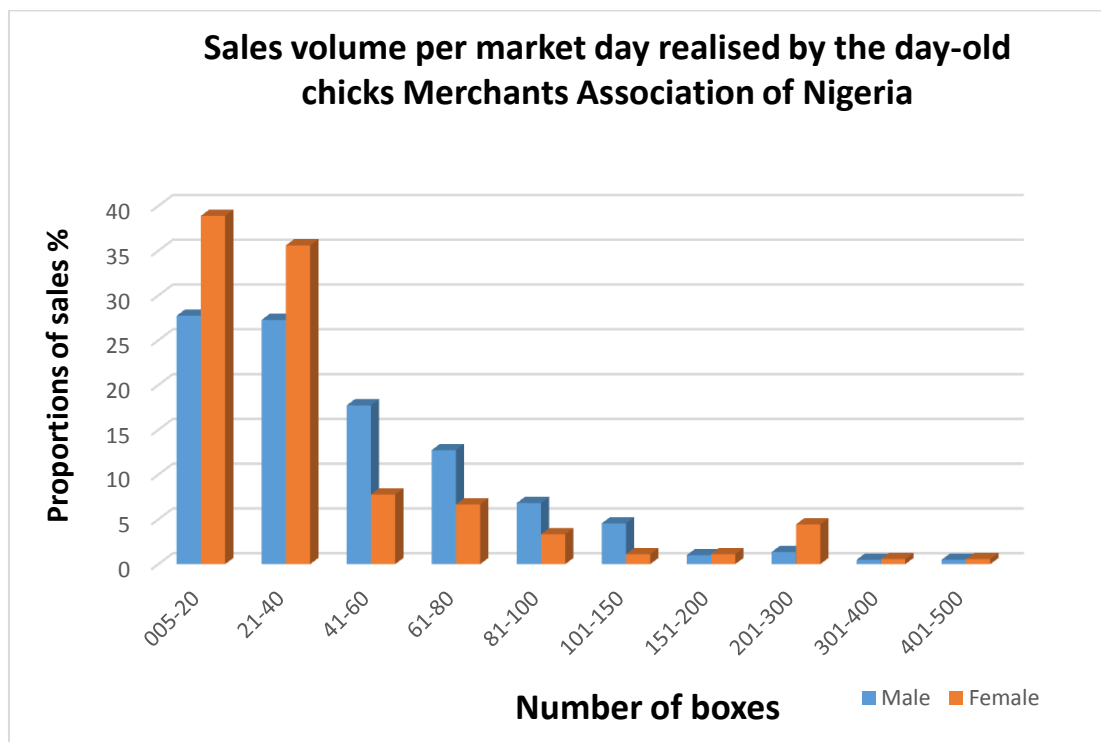


Fig. 5. Sales' volume per market day realised by the day-old chicks (DOC) merchants association of Nigeria

### 3.5 Regulations and Requirements Governing the Registration, Release and Commercial Utilisation of Chicken Breeds in Nigeria

The list of different types and breeds of chicken being utilised for the production of eggs and meat in Nigeria and West Africa, likewise the major and subsidiary promoters is shown in Fig. 1 and Table 2. The study discovered a lot of chicken breeds have been released to the open market for commercialisation and without evidence of any registration in respect of the breeds. The prevailing practice around the world is that animals are frequently bred according to the pre-determined breeds' standard set down by the governing Organisations. Consequently, the Federal Government of Nigeria provided a procedure [21,22] but there has been violation of extant regulations governing the registration, release and commercial utilisation of chicken breeds majorly by the promoters of these breeds in Nigeria [11] described the recommended procedure for registration of both the existing and newly-developed livestock in Nigeria. Inadvertently to the DOC producers, such actions of violation is considered an offence and upon conviction be liable to pay a fine of five hundred thousand (₦500,000) naira, this in accordance to the provisions of the Act of Parliament (2016).

### 4. CONCLUSION

It is concluded that large number of chickens utilised for the commercial production of DOC are not registered according to the poultry descriptor of registration in Nigeria. whereas there are eleven major chicken promoters/breeders' farms and numerous subsidiary promoters in the country.

### 5. RECOMMENDATION

It is recommended that chicken breeds that are being used for the production of DOC, eggs and meat in Nigeria be registered to aid documentation, inventory and also expedite government interventions on the industry.

### DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for

any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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