

## A DESCRIPTIVE ANALYSIS OF SOCIAL ECONOMIC CHARACTERISTICS OF INDIGENOUS CHICKEN FARMERS IN KITUI COUNTY-KENYA

### AUTHORS

Mutombo<sup>1</sup> P.K, Kilungo<sup>2</sup> J. K, Kanui<sup>2</sup> T.I

South Eastern Kenya University P.O Box 170-90200 Kitui-Kenya

1. Correspondant

2. Co-authors

### Abstract

Production of indigenous chicken is a common practice among many farmers living in rural areas. Poultry population is the greatest among the livestock species reared worldwide. Poultry farming is perceived as a very potential and viable enterprise which can poster economic development through provision of employment, income and subsistence of the rural population. This study was conducted in selected wards of Kitui County to establish the effect of demographic characteristics of indigenous chicken farmers on the level of production. A descriptive research design was employed and data was elicited with 120 self administered questionnaires. After screening the returned questionnaires, 100 questionnaires were found fit for the analysis. Descriptive statistics and multiple regression were used to analyse the data .Results revealed that 52% of respondents were women while 48% were men.75% were married while 15% were single. Results also showed that 40% of the indigenous chicken farmers had attained at least primary education level.41% had more than 10years of experience and a majority of 44% owned more than 2 acres of land. The multiple regression result gave adjusted R Square as 0.958 which implies that 95.8% of the factors influencing indigenous chicken production depend on the independent variables. More results revealed that majority of farmers kept less than 50 chicken of which 55% had more cocks than other types of chicken. The study recommends that the government implements a policy on adult education to increase the literacy level. Extension services should also be up scaled in order to increase level of technology adoption.

### Key words

Indigenous chicken ,characteristics,farmers,production.

### 1.0 INTRODUCTION

Chicken production is one of the popular poultry species worldwide (Milkias *et al.*, 2019).They constitute the greatest percentage of livestock species reared in rural areas (Garoga *et al.*, .,2018).The global poultry population is estimated at 16.2 billion and 71.6% is found in developing countries (Milkas *et al.*, 2019).Village poultry contributes 70% of poultry products and 20% of protein intake in Africa (Kajela *et al.*,2019) as cited by Mathiu *et al.*, ,(2021).Indigenous chicken constitutes 70% of the total chicken population in sub sahara Africa (Keleja *et.al.*, 2019).In east Africa 80% percent of human population resided in rural areas and 75% of the households keep

indigenous chicken. According to Padhi, (2016) poultry population is estimated to be 29 million out of which 75% are indigenous chicken as estimated by Delabouglise et al., (2020) and cited by Mathiu et al., (2021). The poultry farming is perceived as a very potential and viable enterprise which can poster economic development through provision of employment, income and subsistence of the rural population (Mwomobia et al., 2016) . Culturally indigenous chicken have been used in traditional medicine and for various cultural rites (Dessie, 1996; King'ori, 2004; Moreki *et al.*, 2010). Milkias et al., (2019) asserted that commercialised poultry production could be used as an exit strategy in addressing food security among the rural poor. Indigenous chickens are hardy, adapt well to the rural environments, survive on low inputs and adapt to fluctuations in available feed resources (Gichohi and Maina, 1992, Kamau et al., 2018). Generally, in sub-Saharan Africa indigenous chickens are owned and managed by women and children and often essential part of female-headed households (Dessie, 1996; Ahlers *et al.*, 2009). Promotion of indigenous chicken production therefore, economically empowers the rural youth and women (Guèye, 2009). In Kenya indigenous chicken production despite its many challenges is a cheaper route to achieve the social-economic pillars of vision 2030 as suggested by Delabouglise et al., (2020).

Despite these merits of poultry farming, indigenous chicken production has been faced with many challenges in africa. In Nigeria, Aromolaran ,Ademiluyi and Itebu(2013) ranked poultry problems in Ibadan, oyo State from the minimum to the highest ,as diseases and pest attack, difficult in credit and and procurement processes, high cost of drugs and mortality of the birds, unsatisfactory healthy breeds availability, accessibility of feeds, high cost of feeds and poor infrastructure like water and electricity supply. Other studies based on problems facing poultry farming included those by; Akinfiresoye and Agbetoye (2013). Alho (2015) Bola-badmus (2020), Das (2015), food and Agricultural organization(2020b), Meta Economics consulting group (2013), Naira Land(2020), osakwe(2017) and shiferaw & Muricho (2011). In Kenya the recent trend of chicken production challenges include the rising costs of farm inputs, inability to control diseases, increasing costs of vaccines, limited information regarding both input and output markets (Abadi et al., 2018, Milkias et al., 2019). The increasing prices of poultry products has also led to a decline in consumptions of the products hence a decrease in overall aggregate demand in the sector (Goraga et al., 2018).

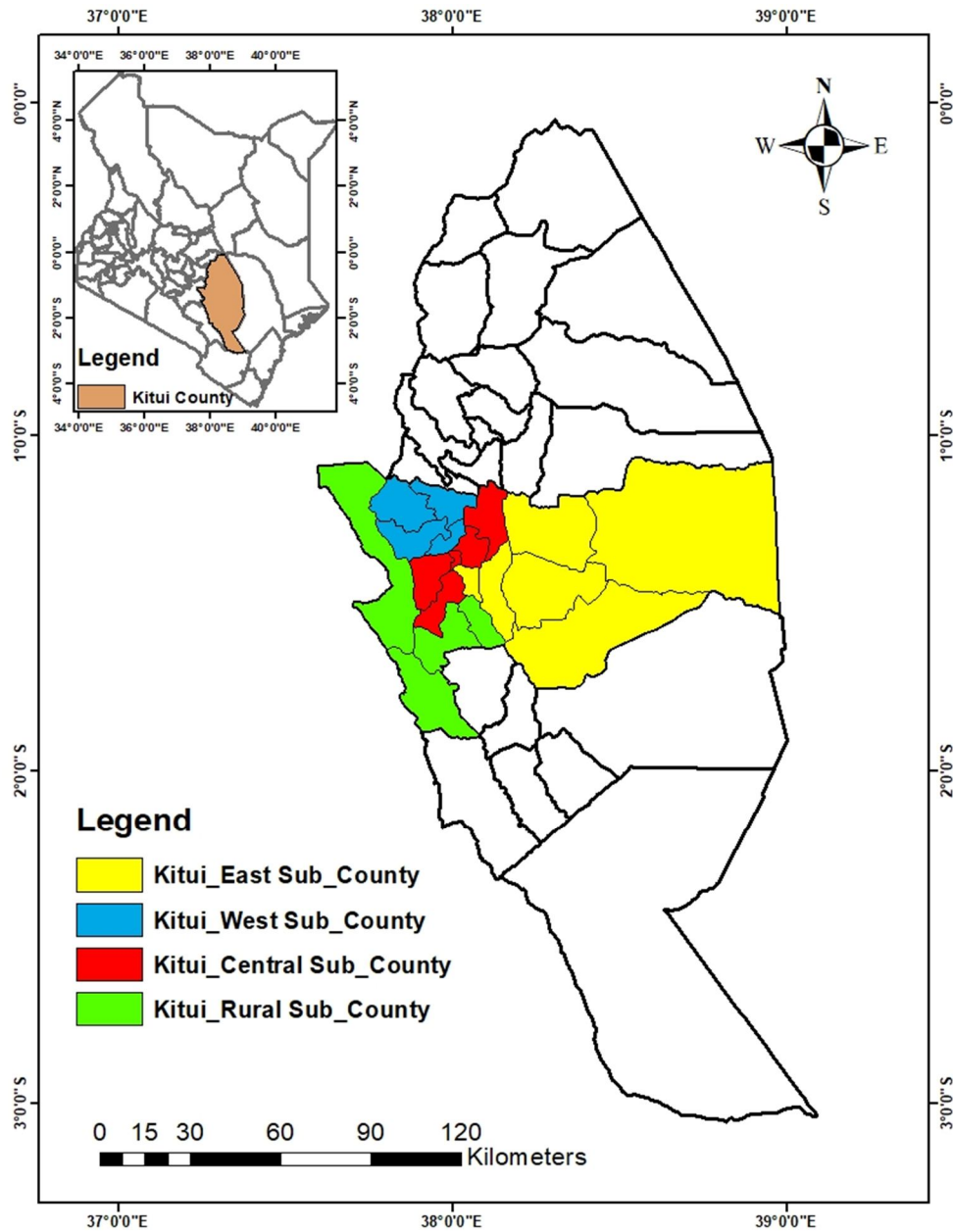
There has been many concerted effort by both government and nongovernmental organization to minimize these challenges and support the sector in increasing the demand of poultry products (Baliyan and Masaku, 2017). Despite all the efforts toward improving production of indigenous chicken among rural farmers, the enterprise continues to generate unrewarding returns (Kejela et al., 2019).

Majority of the problems associated with indigenous chicken production are highly related to socio economic characteristics of the chicken farmers (Mathiu et al., 2021) Demographic characteristics like age ,gender, experience in chicken production, level of education and ability to secure loans are among other factors that need thorough research with a view of improving the poultry sector. Therefore this study aims at analyzing the social economic characteristics of indigenous chicken farmers in Kitui County, Kenya.

**2.0 Materials and methods**

**2.1 Description of the study area**

The study was carried in selected Wards of Kitui county. . It lies between latitudes 0°10 South and 3°0 South and longitudes 37°50 East and 39°0 East. The County has four agro ecological zones all depicting arid and semi-arid conditions; the semi-Arid farming zone, semi-arid ranching areas, arid-agro-pastoral area and arid-pastoral zone. Indigenous chicken farming is the most viable way of earning livelihood in the region.



**Figure 1.**Map of Kitui county

The highlighted parts represent wards where data was collected.

## 2.2 Research design

This study employed a descriptive survey design chosen particularly since it is mainly looking at phenomena, events and issues the way things are (Mugenda and Mugenda, 2003). The descriptive survey design is also concerned with making accurate assessment of the inference, distribution and relationship of phenomenon (Edwards, 2006). In addition, the design provides accurate descriptive analysis of characteristics of a sample which can be used to make inference about the population (Kerlinger, 1973).

## 2.3 Sample Size and Sampling Technique

The study was based on a multistage selection of 120 indigenous chicken farmers in Kitui county. The questionnaire response rate was 83.3% and therefore 100 questionnaires were used for data analysis. A sample size of 2000-3000 is considered as the extreme upper limit while 30 cases is the extreme lower limit for statistical analysis (Singleton 1993). The study population had one community with similar livestock keeping practices and in same geographical locality. Due to time and resources a sample size of 100 would be considered adequate where the study population is considered to be homogenous (Mutai, 2000). The sampling procedures were as shown in the table below:

| Constituency/sub county | Ward             | Number of respondents |
|-------------------------|------------------|-----------------------|
| Kitui central           | Miambani         | 10                    |
|                         | Kitui township   | 10                    |
|                         | Kyangwithya east | 10                    |
| Kitui east              | Kyuluni          | 10                    |
|                         | Nzambani         | 10                    |
|                         | Zombe            | 10                    |
| Kitui west              | Mutonguni        | 10                    |
|                         | Kauwi            | 10                    |
|                         | Kwamutonga       | 10                    |
| Kitui rural             | Yatta            | 10                    |
|                         | Kanyangi         | 10                    |
|                         | Kisasi           | 10                    |

## 2.4 Descriptive Analysis

This method involved the use of frequency distributions, calculating means, percentages and tabulations of inputs, outputs and their prices and socio-economic indicators. This procedure was useful in analyzing the socio-economic characteristics of indigenous chicken farmers. Various aspects of chicken production and the problems farmers faced in the area studied, were evaluated. Analysis of the socio-economic characteristics of the farmers helped in detecting problems farmers faced, with a view to recommending possible interventions to solve those problems.

## 3.0 Results and discussions

### 3.1 Social Demographic Characteristics of Data

#### 3.1.1 Gender involvement

Results in Table 1 revealed among those who reared indigenous chicken majority of 58% were women while 42% were men. This implies that more women than men were engaged in indigenous chicken rearing . According to Keombou et al.,(2016) women take care of small livestock while men take care of cattle and small ruminants. However men entrust their animal to their wives and children (Keombou et al.,2016). Other similar results include studies by Haoua (2010) in the sudano-sahelian zone of Cameroon and Fosta et al.,(2007) in forest of Cameroon

**Table 1: Distribution by gender**

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Male   | 42        | 42.0       |
| Female | 58        | 58.0       |
| Total  | 100       | 100.0      |

#### 3.1.2 Marital status

Results from table 2 indicated that a majority of 75% of respondents were married while a minority 25% was single. This implies that most of the indigenous chicken farmers were responsible married people with obligation of taking care of their families and therefore taking chicken farming as a source of income for their families. These results agree with a study by Nurudeen (2012) that majority of poultry farmers in Kaduna state were married.

**Table 2: marital status**

| Marital status | Frequency | Percentage |
|----------------|-----------|------------|
| Married        | 75        | 75.0       |
| Single         | 25        | 25.0       |
| Total          | 100       | 100.0      |

#### 3.1.3 Education level

Table 3 shows that majority 40% had attained at list primary education .Literacy of farmers is a major asset of adoption and dissemination of new production techniques and farm management of

local chicken and is also a major asset for integration of local farmers in local chicken value chain development projects (Keombou et al., 2016). Bukunmi and Yusuf (2015) concluded that the level of education had a positive coefficient which could also imply that education helps the farmers to understand better the innovation introduced to them. It also helps them to make sound and useful economic and managerial decisions.

**Table 3: Education level**

| Level of education | Frequency | Percentage |
|--------------------|-----------|------------|
| None               | 10        | 10.0       |
| Primary            | 40        | 40.0       |
| Secondary          | 31        | 31.0       |
| Tertiary           | 19        | 19.0       |
| Total              | 100       | 100.0      |

### 3.1.4 Number of dependants

Results in table 4 reveal that majority of the households 40% had 4-5 family members ,31% had had 7-9 ,followed by 20% who had 3 and below dependents while the minority households 9% had 10 and above dependents (table 4).Chicken farming is labour intensive and therefore large households will help in reducing labour constraints (Nwaru, 2004).

**Table 4: Number of dependants**

| Number of dependants | Frequency | Percentage |
|----------------------|-----------|------------|
| 3 and below          | 20        | 20.0       |
| 4-6                  | 40        | 40.0       |
| 7-9                  | 31        | 31.0       |
| 10 and above         | 9         | 9          |
| Total                | 100       | 100.0      |

### 3.1.5 Years of experience

A majority of 41% of the respondents had more than 10 years experience in indigenous chicken production (Table 5). Many years of experience implies that farmers are likely to make better decisions to enhance productivity and income. This is because experience in poultry production usually determine the farmers decision with respect to inputs combination or resource allocation (Umar,2012).

**Table 5**

| <b>Years of experience in indigenous chicken farming</b> | <b>frequency</b> | <b>percentage</b> |
|--|------------------|-------------------|
| 1 year and below   | 13               | 13                |
| 2 to 5 years   | 13               | 13                |
| 6 to 10 years  | 33               | 33                |
| More than 10 years                                       | 41               | 41                |
| Total  | 100              | 100               |

**3.1.6 Land size**

The data on land size shows that majority (44%) of the respondents had 2.1 -3.0 acres of land. This was followed by 40% who have less than two acres. This means that only 16% of the respondents have more than 3.0 acres (Table 6)

**Table 6**

| <b>Land size in acres</b> | <b>frequency</b> | <b>percentage</b> |
|---------------------------|------------------|-------------------|
| Less than 2 acres         | 40               | 40%               |
| 2.0 -3.0 acres            | 44               | 44%               |
| More than 3 Acres         | 16               | 16%               |
| Total                     | 100              | 100               |

**3.2 Multiple regression model for demographic data**

To test association between, Land size, Occupation, Marital status, Age, Gender, Education Level, Number of dependants and number of indigenous chicken, a Multiple linear regression model was also used as presented below.

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

Where,

$y$  = Number of indigenous chicken

$\beta_0$  = Constant

$X_1$  = Age

$X_3$  = Gender

$X_4$  = Education Level

$X_5$  = Number of dependents ( $X_5$ )

$X_6$  = Occupation ( $X_6$ )

$X_7$  = Land size ( $X_7$ )

$\varepsilon$  = Error term

The linear regression analysis results were presented in the Table below.

**Table 7: Model Summary**

| Model | R       | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|---------|----------|-------------------|----------------------------|
| 1     | .980(a) | .961     | .958              | .23125                     |

a Predictors: (Constant), Land size, Occupation, Marital status, Age, Gender, Education Level, Number of dependants

The Model summary shows that Adjusted R Square is 0.958 which implies that 95.8% of the Number of indigenous chicken is influenced by the demographic characteristics of the farmers.

**Table 8: ANOVA (b)**

| Model |            | Sum of Squares | df  | Mean Square | F       | Sig.    |
|-------|------------|----------------|-----|-------------|---------|---------|
| 1     | Regression | 120.520        | 7   | 17.217      | 321.960 | .000(a) |
|       | Residual   | 4.920          | 93  | .053        |         |         |
|       | Total      | 125.440        | 100 |             |         |         |

a. Predictors: (Constant), Land size, Occupation, Marital status, Age, Gender, Education Level, Number of dependants.

b Dependent Variable: Number of indigenous chicken

The ANOVA results indicated that the model was statistically significant,  $F(7,93) = 321.96$ .

**Table 9: Coefficients (a)**

| Model |                                | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|--------------------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                                | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)                     | 0.306                       | .181       |                           | 1.691  | .094 |
|       | Age ( $X_1$ )                  | -.192                       | .051       | -.292                     | -3.747 | .000 |
|       | Gender ( $X_2$ )               | .611                        | .129       | .269                      | 4.721  | .000 |
|       | Marital status ( $X_3$ )       | .265                        | .095       | .102                      | 2.781  | .007 |
|       | Education Level ( $X_4$ )      | .150                        | .071       | .122                      | 2.101  | .038 |
|       | Number of dependants ( $X_5$ ) | .608                        | .080       | .481                      | 7.637  | .000 |
|       | Occupation ( $X_6$ )           | -.898                       | .157       | -.205                     | -5.714 | .000 |
|       | Land size ( $X_7$ )            | .665                        | .087       | .487                      | 7.652  | .000 |



a) Dependent Variable: Number of indigenous chicken

$$Y = 0.306 + 0.192X_1 + 0.611 X_2 + 0.265 X_3 + 0.15 X_4 + 0.608 X_5 - 0.898 X_6 + 0.665 X_7$$

The regression model shows that the variables, Land size, Occupation, , Age, Gender, Education Level and Number of dependents significantly influenced the Number of indigenous chicken kept by the farmers. It was however noted that marital status did not significantly influence Number of indigenous chicken kept by farmers. The number of household dependents had the highest influence on the number of indigenous chicken kept by farmers. It was also noted that the age of the farmers negatively influenced the Number of indigenous chicken kept by farmers (Table 9).

### 3.3 Production Information

The study sought to establish the production information of the indigenous chicken farmers in Kitui County. The respondents were first required to indicate the number of indigenous chicken they had in the last one year. Figure 1 shows that, majority (40%) of the farmers in Kitui County had 50 chicken and below in the last one year. This was followed by 24% who had 61-70 chicken in that year.

Figure 1. Number of indigenous chicken



Source: Generated from survey data

### 3.4 Chicken type

Table 10 shows that, majority (52%) of the respondents had 50 chicks and below while those with the highest numbers which was 70 and above were 12%. On the other hand, majority (41%) of the respondents had 50 and below indigenous layers while those with the highest number (above 70) indigenous layers were 16%. Table 10 also shows that majority (55%) of the respondents had 50 and below indigenous cocks while those with the highest number (above 70) indigenous cocks were 10%. Responding to the sources of chicks, all the respondents indicated that chicks were hatched by the hen through natural methods.

**Table 10: Type of Chicken**

| <b>Variables</b>         | <b>Frequency</b> | <b>Percentage</b> |
|--------------------------|------------------|-------------------|
| <b>Indigenous Chicks</b> |                  |                   |
| 50 and below             | 52               | 52.0              |
| 51-60                    | 20               | 20.0              |
| 61-70                    | 16               | 16.0              |
| 70 and above             | 12               | 12.0              |
| Total                    | 100              | 100.0             |
| <b>Indigenous Layers</b> |                  |                   |
| 10 and below             | 41               | 41.0              |
| 11-20                    | 23               | 23.0              |
| 21-30                    | 20               | 20.0              |
| 30 and above             | 16               | 16.0              |
| Total                    | 100              | 100.0             |
| <b>Indigenous Cocks</b>  |                  |                   |
| 50 and below             | 55               | 55.0              |
| 51-60                    | 21               | 21.0              |
| 61-70                    | 14               | 14.0              |
| 70 and above             | 10               | 10.0              |
| Total                    | 100              | 100.0             |

**Conclusions**

From the results of the study it can be concluded that:

1. The social economic characteristics of the farmers significantly influenced the level of indigenous chicken production in the study area.
2. The number of dependents per household had the greatest influence among the tested independent variables

**Recommendations**

The study recommends that :

1. The Government to put emphasis and strengthen the policy on adult education in Kenya .
2. The county government of Kitui county to increase extension and veterinary officers in the sub county.

**References**

- Abadi T, Gezahegn M, Teklehaimanot A (2018). Assessment of factors affecting adoption of exotic chicken breed production in North Western Zone of Tigray, Ethiopia. *International Journal of Livestock Production* 9(11):293-299.
- Baliyan SP, Masuku MB (2017). Socio-Economic Factors as Determinants of Farm Management Economics 2(2):27.
- Bukunmi, F. R., & Yusuf, H. A. (2015). Analysis of Socio-Economic Factors Influencing Poultry Egg Production among Poultry Farmers in Ondo State, Nigeria. *British Journal of Applied Scienec and Technology*, 10 (3), 1-7.
- Delabouglise A, Le Thanh NT, Xuyen HTA, Nguyen VYB, Tuyet PN, Lam HM, Boni MF (2020). Poultry farmer response to disease outbreaks in smallholder farming systems in southern Vietnam. *Elife* 9:59212
- Dessie T., (1996). Studies on village poultry production systems in the Central Highlands of Ethiopia (M.Sc.thesis. Swedish University of Agricultural Sciences,Uppsala, Sweden).
- Garoga Z, Wilbert C, Caron L (2018).Ethiopia native productivity ,aims of production and breeding practices across agro climatic zones. *International journal of livestock production* 9(8):198-205.
- Gichohi, C.M. and J.G. Maina,( 1992). Poultry production and marketing, Ministry of Livestock Production.Paper presented in Nairobi-Kenya, Nov., 23-27.Government Area, Nigeria. A thesis submitted to the school of postgraduate studies, Ahmadu Bello University Zaria, Kaduna State, Nigeria.
- Guèye E.F.,( 2009). The role of networks in information dissemination to family poultry farmers. *World'sPoult. Sci. J.*, 65: 115-123.
- Kamau CN, Kabuage LW, Bett EK (2018). Impact of improved indigenous chicken breeds on productivity. The case of smallholder farmers in Makueni and Kakamega counties, Kenya. *Cogent Food and Agriculture* 4(1):1477231.
- Kejela Y, Banerjee S, Taye M (2019). Some internal and external egg quality characteristics of local and exotic chickens reared in Yirgalem and Hawassa towns, Ethiopia. *International Journal of Livestock Production* 10 (5):135-142.
- Milkias M, Moll M, Tilahun S (2019) productive and reproductive performance of indigenous chicken in Gena Bossa District of Dawro zone,Ethiopia.*International journal of livestock production* 10 (1) :24-32

Mutai K.(2000).How to write quality Research proposal (13,127,133)

Mwobobia RM, Amwata DA, Kanui TI, Nguku SA (2016). Comparing production characteristics of poultry farmers in Katulani District, Kitui County, Kenya. *Livestock Research for Rural Development* 28(5):20-36.

Nurudeen, J. A. (2012). Economics and social characteristics of registered poultry egg producers in Ilorin, Kwara State. *Russian Journal of Agricultural and Socio-Economic Sciences*, 11 (11).

Nwaru, J. C. (2004). Rural Credit Market and Arable Crop Production in Imo State of Nigeria. Phd Dissertation, Micheal Okpara University of Agriculture, Umudike.

Padhi MK (2016). Importance of indigenous breeds of chicken for rural economy and their improvements for higher production performance.

Scientifica (2016).Poultry Egg Production among Poultry Farmers in Ondo State, Nigeria. *British Journal of Applied Scienc and Technology*, 10 (3), 1-7.

Singleton,R.A(1993) Approaches to social research 2<sup>nd</sup> edition.New York Oxford Universty Press.

Umar, Mukhtar. (2012). Economic Analysis of Poultry-egg Production in Bauchi local government area, Bauchi State, Nigeria. An Unpublished M.SC dissertation submitted to the school of postgraduate studies, Ahmadu Bello University, Zaria.