Direct Research Journal of Agriculture and Food Science
Vol. 11(7), Pp.172-179, July 2023
ISSN 2354-4147
DOI: https://doi.org/10.26765/DRJAFS11234815
Article NumberDRJAFS11234815

https://directresearchpublisher.org/drjafs/

Original Research

Profitability and Resource-use Efficiency of Poultry Egg Production in Kuje Area Council, Federal Capital Territory, Nigeria

Elizabeth Samuel Ebukiba[1], Fuhad Nurudeen Owolabi[1], Samson Olayemi Sennuga[2]*, Adebisi Olateju Omole[4], Joseph Bamidele[3], Bankole Osho-Lagunju[2], Funso Omolayo Alabuja[1], and Mary E. Iheonu[2]

[1]Department of Agricultural Economics, Faculty of Agriculture, University of Abuja, FCT, P.M.B. 117, Abuja, Nigeria.
[2]Department of Agricultural Extension, Faculty of Agriculture, University of Abuja, FCT, P.M.B. 117, Abuja, Nigeria.
[3]Faculty of Business and Law, University of Northampton, Waterside Campus, University Drive, Northampton, United Kingdom, NN1 5PH.
[4]Head, Extension Services, FCT Agricultural Development Programme, Abuja, Nigeria.
Corresponding Author E-mail: dr.yemisennuga@yahoo.co.uk

Received 2 June 2023; Accepted 26 June 2023; Published 3 July 2023

ABSTRACT: The study main objective was to evaluate the economic viability and resource efficiency of the production of poultry eggs among the Kuje Area Council's egg producers. Using multistage selection methods, a sample of 80 chicken egg growers was chosen, and primary data was gathered using a standardized questionnaire. Descriptive statistics, multiple regressions, cost and return analysis, and a ranking of the obstacles faced by producers of chicken eggs were all used in the data analysis. The results showed that there were more male farmers (53.8%) than female farmers that produced chicken eggs in the research area. The fact that the majority of respondents (85%) were married suggests that their top priorities were profit maximization, personal consumption, and business objectives. The study also discovered that 60% of the farmers had 5-8 years of experience producing poultry eggs, which may indicate that their level of experience influenced how they decided how to allocate resources and combine inputs. Among the farmers, just 40% retained more than 200 layers. With a return on investment of 1.55, the cost and returns analysis showed that poultry egg production in the study area was lucrative. The study found important explanatory factors for egg production, such as the number of birds in the stock, the amount of paid labour and family labour, and the amount of feed. Despite their success, the farmers were found to be inefficient in their use of resources. The study suggested that farmers adopt improved management practices to reduce disease outbreaks in order to increase profitability and resource utilization efficiency. In addition, creating a cooperative society for poultry egg producers and promoting private initiatives to build feed mills were recommended as further ways to cut production costs.

Keywords: Poultry, egg production, resource use efficiency, cost and returns
Citation: Ebukiba, E. S., Owolabi, F. N., Sennuga, S. O., Omole, A. O., Bamidele, J., Osho-Lagunju, B., Alabuja, F. O., Iheonu, M. E. (2023). Profitability and Resource-Use Efficiency of Poultry Egg Production in Kuje Area Council, Federal Capital Territory, Nigeria.Direct Res. J. Agric. Food Sci Vol. 11(7), Pp. 172-179. https://doi.org/10.26765/DRJAFS11234815

INTRODUCTION

Nigeria's agricultural sector is a significant contributor to the country's economy, accounting for about 23.78% and 29.94% of the Gross Domestic Product in the second and third quarters of 2021, respectively. It is a crucial source of employment, employing over one-third of the total labor force in the country Ukoha and Anyanwu (2007).

Poultry egg production is particularly important within Nigeria's agricultural sector as it offers quick returns and income generation, while also providing high nutritional value in the form of protein from meat and eggs. Nigeria is one of the largest producers of poultry eggs in Africa, with consistent growth in output over the years (FAO,

2017). Poultry eggs are recognized for their nutritional benefits, containing protein, lipids, vitamins, and other valuable nutrients that contribute to a balanced diet. The egg yolk and albumen are especially rich in protein, with the yolk accounting for approximately 17.5% and the albumen around 10% of the egg's protein content (Sati et al., 2023).

The importance of protein in the creation of well-balanced human meals, which are essential for preserving good health, vigour, and productivity, was stressed by Abedullah et al.(2017). Building and repairing bodily tissues depend heavily on protein. According to Nmadu (2014), a lack of protein prevents the growth of the brain, diminishes young people's agility, slows down their growth, and makes them more susceptible to diseases. When a child consumes eggs on a daily basis, it guarantees the fulfillment of at least one-fifth of their daily requirement of animal protein solely from eggs. The insufficient protein intake in Nigeria is evident in the yearly per capita egg consumption, as mentioned by Adepoju (2015).

On average, Nigerians consume approximately 70 eggs per person each year. Aboki et al.2017) propose that eggs are a cost-effective choice for animal protein among the general population compared to alternative options. Apart from being consumed domestically, eggs are used in various applications including confectionery, bakery products, ice cream, and cosmetics, as highlighted by Tijani et al.(2014).

In simple terms, "efficiency" refers to using resources effectively and avoiding waste, as discussed by Nmadu et al. (2014). Farrell's definition of efficiency, as cited by Alimi et al. (2014), states that it involves producing a certain level of output at a lower input cost. It is important to assess the efficiency of farmers, especially in economies with technological limitations. Efficiency studies provide valuable insights into improving productivity without expanding resources or developing new technology, as highlighted by Yusuf and Malamo, (2017). One way to enhance production is by evaluating how efficiently farmers utilize their resources. By making adjustments to optimize resource utilization, it is possible to increase production if the current practices are inefficient.

The economic sustainability of the agricultural sector in Kuje Area Council is hindered by significant challenges related to profitability and resource utilization in poultry egg production. Poultry egg production plays a crucial role in providing protein and income in the region (Angelica et al., 2023). However, to address these specific challenges, a detailed investigation is necessary. This problem statement focuses on exploring the issues surrounding profitability and resource utilization in poultry egg production in Kuje Area Council, supported by relevant references.

Sustaining profitability proves to be an ongoing difficulty for poultry egg producers in Kuje Area Council. Fluctuating prices of key inputs like feed, vaccines, and equipment contribute to increased production costs, resulting in reduced profit margins (Ayodele et al., 2020). Unstable market conditions, limited access to credit facilities, lack of knowledge about modern production techniques, and ineffective marketing strategies further diminish the overall profitability of poultry egg production (Ocheja et al., 2019).

To summarize, the challenges associated with profitability and resource utilization in poultry egg production in Kuje Area Council are complex and have significant implications for the sector's economic viability and sustainability. Fluctuating input prices, restricted credit access, ineffective marketing strategies, suboptimal resource management practices, and market access constraints all contribute to these challenges (Haruna et al., 2023). Addressing these issues requires a comprehensive approach that includes improving market access and integrating the value chain, enhancing resource management practices, capacity building, and providing financial and technical support. By successfully overcoming these obstacles, stakeholders can encourage the expansion and development of the Kuje Area Council chicken egg production industry, assuring its long-term profitability and sustainable economic contribution.

The specific objectives are to:

1. describe the socioeconomic traits of the chicken egg producers in the research area.
2. calculate the price and profit of producing chicken eggs in the research region.
3. examine how effectively resources are used in the research area to produce chicken eggs.
4. Identify the challenges facing egg producers in the research area.

MATERIALS AND METHODS

The study will be carried out in Abuja, Nigeria's Kuje Area Councils, the Federal Capital Territory. The latitude and longitude of Kuje, Nigeria are approximately 8.8759° N (latitude) and 7.2334° E (longitude).The land size of the Federal Capital Territory is roughly 8,000 square kilometres. 49,420 men and 47,813 women make up Kuje's 97,367 inhabitants, who live in a 1,644 Km^2 area (NPC, 2006) (Table 1). Most Kuje people work in agriculture. The soil has the capacity to grow both root crops and tubers like yam and cassava because it is primarily a grassy savannah environment It also supports fruits, vegetables, grains (maize, sorghum, and rice), seeds and nuts (melon seeds, benne seed), as well as

Table 1: Socio-Economic characteristic of the respondents.

Characteristics	Items	Frequency	Percentage
Gender	Male	43	53.8%
	Female	37	46.30%
	Total	80	100
Marital Status	Single	6	7.5%
	Married	68	85%
	Widow	3	3.80%
	Divorced	3	3.80%
	Total	80	100
Age	20-30	24	30.0%
	31-40	50	62.5%
	41-50	5	6.30%
	51-60	1	1.3%
	Total	80	100
Educational Level	Primary	20	25.0%
	Secondary	28	35.0%
	Tertiary	30	37.5%
	None	2	2.5%
	Total	80	100
Household Size	1-3	6	7.50%
	4-7	28	35.0%
	8-11	38	47.5%
	12-15	8	10%
	Total	80	100
Access to Loan	Yes	35	43.8%
	No	45	56.30%
	Total	80	100
Cooperative society	Yes	38	47.50%
	No	42	52.5%
	Total	80	100
Poultry management	Deep litter	37	46.30%
	Battery cage	39	48.80%
	Both	4	5.0%
	Total	80	100
Year of experience	1-4	13	16.30%
	5-8	48	60.0%
	9-12	14	17.50%
	13-16	5	6.30%
	Total	80	100
Flock size	50-100	9	11.30%
	10-150	16	20.0%
	151-200	23	28.7%
	>200	32	40.0%
	Total	80	100
Extension contact	Weekly	35	43.8%
	Fortnight	28	35.0%
	Monthly	17	17%
	Total	80	100

Source: Field Survey, 2023

legumes (cowpea, groundnut). Two types of weather are experienced by Kuje Area Council. These are the rainy season, which starts around March and lasts until October, and the dry season, which starts in October and lasts until March but is typically distinguished by bright sunshine. Temperatures during the rainy season range from 22°C (71.6°F) to 23°C (73.4°F) at night and reach 28°C (82.4°F) to 30°C (86.0°F) during the day. During the dry season, daytime highs of up to 40 °C (104.0 °F) and lows of 12 °C (53.6 °F) are possible. Daytime temperatures in the dry season can peak to 40°C (104.0°F), while nighttime lows can reach 12°C (53.6°F). Of the six area councils, Kuje Area Council is one of the most developed; it is located in the FCT's semi-urban

settlement region. The FCT has a hot, muggy, and tropical climate. Because of this, the majority of its constituent portions operate under regimes that differ from those in the south and north of the nation. According to data estimated from nearby weather stations, the study region receives roughly 1650 mm of precipitation annually. According to NIMET (2010), July, August, and September receive about 60% of the yearly rainfall. Ikwa, Paikon-kore, Gwako, TungaMaje, Dobi, Zuba, Ibwa, Quarters, and Central.

Sampling technique

The multi-stage sampling method was used in the investigation. The Kuje Area Council will be purposefully chosen for the initial stage due to its rural characteristics and the accessibility of chicken egg farmers. From a list of the ten wards in the Kuje Area Council, four (4) were chosen at random for the second stage. The four wards to be chosen are Chibiri, KabiKuje, Chida, and Kango since they are involved in the chicken industry. The Agricultural Development Project (ADP) office provided the Kuja Area Council with a list of the four selected wards' poultry egg producers. The sample frame for the study will then be comprised of these lists The final stage will involve the random selection of twenty (20) poultry egg producers from the list of poultry egg farmers provided from the ADP office. Consequently, the study will have a total of 80 chicken egg growers.

Data collection

The study's data came from original sources. A structured questionnaire was used to gather the information. The socioeconomic characteristics of chicken egg farmers, including their age, sex, business type, degree of education, and inputs/outputs cost variables, are among the information gathered.

RESULTS AND DISCUSSION

Socio-economic characteristics of poultry egg farmers in Kuje Area Council

According to (Table 1) survey findings, the majority of chicken egg growers in the study area (62.5%) are between the ages of 31 and 40. This shows that the farmers raising chickens for their eggs are physically and intellectually equipped to handle the difficulties of raising chickens in developing nations like Nigeria. The results also reveal that there are more male farmers (53.8%) than female farmers involved in poultry egg production, which contradicts a previous study that reported female dominance in arable crop farming in southwestern Nigeria (Adebisi et al., 2012). Furthermore, a significant portion of the respondents (85%) are married, indicating that they make responsible decisions that affect agricultural productivity and income. This finding aligns with a study by Ebewore et al. (2013), which found that married respondents derived sufficient income from cassava production to support their families. Due to the widespread prevalence of polygamy in the study area, the majority of respondents have large households. This could also contribute to the availability of family labor and alleviate labor constraints in poultry-egg production. In terms of education, 35.5% of the farmers have obtained tertiary formal education, which is relatively high considering the area's status as a developing region. This high literacy level among the respondents enables them to understand and adopt modern farming practices, leading to increased productivity and profitability.

In terms of management practices, the majority of respondents (48.8%) rear hen layers in a battery cage system, while 46.3% rear hen layers in a deep litter system. The study also reveals that a significant number of the respondents (60%) have between 5-8 years of experience in poultry egg enterprise. This experience suggests that they are more likely to have a good understanding of poultry egg farming practices and are capable of making effective decisions related to input combinations and resource allocation.In terms of flock size, about 20% of the respondents keep between 101-150 layers, while 29% keep between 151-200 layers. Only 40% of the farmers keep more than 200 layers, indicating that the poultry egg enterprise in the study area is predominantly composed of medium-scale farmers. The majority of the farmers (44%) have weekly contact with extension agents, which suggests a higher adoption rate of poultry production technologies due to regular interactions with extension services. However, the study found that a considerable proportion of the respondents (43.8%) do not have access to credit, and 53% do not belong to any farming association. This implies that they are less likely to benefit from collective actions and support provided by agricultural cooperative groups.

Costs and returns analysis of poultry egg production

Table 2 details the financial factors of the commercial production of chicken eggs in the research region. Eggs, used layers, and chicken droppings used as organic crop manure are the main sources of income for farmers. The cost of feed accounts for a sizeable share (45.79%) of the overall production costs in the research area's commercial chicken egg farming. This result is consistent with earlier research that showed a significant percentage of feed expenditures in the production of poultry eggs (Hassan et al., 2016; Emokaro and Erhabor, 2014). In commercial chicken egg farming, rent, labour, and chick

Table 2: Costs and returns analysis of poultry egg production.

Items	Value	%TC
Variable cost		
Feed	617,865	45.79
Transportation	11,791	0.87
Medication/ veterinary services	17,344	1.29
Chicks	157,031	11.63
Electricity	13,081	0.95
Water supply	1,161	0.09
Hired labour	99,141	7.35
Family labour	70,153	5.199
Total variable cost	987,567	
Fixed cost		
Depreciation cost on:		
Refrigerator/freezer	88,534	6.56
Rent	250,512	18.56
Feeder	3,161	0.23
Drinker	2345	0.17
Cost of Crate	1135	0.08
Lighting	11,791	0.87
Weight balance	4,261	0.32
Total fixed cost	361,739	
Total Cost of Production	1,349,306	
Revenue		
Sales of eggs (including those consumed)	1,314,336.21	
Sales of poultry manure	240,600	
Sales of spent layer (sales after laying an egg)	540,820	
Total revenue	2,095,756.21	
Gross margin	1,108,189.21	
Net farm income	746,450.21	
Benefit-cost ratio	1.55	

Source: field survey, 2023

Table 3: Production function analysis for poultry egg enterprise

Variable Functional form	Linear	Double-log	Semi- log	Exponential
Constant				
	36543.32.887 (6.72)***	-5640 (2.173)***	07.09 (-2.994)	4.693 (47.483)***
The stock of birds				
	13.44 (8.089)***	1.469 1 (3.474)	65486.398 (2.760)**	0.661 (2.850)***
Hired labor				
	-14.347 (-5.75)***	-0.371 (-1.781)*	-13221.706 (-0.498)	0.000 (3.840)***
Family labor				
	-16.27 (-3.725)***	-0.210 (-1.099)	15962.93 (0.59)	0.000 (4.871)***
Feed consumed				
	0.67 (2.09)**	-0.213 (-1.289)	-25776.39 (-1.101)	1.154E-6 (1.981)*
R^2 value	0.969	0.780	0.802	0.568
Adjusted R^2 value	0.965	0.713	0.743	0.521
F-value	283.938***	11.79***	13.502***	12.066***

Source: Field survey, 2023

expenditures represented 18.56%, 12.55 %, and 11.63% of the total production cost per 80 layers, respectively. According to the study's findings, commercial poultry egg farming is a successful industry in the research region. According to the predicted net farm revenue and total cost of production, the cost-benefit ratio for commercial poultry egg production is 1.55, which means that for every Naira spent, a profit of N1.55 is made. This result is in line with earlier research' findings that poultry egg production is profitable (Rahji et al., 2015; Mukthar, 2012). Overall, the findings show that producing commercial poultry eggs is a financially sound and lucrative business in the research region.

Table 3 lists the independent variables that were taken into consideration in the model to predict egg yield, including the total number of birds (X1), hired labour (X2),

Table 4: Resource use efficiency indicators

Resource use efficiency indicators					
Resource	**MPP**	**MVP (₦)**	**MFC (₦)**	**A.E**	**Efficiency**
Stock size	13.44	4112.64	200	20.50	underutilize
Hired labor	-14.347	-4390.18	700	-6.27	overutilize
Family labor	-16.272	-4979.23	700	-7.11	overutilize
Quantity of feed	0.067	20.50	88	0.23	overutilize

Source: field survey, 2023

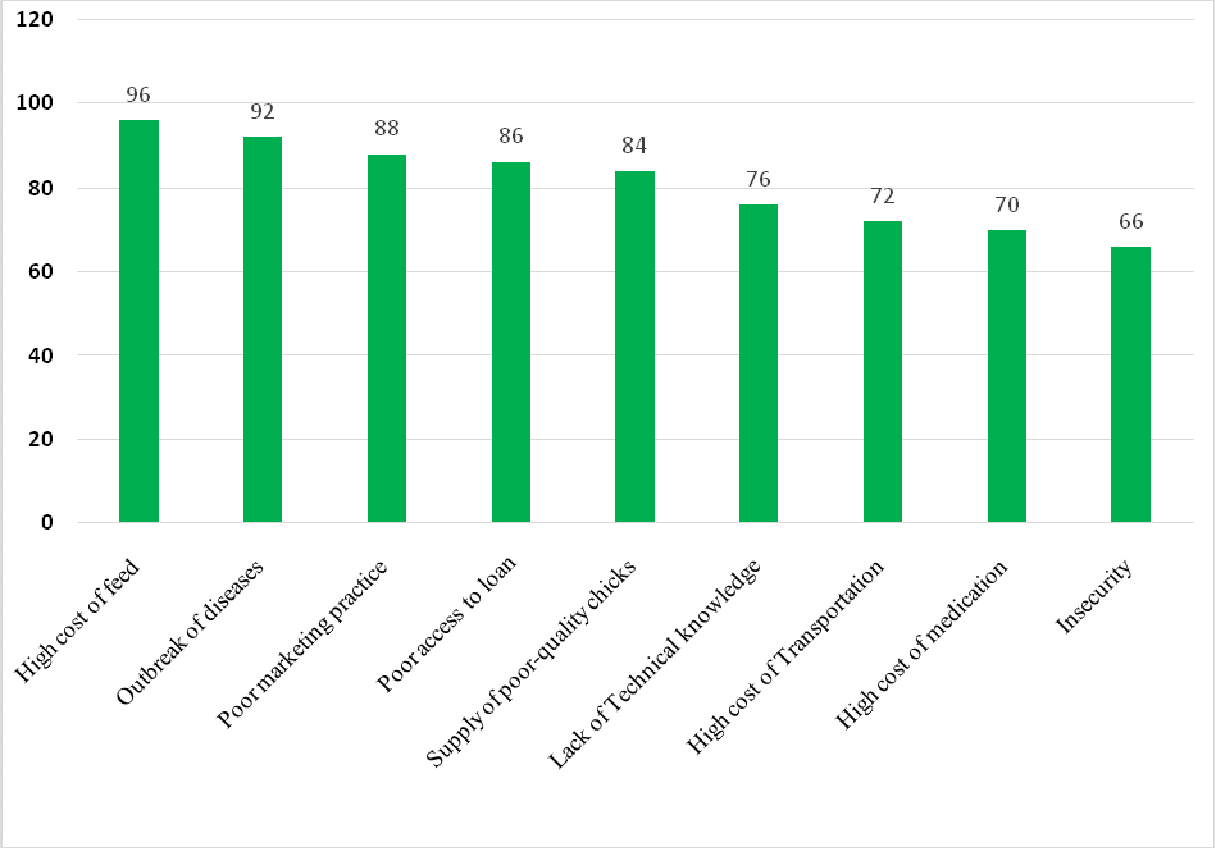

Figure 1: Constraints Faced by Poultry Egg Farmers in Kuje Area Council
Source: Feld survey, 2023

family labour (X3), and feed consumption (X4). The main equation was chosen to be in linear functional form. The findings show that the number of birds in the stock, paid labour, family labour, and feed quantity are significant explanatory variables ($p < .01$) for the quantity of eggs produced.

According to the included explanatory factors, 96.90% of the variation in egg yield can be accounted for by the coefficient of multiple determinations (R2), which is 0.969. The F-value in the table indicates that all the explanatory variables are statistically signiflcant ($p<.01$), indicating that their combined effect on egg production is substantial. Contrary to what might be expected given the priority, the hired and family labour contributions have an interesting negative sign. This finding, however, conflicts with a study Yakasa (2010) did on cassava production in Abuja, Nigeria.This suggests that a rise in these factors would lead to a fall in egg production. This can mean that these resources have been used excessively. There is a good chance that many of the poultry farmers in the study live on or close to the farm, and that their family are always willing to help out on the farm. The potential abuse of labour resources could result from this. On the other hand, the number of birds in the stock and the amount of feed consumed both have a positive sign, indicating that raising these factors would result in a rise in egg production. This shows that the production level is still within a range that is favourable, where increasing

these inputs can lead to greater efficiency. Therefore, it is important to encourage farmers to develop better management strategies in order to increase profitability. It is significant to note that the coefficients for both hired labour and family labour are negative, indicating that a rise in either of these factors would lead to a fall in productivity.

Hired labour and family labour were overutilized, according to the allocative efficiency score (Table 4). According to the findings (Obasi et al., 2013), the overuse of labour was caused by the use of labor-intensive technology rather than labor-saving tools like the tractor.Since the same group of employees may be used as poultry attendants, workers in the feed mill, and other agricultural activities, the inefficiency in the utilization of both hired and family labour may be related to the fact that labour inputs were overutilized, which unquestionably decreased labour efficiency. Therefore, labour management practices should be implemented so that labour is utilized for essential tasks. The resource use efficiency index for the avian stock was 20.56, which indicates underutilization. This makes it necessary to increase the scope of operations, which could be done if some production credit were made accessible at reasonable rates.

The limitations experienced by chicken egg farmers in the study area are shown in (Figure 1) as a ranked multiple response table, as identified and prioritized by the farmers themselves. According to the findings, the highest-ranked constraint, as reported by 96% of the respondents, is the high cost of feed, which significantly affects the expansion of poultry egg production. Other significant constraints reported by the respondents include disease outbreaks (92%), poor marketing practices (88%), limited access to loans (86%), supply of poor-quality chicks (84%), lack of technical knowledge (76%), high transportation costs (72%), and the high cost of medication (70%). These constraints have detrimental effects on poultry farms, such as increased mortality, decreased egg quality, reduced flock size, lower yields, and difficulties in marketing due to inadequate infrastructure and resources.

Conclusion

The study's conclusions suggested that Kuje Area Council's poultry egg industry was profitable. Despite working at a medium scale, the farmers were found to be wasteful in their utilization of several productive resources. The study found that while the stock size of birds was being underutilized, paid labour, family labour, and the amount of feed were all being overutilized. The implications of these findings for policy advise that the Kuje Area Council's Agricultural Development Project give priority to extension initiatives that educate farmers about making chicken feed. The cost of feeding, which makes up the largest portion of the variable cost in the production of poultry eggs, would be significantly reduced by farmers with the assistance of this instruction. The promotion of effective labour management techniques should also be a priority because doing so will help farms cut expenses by using labour only for essential tasks. These legislative changes would help the region's poultry egg industry become more productive and profitable overall.

Recommendations

On the basis of the study's findings, the following suggestions are put forth:

(a) Farmers should form agricultural cooperative groups to facilitate their access to loans from government agencies and financial institutions, such as NGOs.

(b) It is advisable to establish adult education classes specifically designed for poultry-egg farmers. This will enhance their education levels, making them more open to adopting technological advancements and ultimately improving their efficiency.

(c) Poultry-egg farmers in the research region ought to think about forming a cooperative society for the manufacture of poultry feed. The farmers will have a steady supply of economical feed thanks to this cooperation. To further increase the supply of feed, private initiatives to build feed mills ought to be supported.

(c) Adequate veterinary services should be made readily available to poultry-egg farmers in a timely manner. This will contribute to maximizing the egg-producing capacity of the poultry farms.

(d) Low-interest loans should be made available to farmers in the study area to help them grow their chicken egg producing operations.

(e) It is essential to give extension agents the right training and give them the technological know-how and resources they need. They will be better equipped to inform and direct farmers on new methods for producing chicken eggs as a result. Stakeholders may improve the profitability and sustainability of the poultry-egg production sector in the study region by putting these recommendations into practice.

REFERENCES

Aboki, E., Jongur, A. A. U and Onu, J. I. (2017). Productivity and Technical Efficiency of Family Poultry Production in Kurmi Local Government Area of Taraba State, Nigeria. Journal of Agriculture and Sustainability 4(1):52-66.

Abedullah, A., Maqbool, A., &Bukhsh, K. (2017). Issues and economics of poultry production: A Case study of Faisalabad, Pakistan. Veterinary Journal, 27(1), 25–28.

Adebisi, A.O., Olajide, F.B., Adeoye, I.B. and Olajide, L.O. (2014). Analysis of Production constraints Facing Fadama Vegetable Farmers in Oyo State. International journal2012; 7(2): 189-192

Adepoju, S. O. (2015). Socio-Economic Analysis of Small-Holder Poultry (Layer) Production in Two LGAs of Kaduna State." Unpublished M.ScThesis, Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University, Zaria.

Angelica, I, C., Sennuga, S, O., Bankole, O, L., Iheonu, M, E., Alabuja, F. O., Bamidele, J. &Preyor, T. J. (2023). Factors Militating Against Nigerian Youths Taking Up Careers in Agriculture in Gwarinpa, Abuja, Nigeria. Journal of Applied Surface Science 1(1), 43-50.

Alimi, T. (2014). Resource Use Efficiency in Food Crop Production in Oyo State, Nigeria. Journal of Agriculture and Environment, 1(1): 1-7.

Ayodele, O., Iweala, E., &Aina, O. (2020). Analysis of Poultry Egg Production and Profitability in Osun State, Nigeria. Journal of Agricultural and Veterinary Sciences, 13(2), 1-8.

Ebewore, S.O, Ebodion, J. and Oboh, O.O. (2013). Profitability analysis of yam production in Ika South LGA of Delta State, Nigeria. Journal of Biology, Agriculture and Healthcare, 2013; 3 (2):121.

Emokaro, C.O. and Erhabor, P.O.(2014) Comparative Analysis of Profitability of Layers Production in Esan North East and Ovia North East Local Government Areas of Edo State, Nigeria. Agricultural Journal.18(1) 121-126.

Farrell, M. J. (1957). The measurement of Productive efficiency. Journal of the Royal Statistical Society, Series A, CXX (part 3), 253–290.

FAO. (2017). FAO Country Programming Framework (CPF) the Federal Republic of Nigeria. ftp://ftp.fao.org/TC/CPF/Countries/Nigeria/CPF_Nigeria_2013_2017.pdf [accessed July 2, 2023.

Hassan, A.A., Ahmadu, H.J. Oseni,Y.Dawang,N.C. Rahman,S.A. and Abdul Salam,Z (2016). Economic Analysis of Poultry Egg enterprise in Kaduna State, Nigeria. Agricultural Journal 28(1):196-204

Haruna, L. Z., Sennuga, S. O., Bamidele, J., Alabuja, F. O., Osho-Lagunju, B., Preyor, T. J.&Banarbas, T. M. (2023). Factors Influencing Farmers' Adoption of Improved Technologies in Maize Production in Kuje Area Council of FCT-Abuja, Nigeria,Journal of Applied Surface Science,1(1), 43-50.

Nmadu, J. N., Ogidan, I. O. &Omolehin, R. A. (2014). Profitability and resource use Efficiency of poultry egg production in Abuja, Nigeria. Agricultural journal 35(2014), 134 – 146.

Obasi, P.C., Henri-Ukoha, A., Ukewuike, S.I., and Chidiebere-Mark, N.M. (2013). Factors Affecting Agricultural Productivity among Arable Crop Farmers in Imo State, Nigeria. American Journal of Experimental Agriculture, 2013; 3(2): 443 – 454.

Ocheja, J., Gbabo, A., &Gbokor, F. (2019). Profitability of Poultry Egg Production in Benue State, Nigeria. International Journal of Advance.

Rahji, M.A.Y., Akinyemi, M. and Akun, D.G. (2015). Farm Size and Relative Efficiency in Egg Production in South –West Nigeria. Scholarly J. Agric. 5(4): 141-146.

Sati, Y. G., Sennuga, S. O., Bamidele, J., Alabuja, F. O. &Osho-Lagunju, B. (2023) Impact of loan acquisition among beef sellers in abattoir market, FCT-Abuja, Nigeria, International

Journal of Research in Finance and Management, 6(1), 157-162

Tijani, A. A., Alimi, T. Adesiyan, A. T. (2014). "Profit Efficiency among Nigerian Poultry Egg Farmers: A case study of Aiyetedo Farm Settlement, Nigeria". Research Journal of Agricultural Biological Sciences, 2(6): 256-261.

Ukoha, O. O. and Chukwuma, A. A.(2007). Technical Efficiency of small scale of Poultry-Egg Production in Nigeria: Empirical study of Poultry Farmers in Imo State, Nigeria. Journal of Poultry Sciences, 1 (3-4): 16-21, 2007.

Yakasai, M. T. (2010). Economic Contribution of Cassava Production: A case study of Kuje Area Council, Federal Capital Territory, Abuja, Nigeria. Bayero Agricultural journal,2010; 3(1): 215-219.

Yusuf, S. A. Malamo, O. (2017). Technical Efficiency of Poultry Egg Production in Osun State: A Data Envelopment Analysis (DEA) Approach. International Journal of Poultry Science (9):622-629.