



Technical Efficiency Measurement of Local Poultry Farmers in the Urban Areas of Kwara State, Nigeria

Ogunwande I. Olusegun

Department of Agricultural and Resource Economics, The Federal University of Technology,
Akure, Ondo State, Nigeria

Corresponding Author: Ogunwande, I.O.: iogunwande@futa.edu.ng

ABSTRACT: The study investigated the technical efficiency status of local poultry farmers in Ilorin West Local Government Area of Kwara State, Nigeria. A total of 180 respondents were reached and interviewed using multistage sampling technique. The tools of analysis used were Descriptive Statistics, Budgetary Technique and Stochastic Frontier Production Function (SFPF) for the socio-economic variable, cost and returns and individual farm efficiency analysis. Results obtained showed the mean age (57.47) years, farming experience (19.8) years, household size (9), no of extension contacts (4), monthly income (N29, 119.44) and females (78.3%) among others. Cost and returns analysis revealed that local poultry farmers operate at optimal level with profit (N164, 330.05), Net Farm Income (N163, 931.04), Gross Ratio (N0.22k), Operating Ratio (N0.28k) and Fixed Ratio (0.04%). Cage Size (0.0421), flock size (0.1347), labour (0.0469) and veterinary drug (0.0318) and household size (-0.1349) were found to negatively influenced farm output. The mean technical efficiency score and Return to Scale were 0.680 and 0.602 respectively while the tested hypothesis showed that there is a significant relationship between the total value of poultry and socioeconomic characteristics like age, farming experience and household size among others. It was concluded based on the results that local poultry production is a profitable enterprise in the study area. It was recommended that good housing and routine feeding should be paramount in the business.

Keywords: Technical Efficiency, Local Poultry, Urban Area, Farmers

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INTRODUCTION

Livestock production constitutes a critical and basic part of the agricultural economy of Nigeria and found to be prevalent and profitable in the sub-Sahara Africa (FAO, 2015). In Nigeria, there are arrays of livestock being raised under the intensive, semi-intensive and extensive system. Many farmers raise livestock on subsistence and commercial scale based on the availability of resources to be mobilized in achieving the set goals. Livestock are grouped into ruminants (cattle, sheep, goat, and horses), non-ruminants (pig, rabbit, and poultry) and pseudo-ruminants. Of all, chicken remains a noteworthy sub-sector in the livestock industry and alone constitutes as much as 95% of all poultry kept on the planet (Kalla *et al*, 2007).

Poultry product is outstanding based on the fact that it provides the highest turnover rate and the fastest returns to investment outlay in the livestock enterprises (Sanni *et al*, 2005). The industry has been described as the fastest means of proffer solution of protein deficiency among households in Nigeria (Akpabio *et al*, 2007; Ahionsu and Sunmola, 1999). Poultry eggs contribute to the palatability of many dishes by adding about the same amount of animal protein as pork and poultry meat (Alabi and Isah, 2002). The commitment of poultry creation (meat and eggs) to aggregate livestock yield increased from 26% in 1995 to 27% in 1999 with an increase in egg production alone representing about 13% during the period. In the same vein, Folorunsho and Onibi (2008) upholds the

importance of poultry egg and meat as offering considerable potential for meeting human needs for dietary animal supply while Laseinde (1994) opined that poultry production in the past was not recognized as an important occupation; it has developed and occupied a place of pride among the livestock enterprises due to its rapid monetary turnover.

Food and Agricultural Organization (1989) recommended daily protein consumption as 60g per person out of which 35g is expected to be of animal source. It was further reported by Isoun (1980) that the average per capita protein intake in Nigeria was 51.7g of which only 8.6g came from animal sources, conversely, in the developed countries, the average per capita protein intake was over 90g with more than 65g animal protein. Proteins are proved beyond a reasonable doubt by medical science as veritable component of anti-body which builds immunity in the body and shield it from being easily infected with diseases. As labour plays a significant role in the efficient management of other resource mobilized for technical transformation of input to output in agriculture (Olayemi, 2004); good health helps immensely in attaining efficiency in the production process, arising from the consumed protein-ridden poultry products that immunize the body against opportunistic infections which are capable of reducing labour man-days.

In spite of the nutritive value of poultry egg and meat, its production in the nation is terribly insufficient as reflected in the wide gap between demand and supply of the product; this could be attributed to various issues that poultry farmers in Nigeria are confronted with. The main problem of broilers production in Nigeria is that of lower productivity which is ascribed to technical inefficiency, high production cost, insufficient extension services and training facilities (Eze *et al*, 2012). Prominent challenges confronting farmers in the poultry enterprise include low capital base, diseases and pest, poor housing, high cost of feed, poor quality of day old chicks and labour have been nadir to poultry production in Nigeria (Ogunfowora, 1980; Bamgbose, *et al*, 1998; Alabi and Aruna, 2006; Mgbakor and Nzeadachie, 2013).

Literature is awash with plethora of researches and reasonable findings on poultry production in Nigeria. Among these are Ojo (2003) who worked on the technical efficiency of poultry egg production in Nigeria using Stochastic Frontier Production Function (SFPF). He found out in his study that the return to scale for egg production was 0.771 which was interpreted that farmers operate at the stage II on the production surface while the average technical efficiency was 0.763 with maximum and minimum were 0.24 and 0.69 respectively. Adepoju (2018) worked on the technical efficiency of egg production in Osun State where SFPF was also used; the returns to scale (RTS) in the egg production of farmers in the study area was found to be 0.77 while the technical efficiency was 0.76 with minimum and maximum efficiency values were 0.24 and 0.93 respectively.

Alabi and Aruna (2005) also examine the efficiency of family poultry production in Niger Delta, Nigeria who reported that Return on Investment in family poultry was 7.60; the mean technical efficiency was 0.22 while the minimum and maximum was 0.09 and 0.63 respectively. Also, Omolayo (2018) also investigated the economics of broiler production in Lagos State poultry estate and the result revealed that return per naira (0.40), gross ratio (0.66) and the operating ratio (0.54) which showed that the enterprise was having good financial standing. The efficiency result showed the mean efficiency was 74.74% while the minimum and maximum efficiency was 57.88% and 96.31% respectively.

What made this study different from the ones in the foregoing is that it investigates the technical efficiency among farmers raising local poultry birds which has little reference in the literature but in many cases has a high level of significance among the rural households in Nigeria in terms of income source and household's meat and egg consumption. Based on the discussion in the foregoing, this study hopes to answer the following research questions: What are the socioeconomic characteristics of local poultry farmers? Is local poultry profitable? What informs the preference for raising local poultry among the

respondents? What is the perception of farmers on local poultry production? The specific objectives of the study were to: describe the socioeconomic characteristics of the local poultry farmers; determine the profitability of local poultry production among the respondents; assess the determinants of preference for local poultry production among

the respondents; examine the perception of the respondents about local poultry in the study area.

Hypothesis for the Study

H₀: There is no significant relationship between the total value of local chicken produced and selected socioeconomic variables.

METHODOLOGY

Study Area

The study was carried out in Ilorin West Local Government Area (LGA) of Kwara State with its headquarters in Wara-Osin. It is bounded in the West by Asa LGA, bounded in the East by Irepodun LGA, bounded in the North by Moro LGA and bounded in the South by Ilorin. The LGA is deep seated in the heart of Ilorin town with a total land area of 105km². According to the National Population Census (NPC) figure of 1991, it has a population of 364,666 with 181,875 males and 182,791 females. Ilorin West is located in the derived savanna vegetation belt with a mean annual temperature and rainfall of 29^oC and 1,250mm respectfully (Kwara State Ministry of Information, 2016). The area is purely urban with heavily clustered

settlements with a lot of bungalow houses which are dotted by some storey buildings but with some spaces as backyard. The space in some cases is used for farming which comprise crop and livestock. The notable crops planted are maize, guinea corn etc. while livestock are duck, goat, and chicken etc. There are many markets and cottage industries in the area which provide job for people from all works of life. Ilorin West LGA is mostly occupied by the Yoruba and plays host to many other tribes like Hausa, Fulani, Egede, and Nigeriens among others.

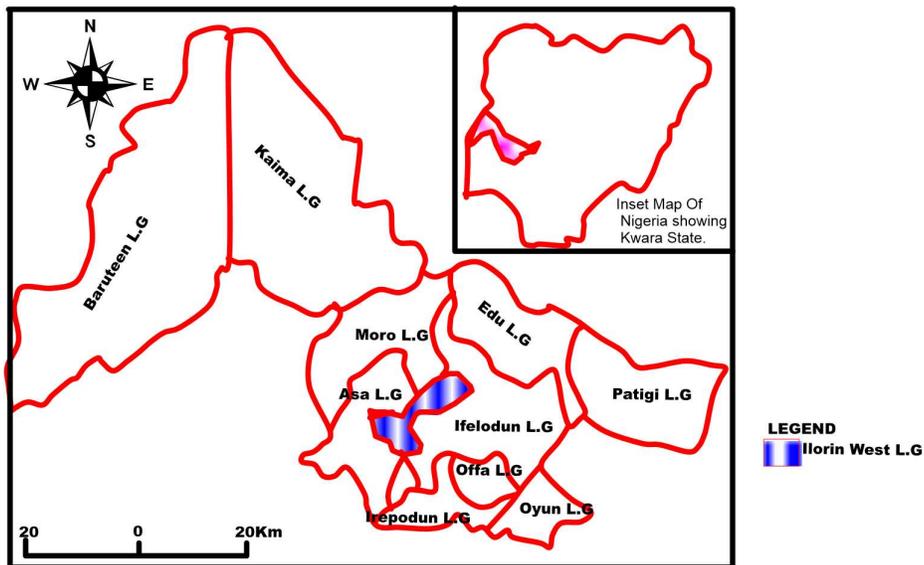


Figure 1: Map of Kwara State showing the Study Area

Source of Data

Data used in this study were from primary sources and cross sectional in nature. Some of the variables included to build the model used in this study for policy purpose are: age, marital status, household size, farming experience, flock size, quantity of feed, monthly income, cost and revenue generated among others. The data were collected December, 2018 when local poultry were always at their peak of performance.

Instruments of Data Collection

Data used in this study were collected using copies of structured questionnaire, interview schedule and recording gadgets, such as cell-phone and tape recorder.

Sampling Technique

Multistage sampling technique was used in selecting the respondents used for this study. The first stage was the purposive sampling of Ilorin West LGA from a total of three LGA in Ilorin metropolis because of the prevalence of local poultry farmers in the area. From the area, twelve (12) communities were randomly selected based on spatial location for unbiased selection and, these are: Odota, Baboko, Surulere, Agbo-Oba, Adeta, Pakata, Oloje, Alore, Abayawo, Okelele, Adangba and Omoda which formed the second stage. The third stage was the random selection of fifteen (15) poultry farmers from each of the communities regardless of gender or age bias, which gave a total of 180 respondents which was finally used for the study.

Analytical Tools

The socioeconomic characteristics of the local poultry farmers in the study area and how they affect the profitability of broiler production were described using descriptive statistics such as tables, frequency counts, and percentage distribution.

Farm Budgetary Technique

The cost and returns associated with local poultry production was carried out to determine the production was carried out to determine the profitability of local poultry enterprise. Net

Farm Income (NFI) and Gross Margin (GM) were used to determine the cost and returns of poultry production in the study area using Budgetary Technique (BT). A farm budget as the detailed physical and financial plan for the operation of a farm for a certain period (Olukosi and Erabor, 1988). The farm budgetary analysis helps to determine the total and total revenue that accrued to the enterprise within a specific production period. The gross margin analysis involves evaluating the efficiency of an individual enterprise (of farm plan) so that comparison can be made between enterprises or different farm plans. Gross Margin (GM) is the difference between the GFI and the Total Variable Cost (TVC), that is, $GM = GI - TVC$ or $Gross\ Margin\ (GM) = TR - TVC$.

Where: GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Cost

TFC = Total Fixed Cost

Other profitability ratios that were determined from the study include:

1. Gross Ratio = Total Expenses/Gross Income
2. Fixed Ratio = Total Operating Cost/Gross Income
3. Operating Ratio = Total Operating Cost/Gross Income

Stochastic Frontier Production Function

The stochastic frontier model was used as the inferential statistics for the analysis of technical efficiency. Cobb-Douglas Stochastic Frontier Production Function was used with inefficiency variables to determine the technical efficiency effects of most important variables to the returns of local chicken farms. The technical efficiency of individual farmer is defined in terms of the ratio of the observed output to the corresponding frontier output given the available technology (Effiong and Onyeawaku, 2006).

Model Specification

Stochastic frontier production function can be estimated using either the Maximum Likelihood Method (MLM) or using a variant of the Corrected Ordinary Least Square (COLS) method suggested by Richmond (1974). The

MLM was applied, using the FRONTIER computer programme developed by Coelli (1994). The following model specifications were used in the analysis:

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \dots + \beta_4 \ln X_4 + V_i - U_i$$

where \ln denotes logarithms to base e

Y_i = Birds/Egg Output per farm (in kg)

X_1 = Cage size (in m^2)

X_2 = Flock size (No.)

X_3 = Quantity of labour used (in Man-days)

X_4 = Quantity of water used (in litre)

X_5 = Veterinary drugs (in litre)

V_i = Random error assumed to be independent of U_i identical and normally distributed with zero mean and constant variance $N(0, \delta_2 v)$

U_i = Technical inefficiency effects which are assumed to be independent of V_i , they are non-negative truncation at zero or half normal distribution with $N(\mu; \delta_2 u)$

If $U_i = 0$, no allocative inefficiency occurs, the production lies on the stochastic frontier. If $U_i > 0$, production lies below the frontier and it is inefficient. The inefficiency model based on Battese and Coelli(1988) specification was

$$U_i = \delta_0 + \delta_1 Z_1 + \delta_2 Z_2 + \delta_3 Z_3 + \delta_4 Z_4 + \delta_5 Z_5$$

Where

Z_1 = Household Size (in No.)

Z_2 = Farming experience (in years)

Z_3 = Extension contacts (No.)

Z_4 = Education level (in years)

Z_5 = Farmers Age (in years)

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Local

Poultry Farmers

Socioeconomic characteristics of poultry farmers being examined in this study is presented in Table 1. Result on age showed that 47% of the farmers who are above 60 years of age raise local poultry the most in the area with the mean age of 57.47 years. It could be inferred from this result that, aged is into the poultry enterprise because little resource such as energy, time and feed among others is required. The highest farming experience was 82.2% within the range of 11-30 years with the mean of 19.8%. It means that poultry farmers of this type have substantial experience which can make them operate well to keep the enterprise going sustainably towards the realization of set primary goals. Household size of the respondents showed that the highest family membership category was less than or equal to six with 45% while the mean household size is 9 members. Family planning and other economic situations in the country has made farmers in the study area planned and managed their family well to avert incurring high cost of upkeep. Most (78.9%) of the farmers in the study area are married, which means that responsibility and traditional attachment is of paramount importance to them. Gender distribution of the respondents showed that the majority (78.3%) of farmers raising local

poultry are women. It could be inferred from this result that enterprise of this magnitude is done in and around the residence and in most cases women are the carers of the home, therefore, most have this business as full time or part-time. Majority (60%) of the local poultry operators are primary school certificate holders. This is very possible because, people in this category of educational level cannot secure any tangible job under the government or private establishments and based on this engage in the business as basis for self-employment. The monthly income of the local poultry farmers was highest with 53.9% within the range of ₦20,001- ₦40,000 with the average of ₦29,119.44(\$79.78k) which is far above the national minimum wage paid to the public and civil servant by the Federal and State Governments. It could be inferred from this result that, even, farmers in question are self-employed and barely aged but could still compete with their counterparts under minimum wage favourably in term of purchasing power. About 84% percent of the respondents practised local poultry enterprise as secondary means of income generation while farmers who operate it as major source of livelihood are just about 16%. The result shows that local poultry business is easy to operate as it can be a subordinated source of income without any deleterious effect on the major

source of income. More so, it confirms its relative non-competitive nature as regards other jobs. Farming system shows that majority (63.9%) of farmers practise free-range/extensive system of farming whereby little food and care is given to poultry birds by the farmers which definitely reduces cost of rearing. Most of the farmers in local poultry business keep on both commercial and subsistence (75.6%) and also have the ultimate aim of getting meat and egg as output. The aim of this is to convert the surplus of the two products into feeding the family and for income realization. Result on the number of visits of the

extension agents showed that 62.2% of the respondents received 3-6 contacts in the last farming season while 6.1% received more than 6 visits in the previous season while the mean visit was about 4 times. This number of visits is insufficient when compare to 24 contacts that is official for extension officers to visits farmers in a season. It could be inferred from this result that unavailability of extension advice can adversely affect farm output most especially in the area where the level of education is low hence the little access to information of reliable and relevant source.

Table 1: Socioeconomic characteristics of Local Poultry Farmers

Variable	Frequency	Percentage	Mean
Age(in years)			
≤20	2	1.1	57.47
21-40	34	18.9	
41-60	58	32.2	
>60	86	47.8	
Farming Exp.(in years)			
≤10	10	5.6	19.81
11-20	78	43.3	
21-30	70	38.9	
>30	22	12.2	
Household Size			
≤6	81	45.0	8.53
7-10	71	39.4	
>10	28	15.6	
Marital Status			
Single	14	7.8	
Married	142	78.9	-
Widowed	15	8.3	
Separated	9	5.0	
Gender			
Male	39	21.7	
Female	141	78.3	
Educational Level			
No Formal	-		
Primary	108	60.0	
Secondary	48	26.7	-
Tertiary	21	11.7	
Adult Education	3	1.6	
Monthly Income(in N)			
≤20,000	49	27.2	N29,119.44
20,001-40,000	97	53.9	
40,001-60,000	32	17.8	
>60,000	2	1.1	

Variable	Frequency	Percentage	Mean
Main Occupation			
Artisan	67	37.2	
Trader	51	28.3	
Civil/Public Servant	27	15.0	-
Farming	29	16.1	
Retiree	6	3.3	
Farming System			
Intensive	12	6.7	
Semi-Intensive	53	29.4	-
Extensive/Free Range	115	63.9	
Farming Type			
Subsistence	13	7.2	
Commercial	31	17.2	-
Both	136	75.6	
Extension Contact (No.)	57	31.7	3.76 Times
≤2	112	62.2	
3-6	11	6.1	
>6			
Total	180	100.0	

Source: Field Survey, 2018

Cost and Returns in the Local Poultry Production among Farmers

Cost and returns details arising from local poultry production is presented in Table 2. The financial analysis revealed that the Total Variable Cost (TVC) is ₦39,499.01 which is 86.76% of the Total Cost (TC) and the Gross Margin (GM) of ₦169,859.46 which is the product of the difference between TR and TVC. Gross Margin shows the extent to which the

farm makes a return that is above the cost of production without TFC. However, TFC was not computed because, local poultry production is an enterprise under the farm in that some tools used for this enterprise is also used for other enterprise. The Total Fixed Cost (TFC) is estimated as ₦6,028.42 and the Total Cost is ₦45,527.42. The profit realized by farmers was ₦164,330.05 while the Net Farm Income (NFI) is ₦163,831.04.

Table 2: Cost and Returns Details of Local Poultry Enterprise among Farmers

Item(in Naira)	Average Amount(N)	% of Variable Cost/Fixed Cost	% of Total Cost
Number of poultry farmers = 180	Average number of birds/farmer = 150		
Total Revenue(TR)	209,358.47		
Variable Cost(VC)			
Cost of chicks	6,499.59	16.46%	14.28%
Cost of medication	5,302.23	13.42%	11.65%
Cost of labour	12,307.33	31.16%	27.03%
Cost of litter	2,350.00	5.95%	5.16%
Cost of feed	11,059.72	28.00%	24.29%
Cost of water	1,980.14	5.01%	4.35%
Total Variable Cost(TVC)	39,499.01	100%	86.76%
Gross Margin(TR-TVC)	N209,358.47 – N39,499.01 = N169,859.46		

Fixed Cost(FC)			
Dep. of Cage	2,417.19	40.10%	5.31%
Dep. on feeder & drinker	2,150.12	35.67%	4.72%
Dep. On other tools	1,461.11	24.23%	3.21%
Total Fixed Cost(TFC)	6,028.42	100%	13.24%
TC =TFC + TVC	45,527.42	100%	100%
Profit(II) = TR - TC	N209,358.47 – N45,527.42 = N164,330.05		
Net Farm Income(NFI) (GM-TFC)	N169,859.46 – N6,028.42 = N163,831.04		
Average gross margin(AGM)	N1,132.40		
Average Net Farm Income(ANFI)	N1,092.21		
Average Variable Cost= TFC/Av. No. of Birds	N1,395.72		
Average Fixed Cost= TVC/Av. No. of Birds	N1,615.12		
Total Cost per Bird			

Source: Field Survey, 2018□

***Note: Depreciation was estimated using straight line method at 5%

Both the profit and NFI are strong indicators that the farms are staying financially afloat and the return on investment is viable. Result of other probability ratios showed that the Gross Ratio (GR) is 0.22 implying that, for every one naira invested in local poultry production, 22 kobo would be gained. The Operating Ratio (OR) was estimated at 0.28 which implied that about 28% of the gross income was used to pay for operating costs which shows a good standing and promising future for local poultry business in the area. The value for the Fixed Ratio was 0.04% which implied that, 0.04% of the gross income is being used for fixed cost of production. With the financial values estimated, local poultry production in the area is profitable.

Other Profitability Ratios

Other profitability ratio that was determined from the study includes:

1. **Gross Ratio** = Total Cost/Gross Income = $\frac{N45,527.42}{N209,358.47} = 0.22$. This value implied that, for every invested N1 in local poultry production, 22k would be realized.
2. **Operating Ratio** = $\frac{\text{Total Variable Cost}}{\text{Gross Income}} = \frac{N45,527.42}{N163,831.04} = 0.28$. This result implied that, 28% of the gross income is used to pay for the operating costs.
3. **Fixed Ratio** = $\frac{\text{Total Fixed Income}}{\text{Gross Income}} = \frac{N6,028.42}{N164,330.05} = 0.04$.

This result implied that, 0.04% of the gross income is being used for fixed cost of production.

Maximum Likelihood Estimate of Technical Efficiency of Local Poultry Farmers

Table 3 presents the Maximum Likelihood (ML) parameter estimates of the stochastic frontier showing that sigma square (0.1657) and gamma (0.8532) were significant at 1% levels of probability. The significant value of the sigma (σ^2) indicates the goodness of fit and correctness of the specified assumption of the composite error terms distribution (Idiong, 2005 and Okoye *et al*, 2007). The gamma ($\gamma=0.8532$) shows that 0.1468% of the variation in the output of local poultry was due to technical inefficiency while others are due to random effects.

As expected, the signs of the slope coefficient of the stochastic production frontier were all positive. The coefficient of cage size, flock size, labour, and veterinary drug were statistically significant at 1% level of probability showing inverse relationship with output (egg and meat). This implies that a 1% increase in cage size, flock size, labour, and veterinary drug would reduce output by 0.0421%, 0.1347%, 0.0469%, and 0.0318% respectively while the coefficient for water was also statistically significant at 1% level of probability. This implies that a 1% increase in the quantity of water would lead to 0.8562% increase in output.

Farming experience and number of extension contacts modelled as inefficiency variables were found to be negatively significant at 1% level of probability respectively. A 1% increase in the years of farming experience and number of extension contacts would lead to increase in output by 0.0311% and 0.1703% respectively.

Elasticity Estimate of Mean Output and Returns to Scale (RTS) of Local Poultry Farmers

Estimate of mean output and returns to scale of local poultry farmers (Table 4) showed the RTS extracted from inputs coefficient as 0.602(60%). It is positive and less than unity thus, indicating that local poultry production is in stage II (Rational Zone) of the production function and that inputs allocation and utilization are efficient.

Estimation of Efficiency Indices

The frequency distribution of technical efficiency of local poultry farmer were summarized and presented in Table 5. The technical efficiency estimates range from 0.01 to 0.99 with a mean of 0.68 implying that the farmers have ample opportunities to increase their technical efficiency. The result indicates that the average local poultry farmers would enjoy a cost saving of about 34.41 percent derived from $(1-0.68/0.93)100$ to attain the level of the most efficient farmer. The most technically inefficient farmer would have an efficiency gain of 97.84 percent derived from $(1-0.09/0.93)100$ to attain the level of the most technically efficient farmer.

Table 3: Maximum Likelihood Estimate (MLE) for Determinant of Technical Efficiency of Local Poultry Farmers

Production Variable		Coefficient	t-ratio
Constant	β_0	10.4552	1.12
Cage size(in m ²)	β_1	-0.0421***	-4.23
Flock Size(No.)	β_2	-0.1347***	-9.12
Labour(in Mandays)	β_3	-0.0469***	-17.14
Water (in ltrs)	β_4	0.8562***	11.84
Veterinary Drug	β_5	-0.0318***	-4.79
<i>Inefficiency Variable</i>			
Constant	δ_0	2.9552	0.03
Household Size	δ_1	-0.1349	1.54
Farming Exp.	δ_2	0.0311***	3.09
No. of Ext. Cont.	δ_3	0.1706***	24.03
Education(in yrs)	δ_4	-0.0668	-1.24
Farmer's Age	δ_5	-0.0173	-1.19
Sigma Squared	σ^2	0.1657***	9.6
Gamma	Υ	0.8532***	24.7
Log likelihood fxn(LL)		93.64	
Likelihood Ratio(LR)		15.81	
Mean Technical Efficiency(TE)		0.68(68%)	
Number of farmers		180	

Source: Field Survey, 2018

Table 4: Elasticity of Mean Output and Returns to Scale (RTS) of Local Poultry Farmers

Variable	Elasticity/RTS
Cage size	-0.042
Flock size	-0.134
Labour	-0.046
Water	0.856
Veterinary drug	-0.032
RTS	0.602

Source: Field Survey, 2018.

Table 5: Frequency Distribution of Technical efficiency among Local Poultry Farmers

Range	Frequency	Percentage
≤0.10	2	1.1
0.11-0.20	12	6.7
0.21-0.30	2	1.1
0.31-0.40	20	11.1
0.41-0.50	19	10.5
0.51-0.60	41	22.8
0.61-0.70	31	17.2
0.71-0.80	24	13.3
0.81-0.90	19	10.6
>0.90	10	5.6
Total	180	100.0
Mean	0.68	
Minimum	0.09	
Maximum	0.93	

Source: Field Survey, 2018.

Perceived Constraints in the Production of Local Poultry Birds

Distribution of perceived constraints in the production of local poultry birds is presented in Table 6. Of all the array of constraints presented, space (97.7%) is the highest. This implies that farmers in the poultry enterprise in the area had insufficient space to accommodate their birds as this may be the result of urban location of the farm which is characterized by dense population and low man space ratio. Stealing (93.3%) was also found to be a prominent problem owing to the fact that urban is a heterogeneous environment that accommodated people of diverse background among which are uncultured. According to sampled responses, Coccidiosis appeared to be the major local poultry diseases which endemic

and prevalent in December period causing high mortality on birds without adequate treatment, veterinary care (85.6%) happen to be the highlighted problem in this regards. Cost of feed (81.3%) was also a recurring problem as maize and millet which form the basis of the food given is expensive as this may be in short supply due to incessant conflict in the northern part of the country where they are massively supplied. Motor accident (73.9%) is a common problem in the urban where livestock are raised. Vehicular movement is available in the broad day light and livestock are diurnal in nature, many of them are knocked down and die more so that most of the local poultry are raised on free-range. Disease infection (71.7%) and other natural hazards (43.9%) appear to be seemingly insurmountable problems in this enterprise as most farmers use free-range method of rearing, by this therefore; poultry birds are exposed to different types of diseases as a result of water intake from dirty gutters and consumption of rotten food in the vicinity. Also, rain affect them adversely as surface run-off can easily sweep off the birds which can be a colossal loss for the owners.

Table 6: Distribution of Perceived Constraints in the Production of Local Poultry Birds

Constraints	Number of Farmer	%	Rank
High cost of feed	122	81.3	4 th
Stealing	168	93.3	2 nd
Motor Accident	133	73.9	5 th
Natural Hazards	79	43.9	7 th
Rearing Space	175	97.2	1 st
Diseases Infection	129	71.7	6 th
Veterinary Care	154	85.6	3 rd

Source: Field Survey, 2018

Testing of Hypothesis

Based on the result of the tested hypothesis presented in table 7, the null hypothesis was rejected for the alternative hypothesis. The variables modelled for the test hypotheses using t-test and ANOVA in Tables 7 and 8 respectively established that there is a significant relationship between the total value of the poultry birds and selected socio-

economic variables at 5 percent level of significance. Therefore, values of poultry birds were found to be influenced by age, farming

experience, household size and years of education.

Table 7: T-Test for the Relationship between the Value of Poultry Bird Raised and the Socio-economic Characteristics

Variable	df	t-value	Mean Diff.	Sig. Level (P=0.05)
Total value of poultry birds	179	38.179	1.7310E5	0.000
Age (in years)		50.298	57.472	
Farming experience(in years)		36.944	19.806	
Household size		24.241	8.533	
Education(in years)		27.617	8.794	

Source: Field Survey, 2018.

Table 8: T-test for the Relationship between the Value of Poultry Bird Raised and the Socioeconomic Characteristics

Variable	df	Mean Square	F-value	Sig. Level p<0.05
Age(in years)	116	339.726	8.050	0.000
	63	42.200		
	179	-		
Farm. Exp.(in years)	116	74.429	7.482	0.000
	63	9.948		
	179	-		
Household Size	116	31.044	4.993	0.000
	63	6.218		
	179	-		
Education(in years)	116	26.164	7.095	0.000
	63	3.688		
	179	-		

Source: Field Survey, 2018.

CONCLUSION AND RECOMMENDATIONS

Local poultry business in the urban was found to be profitable among farmers as it translates into good profit which makes it economically worthwhile. More so, farmers in the business were found technically efficient. It could therefore be recommended that: More extension and veterinary services should be made available to the farmers in the business; Awareness should be created for the farmers to,

if possible to locate their houses at the outskirts of the town where there would be ample space for them to raise their birds in the safer and friendlier environment; Supply of grains should be increased by the government through adequate supply and consequent low price and; Good housing and routine feeding must be encouraged among farmers.

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