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DETERMINANTS OF BROILER PRODUCTION AND ITS EFFECTS ON POVERTY STATUS AMONG CIVIL SERVANTS IN JOS METROPOLIS, PLATEAU STATE, NIGERIA

Original scientific paper

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Abstract

The research was carried out to analyze broiler production as a sustainable tool in reducing poverty among civil servants in Plateau State, Nigeria. The specific objectives were to: determine the profitability of broiler production; evaluate the poverty status and the effect of broiler income on the poverty status of the civil servants; identify the socio-economic factors influencing the level of broiler production; and describe the constraints of broiler production. Data from 120 members of Poultry Association of Nigeria (PAN) who are civil servants, were analysed using descriptive and inferential statistics. Majority of the civil servants that engaged in broiler farmers were women. Findings revealed that the influx of new entrants into broiler production in recent times was due to the ban on importation of frozen poultry product by the Federal Government of Nigeria which create high demand-supply gap. The civil servants' broiler producers earned a profit margin of 58% and return on investment of ₦1.67 per Naira invested. This resulted into reduced FGT poverty indices. The level of broiler production were significantly determined by sex, level of education and experience at different level of probability. Likewise, the poverty status of the civil servants were significantly affected by salary and income from broiler production at 1 and 5 % levels of probability. Major constraints in broiler production were high cost of feed and vaccines. Government ban on importation of poultry meat is plausible and should be further imbibed by the Nigerian citizens to consume home grown poultry meat.

Keywords: Civil servants, broiler production, sustainable livelihood, poverty

1. INTRODUCTION

Globally, agricultural production is vital to the general wellbeing of the populace because of its importance in the provision of food, income for farmers, raw material for industries, employment and foreign exchange for the nations (Momoh, Akpoko, & Akinola, 2018). In Nigeria, recent economic recessions have signified the need for civil servants to diversify their income sources by combining primary earning and non-wage agricultural activities to sustain their livelihoods. Income from agricultural source is increasingly becoming a supplementary to civil servants who reside in peri-urban and urban centers in many parts of the country. According to the Central Bank of Nigeria, CBN (2021), inflation rate in Nigeria is high with 18.33% in 2021 which has reduced the pay packet or purchasing power of civil servants, and consequently poverty has intensified among them. The erosion in the real wages and salaries of workers is alarmingly severe (Nwude, 2013). Despite the apparent increase in minimum wage over the years, the nominal basic salaries remain inadequate and low in real terms. The results of such salary increases are like taking two steps forward and ten steps backwards (Babatunde, Oladeji & Aliyu, 2016). The net effect is a fall in the real income of civil servants and a reduction in their standard of living due to the high level of inflation (Dauda & Rahji, 2012). The nominal increases have only provided money illusion but no relief for the troubled workers who over the years have been worse off. Thus, many of these civil servants partly allocate their leisure time, off days and vacations to activities which provide a supplementary income so as to cope with adverse shocks (Oladimeji, Abdulsalam, Mani, Ajao & Galadima, 2017).

Thus, as inflation continues to intensify with the disproportionate cost of food and living index increasing, most civil servants are involved in poultry production in the country. This is due to its numerous advantages over other livestock, in terms of small capital, quick returns on investment and wide spread of acceptability which cuts across religious and ethnicity in Nigeria (Oladimeji, Abdulsalam, Abdullahi, Adefalu & Yakubu 2016a). Poultry production is one of the major subsectors in Nigerian agricultural industry which supply protein, lipids and vitamins of high zoological value to man (Bukunmi and Yusuf, 2015). Poultry production is the process of rearing birds domestically mainly for the supply of poultry meat and eggs for human consumption (Oladimeji *et al.*, 2016a). It is a profitable venture for livelihood improvement, enhancing subsidiary family income and financial empowerment (Hassan, Mairiga & Bature 2016). According to the Food and Agricultural Organization (FAO) (2019), poultry comes fourth among sources of animal proteins for human consumption in Nigeria and contributes about 10% of the national meat production.

The most essential component of being a civil servant is the monthly income. One purpose of a person as an employee (civil servant) of a government is to earn income in the form of salaries or allowances to meet basic needs such as food, clothing, wards school fees and housing (Gunawan & Amalia, 2015). Thus, the motive for diversification and opportunities available differ significantly across individuals in differentiated income groups and environment, this suggests an important distinction between push and pull factors in diversification. Generally, these factors may be the goading process of livelihood diversification (Reardon *et al.*, 2007). In recent times, this process has manifested largely in the Nigerian civil servants, as such diversifying their earnings to broiler production activities. In Nigeria, many studies have focused more attention on livelihood diversification in rural areas and among farmers (Donye & Ojibo, 2020, Ebukiba & Anthony, 2019, Isitor, Ehien & Makinta, 2018, Onuk, Umar & Girei, 2017, Mukhtar, Amodu, Adeola & Abdullahi, 2014). On the contrary, this study focuses on economic diversification in urban area and among civil servants. The specific objectives were to: determine the profitability of broiler production among civil servants; evaluate the poverty status of civil servants, identify the socio-economic factors influencing the level of broiler production among civil servants; evaluate the effect of broiler income on the poverty status of the civil servants; and describe the constraints of broiler production in the study area. In addition to the stated objectives, two hypotheses were tested in this study: Ho1: There is no significant relationship between socioeconomic variables and level of broiler production among civil servant and Ho2: Broiler income has no significant effect on the poverty status of the civil servants.

2. LITERATURE REVIEW

One of the major issues in developing countries including Nigeria is rising level of poverty and food insecurity among the populace. Although agricultural production has traditionally been restricted to the rural areas, it is obvious that Nigerian urban and peri-urban is increasingly becoming an important agricultural production enclave due to dwindling economy and the impact of COVID-19 pandemic (Idakwo, Oladimeji, Ayanlere, & Hussaini, 2022). According to World Bank (2011), "poverty is the economic condition in which people lack sufficient income to obtain certain minimal levels of health services, food, housing, clothing and education which are necessities for standard of living". Borrowing a leaf from the work of Samuel, Karimo and Tombfofa (2014), the general definition requires qualification regarding the concepts of absolute and relative poverty. While absolute poverty is theoretically associated to the vital minimum, the concept of relative poverty incorporates the concern with inequality or relative deprivation, where the bare minimum is socially guaranteed. The World Bank (2018), revealed that almost half of the Nigerian population is living below the international poverty line of (\$2 per day). There is also strong evidence that a sizeable proportion of urban and peri-urban households now diversify to livestock production to minimizing income fluctuation and the effect of shocks be it temporal or permanent (PAN, 2019, Folorunso, Ademiluyi & Gama, 2018, Onuk et al., 2017; Oladimeji et al., 2016a & b, Bukunmi & Yusuf, 2015).

Economic diversification refers to efforts by persons and family unit to develop alternative ways to raise incomes and reduce environmental hazard, which fluctuate gradually by the degree of freedom of selection (to diversify or not), and the reversibility of the result (Oladimeji, Abdulsalam, Damisa, and Ajao, 2016). It is germane to say that, many civil servants in Nigeria channeled their leisure time, leave, off days and holidays to activities which provide a supplementary income so as to cope with adverse external shocks that are beyond their control (Oladimeji et al., 2017). Economic Diversification is broadly understood as a form of self-insurance. Diversification is a means by which individuals mitigate their risk exposure. A connected, but discrete role of diversification is to cope with shocks to income. When wages and salaries are unpaid or delayed, civil servant must swing labor to other pursuits (Mallo, 2016).

Economic diversification of urban economies through engaging in farm economy as a response to economic recession has been recognized as an important driver for agricultural transformation in developing countries (FAO, 2017). A dynamic agricultural sector should therefore be at the centre of both peri-urban and rural development strategies, creating better jobs in the sector and at the same time enabling the growth of farm activities livelihood diversification, poverty reduction and decent work (ILO, 2016). The development of farm economic activities is largely a consequence of growth, wealth and industrial development.

Using SEI and Tobit regression, Oladimeji et al. (2017), revealed that government emoluments contributed 70.5% of total household income while 29.5% stemmed from agricultural activities. It is interesting to note that about 33% of income diversification originated from poultry production while fish farming and crop production accounted for 29% and 19%, respectively. The study concluded that broiler production is profitable with mean profit of ₦912 per bird and an average return of ₦1.98. Kalla, Barrier, Haruna, Abubakar, Hamidu, and Murtala (2007), in their study on the economics of broiler production at Miango, Plateau State, Nigeria using a nine-year record (1992 – 2000), stated that poultry production was found to be a profitable venture in the study area having a gross margin of ₦143,334.13 per production cycle with ₦0.23 as the returns per naira invested in the enterprise with average of three production cycle per year.

The findings by Kalla et al. (2007), established that broiler production is profitable in Miango Plateau State, Nigeria in 2007 while Oladimeji et al. (2017), revealed that economic diversification among civil servant in Kwara State, Nigeria was aimed at reducing their sole reliance on monthly salaries which is sometimes irregular and most time unsustainable. This is the empirical gap the study intend to find out among civil servants in Plateau State, Nigeria.

3. METHOD AND DATA

3.1. Study area

The study was conducted in Jos metropolis of Plateau state, Nigeria, located between Latitude 9° 56' N and Longitude 8° 53' E and an average monthly temperature ranging from 21 – 25°C. The average annual rainfall of Jos metropolis is about 1,400 mm (Dung - Gwom, 2009) and a projected population of about 1, 416,026 people in 2021 using 3.2% as estimated growth rate (National Population Census NPC, 2006). The climatic and weather condition in the State favors the production of broiler.

3.2. Sampling procedure and data collection

A one-stage sampling technique was adopted. The stage was purposive selection of two Local Government Areas (LGAs), Jos North and Jos South in Jos metropolis, Plateau State. The two LGAs were chosen based on the preponderance of civil servants and poultry farmers in the areas (PAN, 2019). According to PAN (2019), there were about 600 registered civil servants in the poultry association, out of which 170 are into broiler production. However, in the course of data collection, 50 members were discovered to be retired civil servants, therefore, 120 respondents were used as the sample size for the study. Primary data obtained were: socio-economic characteristics, production information as well as constraints faced by civil servants in broiler production.

3.3. Analytical technique

Descriptive statistics, net farm income, the Foster, Greer and Thorbecke (FGT) index, Ordered logit and Logit regression models were used to achieve the objectives of the study. Descriptive statistics was used to examine the socio-economic and institutional characteristics. The Net Farm Income (NFI) was used to determine the profitability of broiler production in the study area. NFI model is stated as:

$$\text{NFI} = \text{TR} - \text{TC} \quad (1)$$

Where: NFI= net farm income (₦/100 chicks), TR= total revenue (₦/100 chicks), TC= total cost of production (₦/100 chicks).

$$\text{TC} = \text{TVC} + \text{TFC} \quad (2)$$

Where: TVC = Total variable cost (₦/100 chicks), TFC = Total fixed cost (₦/100 chicks).

The Foster, Greer and Thorbecke (FGT) index was used to determine the poverty status of civil servants. Based on Foster *et al.* (1984), a relative poverty line defined as the two-thirds (2/3) of the mean value of per capita annual farm income for the farmers was constructed using Mean Per Capita Household Income (MPCHI). The explicit FGT poverty index (P_α) can be expressed as:

$$P_\alpha = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^\alpha \quad (3)$$

$$\alpha = 0 \text{ That is poverty incidence or headcount, } P_0 = \frac{q}{N} \quad (4)$$

$$\alpha = 1 \text{ Poverty gap or depth } p_1 = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right) \quad (5)$$

$$\alpha = 2 \text{ Poverty severity } p_2 = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^2 \quad (6)$$

Where: P_α = Threshold index for the i th sub-groups α = Degree of poverty aversion (0, 1 and 2), N = Number of households, q = Number of poor civil servant's households (below the poverty line), Z = Poverty line (two-third of Mean Per Capita Household Income (MPCHI) of the civil servants), Y_i = Per adult equivalent income of i -th households.

Ordered logit regression model was used to examine the factors that may likely influence the level of diversification into broiler production among the civil servants. The ordinal variable Y is a function of another variable Y_i^* that is continuous and not measured and has various threshold

points. The value of the observed variable depends on whether it crossed a particular threshold in which there is a random disturbance term normally distributed, as shown in the following formulae:

$$Y_i = 1 \text{ if } Y_i^* \leq K_1 \quad (7)$$

$$Y_i = j \text{ if } K_i \leq Y_i^* \leq K_{i-1} \quad (8)$$

$$Y_i = M \text{ if } Y_i^* \geq K_M - 1 \quad (9)$$

The continuous latent variable Y^* is equal to;

$$Y^* = \sum_{k=1} \beta_k X_{ki} + \varepsilon_i \quad (10)$$

The statistical impact of variables was based on the p-values of the Wald tests (Castilla, Ghosh, Martin & Pardo, 2018). To operationalize the dependent variable, broiler production was categorized into three viz. small scale (1-500 birds), medium scale (501-1,000) and a large scale (above 1,000). Values from 0 to 2 were associated respectively to these three categories. Where: Y = flock size (small, medium and large scale), β_0 = constant, β_k = regression coefficients, X_i is given as; age (years), sex (female 1 and male 0), marital status (married 1 and single 2), education (years spent in formal education), household size (number), experience (years) and ε = error term.

Logit regression was used to determine the effect of broiler production on household poverty status. The dependent variable is the poverty status which is represented by a binary variable (1 or 0).

The logistic regression model is stated thus:

$$P_i = f(Z) = \log \frac{p_i}{1-p_i} \sum \beta_i X_i \quad (11)$$

P_i denotes the probability that the households is below or above the poverty line, β_i are the coefficients and X_i are poverty determinants variables given as salary (₦), income from broiler production (₦), and remittance from family members living away from the households (₦),

Finally, a 5-point Likert scale rating (Likert, 1932), was used to avail civil servants the opportunity to choose the problems they think are major constraints associated with broiler production in the study area. The rating was in this order: Strongly agreed (SA) = 5, Agreed (A) = 4, Neutral (N) = 3, Disagree (D) = 2, and Strongly disagree (SD) = 1.

4. RESULTS AND DISCUSSION

4.1. Summary of variables used in Ordered Logit Regression Model

The socioeconomic characteristics of civil servants in broiler production were described in Table 1. The mean age of 44 ± 9.5 years implies that the respondents are energetic, productive and economically active in most agricultural activities. This coincides with the findings of Hassan *et al.* (2016), and Oladimeji *et al.* (2017), whom reported the mean age of 44 and 46 years respectively in their separate studies.

The mean household size was 6 ± 2.3 . The significance of household size in Nigerian agriculture is that there is likelihood of reduced cost of labour, as adequate family labour may be available for farming operations (Donye & Ojibo, 2020).

The result showed that 75.8% of the farmers had ≤ 10 years of experience in broiler production, while the average is 9 ± 7.23 years. The standard deviation indicates the influx of new entrants into broiler production in recent times. This could be due to the ban on importation of frozen poultry product by the Federal Government of Nigeria. Onuk *et al.* (2017), indicated that the more experience the farmers, the more productive they tend to be.

The result of the distribution of broiler farmers' access to credit showed that majority (72.5%) of the farmers had no access to credit while 84.8% ($n=33$) of those that had access could only access credit worth $\leq \text{N}50,000.00$. The average amount of credit obtained by the farmers in the study area was ₦32,878.75. This suggests that the farmers had limited access to sufficient amount of credit to expand their scale of broiler production. Hassan *et al.* (2016), noted that access to micro-credit could have prospects in improving the productivity of poultry farmers.

Among the sampled broiler farmers, majority (83.33%) were married while 61.67% were female. This study is in line with Oladimeji et al. (2016a), and Mamman, Anzaku, and Umar (2016), whom revealed that broiler production is dominated by 69% and 66% female civil servants in Kwara and Nassarawa States Nigeria, respectively.

Education is a vital socio-economic factor that influence farmer's decision, awareness, perception and adoption of innovations that can bring about increase in productivity. The result revealed that majority of the farmers (96.7%) had tertiary education, hence a potential for increased broiler production. This finding is in agreement with Isitor et al. (2018), who found that 64% of the poultry farmers in Jos Metropolis were literate. The distribution of broiler producers based on number of extension visit showed that majority (77.5%) of the broiler had no contact with an extension personnel who provide training to broiler farmers and this could be attributed to low extension personnel - farmer ratio in the study area. Hassan et al. (2016), opined that lack of access to extension services through extension agents may result in low level of adoption of improved practices.

Table 1 Summary of descriptive statistics of the civil servant-broiler farmers

Variable	Dominance indicator	Mean±stdev	Min	Max
Age	95.8% were above 29 years	44±9.5	24	60
Household size	50% had 6-10 family size	6±2.3	1	15
Broiler experience	75.8% had ≤ 10 years	9.0±7.23	1	35
Credit accessed ('000N)	84.8% utilize ≤N50,000	53.3±21.9	na	na
Access to credit	72.2% had no access	na	na	na
Marital status	83.3% were married	na	na	na
Sex	61.7% were male	na	na	na
Education	96.7% had tertiary	13.7±1.9	6	15
Extension contact	77.5% had no contact	na	na	na

Source: Field survey, 2020

4.2. Profitability of broiler production among civil servants

The profitability of broiler production among sampled civil servants is presented in Table 2. Results showed that broiler feeds and cost of purchase of stock accounted for 57.83% and 28.43% of the TVC. The TC was ₦162, 560.00 while the TR was ₦271,822.00.

Table 2 Profitability of broiler production among civil servants per 100 birds

Variables	Cost/revenue items	Cost per 100 bird (N)	%TVC	%TC
Fixed inputs (depreciated)	Poultry shed	34,825		21.08
	Other equipment	308.50		1.88
	Total Fixed Cost	35,134		
Variable Inputs	Cost of chicks	36,233	28.43	21.91
	Cost of vaccine	3,382	2.65	2.05
	Cost of feed	73,693	57.83	44.56
	Cost of electricity	1,735	1.36	1.05
	Cost of labour	11,274	8.85	6.81
	Cost of water	1,109	0.87	0.67
	Total Variable Cost	127,426		
	Total Cost	162,560		
Revenue	Quantity sold	89		
	Mortality	11		
	Unit price	2,998		
	Gross sold	266,822.00		
	Manure sold	5,000		
	Total revenue	271,822		
	Gross margin	144,396		
	NFI	109,262		
	Profit margin (%)	58%		
	Gross Ratio (%)	40%		
	Return on investment	1.67		

Source: Field survey, 2020

Thus, the result showed that the broiler production is a profitable venture in the study area with a gross margin of ₦144,396.00 and a net profit of ₦109,262.00. The return per naira invested for the broiler production was ₦1.67. This implies that for every one naira (₦1.00) invested in a broiler production, a profit of ₦0.67 was realized. The result is comparable to study by Mamman *et al.* (2016), that broiler production is profitable among farmers in Nassarawa State with ₦1.11 as returns per naira invested (RNI). The profit margin of 46% indicates that the broiler farmer still have 46% of their sales revenue to cover their operating costs. This means that broiler producers can sustain production and survive for a longer time. The gross ratio was 58%, which is 58% of the gross income is accrued to the TC. Thus, it can be concluded that broiler production among civil servants in the study area is economically viable. The higher the gross ratio, the higher the profit percentage. The higher profit margin and gross ratio realized in the study area, shows that broiler production was profitable in the study area. This finding is also consistent with Onuk *et al.* (2017), and Oladimeji *et al.* (2017), that reported RNI to be ₦1.05 in Nasarawa State among broiler farmers and ROI of ₦1.98 among civil servants in Kwara State, respectively.

4.3. Poverty Status of the broiler farmers

The results of the FGT are presented in Table 3. A relative poverty line of ₦12,411.88 and ₦22,040.61 per month was established for salary only and salary plus income from broiler production.

The result of the poverty incidence among the sampled civil servants was 0.70, which imply that about 70% of the respondents were poor with income generated from salary only. Poverty gap (depth) that is, the mean distance that separates the population from the poverty line was 0.57 which means that about 57% of the total income is required to bring individuals within the poor up to the poverty line. The poverty severity index of the households was 0.41%. The poverty severity takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor (Oyinbo and Kehinde, 2016). This implies that poverty is more severe among poor farmers with about 41% of the poorest among the respondents.

Table 3 Poverty indices of civil servants

Poverty Category	Salary only		Salary with broiler income	
	%	Frequency	%	Frequency
Non-poor	0.30	36	0.59	70
Poor	0.70	84	0.41	50
Total	100	120	100	120
Poverty indices				
Poverty incidence(Po)		0.70		0.41
Poverty depth(P1)		0.57		0.13
Poverty severity(P2)		0.41		0.05
Poverty line per month (₦)				
MPCHI		18,617.83***		33,060.91
Poverty line (2/3*MPCHI)		12,411.88		22,040.61
Using Dollar Equivalent				
Poverty line at \$2 per day per month		27,660.00		
	%	Frequency	%	Frequency
Non Poor	30.8	37	45.8	55
Poor	69.1	83	54.1	65
Total	100	120	100	120

*** indicate statistically significant t-test at 1% level of probability

Source: Field survey, 2020

On the other hand, the results in Table 3 also showed there is an improvement in civil servants' welfare with involvement in broiler production. The poverty incidence shifted downward from 0.70 to 0.41 meaning that about 41% of the broiler farmers were poor compared to initial number of 70%. Similarly, poverty depth also reduced from 0.57 to 0.13 and this implies that the poor farmers require 13% of the poverty line to escape from poverty group. Poverty severity value also reduced greatly from 0.41 to 0.05, this implies that the severity of poverty among the poor farmers in the study area was 5%. The results are comparable with NBS report of (2020), which revealed a poverty incidence of 55%, poverty depth of 17% and poverty severity of 7.61% in Plateau State, Nigeria. On a global indicator, using the international standard poverty line of \$2 per day according to World Bank (2018), there was a fall in the percentage of poor civil servants from 83% for salary only to 54% for salary with broiler income. The t-test confirmed the significant difference in the variation of salary only, and salary with broiler income of civil servants at 1% level probability.

4.4. Factors influencing the level of broiler production

In Table 4, the marginal effects of sex (0.2469), education (-0.6969) and broiler experience (0.0181) were statistically significant variables determining the level of broiler production among civil servants. The diagnostic statistics showed that the model fits the data $\text{Prob} > \text{Chi}^2 = 0.000$ presented a good fit for the model. From the result, the marginal effect of sex (0.247), indicated that being female increases the probability into broiler production from small scale to medium and large scale by 24.7%. This is in line with *a priori* expectation because women tend to be better managers than their male counterparts. This finding is consistent with the study of Mukhtar et al. (2014), who reported that being female increases the probability of broiler production in Bauchi State. However, this finding is in contrast with study of Donye and Ojibo (2020), who reported that male involved more into broiler production in Plateau State, Nigeria.

Table 4 Determinants of level of broiler production among civil servants

Variables	Marginal effect	Standard error	T-value	P-value
Age	0.0074	0.0052	-1.42	0.155
Sex	0.2469***	0.0751	3.29	0.001
Marital status	-0.7243	0.5996	-1.21	0.227
Education	-0.6969**	0.2937	-2.37	0.018
Household size	0.0002	0.0189	0.01	0.999
Experience	0.0181***	0.0070	-2.59	0.009
No of observation		120		
LR chi ² (6)		30.740		
Prob > chi ²		0.000		
Pseudo R ²		0.142		
Log likelihood		-89.953		

Note: ** and *** significant at 5 and 1 %, respectively

Source: Authors' computation, 2020

Education had a negative relationship (-0.697), with the level of broiler production. The marginal effect revealed that a year increase in education will reduce the probability of level of diversification in broiler production from large scale to small scale by 69.7%. This implies that civil servant with lower educational qualification diversify more into broiler production than those with higher educational qualification. The more educated civil servants may likely be in the position of authority in the civil services and may not have the necessary attention and time needed in broiler production. This result is in contrast with the study by Oladimeji *et al.* (2017), who reported that education increases broiler production among civil servants in Kwara State, Nigeria.

Furthermore, marginal effect of experience (0.018), signified that a year increase in experience is directly proportional to the probability of the level of broiler production from small scale to large scale by 1.8%. The result showed that as the civil servant years of experience increases, there is an increase in the level of diversification into broiler production. This study agrees with the findings of Olanrewaju and Olufemi (2012), and Oladimeji *et al.* (2017), who reported that increase in years of experience increases the level of broiler production in Ondo and Kwara States, Nigeria, respectively.

Thus, the hypothesis of no significant relationship between socioeconomic variables and level of diversification into broiler production among civil servants was rejected.

4.5. Effects of broiler production on poverty status

Results presented in Table 5 showed that the overall data significantly fits the model at ($p < 0.01$) probability level. The negative (-0.0071) and statistically significant ($P < 0.01$) marginal effect of salary implies that as salary increases, the poverty reduces. The marginal effect revealed that additional naira to the salary of the civil servants will decrease their probability of being poor by 0.7%. This finding is consistent with the finding of Onogwu (2017), and Oladimeji *et al.* (2017), who reported that salary of civil servants was both significant at 5% level of probability in reducing poverty of civil servant Plateau and Kwara States, Nigeria, respectively.

Table 5 Results of Logit analysis on effect of broiler income on poverty status

Variable	Coefficient	Standard error	Z	P> z	Marginal Effect
Salary	-0.0005	0.0001	-4.10	0.000	-0.0071***
Broiler income	-0.0005	0.0002	-2.26	0.024	-0.0007**
Remittance	-0.0001	0.0003	-0.44	0.658	-0.0022
Constant	5.2927	1.3430	3.94	0.000	
Sample size		120			
LR chi ² (4)		35.26			
Prob. > chi ²		0.0000			
Pseudo R ²		0.2407			
Log likelihood		-55.6620			

Note: ** and *** significant at 5 and 1 %

Source: Authors' computation, 2020;

Similarly, income from broiler production had a negative (-0.0007) and statistically significant influence on the probability of being poor at ($p < 0.05$) level of probability. The marginal effect showed that an additional naira income generated from broiler production will decrease the probability of being poor by 0.07%. This implies that as the variable increases, the probability of being poor decreases and vice versa. This result agrees with Babatunde *et al.* (2012), who reported that poultry income of farmers in Oyo State was significant at $p < 0.01$ level and was negative related to poverty. This is also in line with the findings of Oladimeji *et al.* (2016b), who asserted that additional income is an important determinant of poverty, hence agricultural activities will lead to extra household income which could reduce the poverty level of the civil servants.

Hence the hypothesis; production has no significant effect on the poverty status of the civil servants was also rejected.

4.6. Constraints Faced by the Farmers in Broiler Production

The constraints faced by broiler farmers in the study area were ranked according to their severity as indicated by the farmers (Table 6). The results of the analysis showed that high cost of feed ranked

first among the various constraints with a mean value of 4.56. The high cost of feed is associated with the global inflationary trend and also the competition on the demand for maize by humans as well as the birds and other livestock. Similar situation was noted by Garba and Jirgi, (2014), which indicates that 78% of the farmers were faced with the problem of the high cost of feed. Ranked next to high cost of feed is high cost of vaccines with a mean value of 4.52. This is important for the running of broiler farm. These vaccines includes gumboro, new castle and fowl pox. Medication includes antibiotics against bacteria, fungal and protozoan diseases. This finding corroborates with Oyinbo and Kehinde (2016), which also showed that high cost of medication and vaccines was a critical constraint in poultry production.

Diseases and inadequate supplies of vaccines and medicine were identified as the next prominent problem. Similar situation was noted by Ebukiba and Anthony (2019), who observed that the quantity and quality of vaccines available in Nigeria against the major diseases are not up to the desired standard and prices. Also, poor marketing and high cost of chicks has a mean value of 4.16 and 3.86 respectively which collaborates Ebukiba and Anthony (2019), that also noted 67 percent of the farmers were of the opinion that poor marketing was the major problem of broiler production in Karu, Nassarawa State, Nigeria. The Nigerian government lack of attention and incentives which the broiler farmers identified as fifth constraint with mean score of 3.34 and the high cost of medication coupled with inadequate supplies of .vaccines may also responsible for high rate of mortality with mean score of 3.26. The least constraints faced in broiler production as identified by the broiler farmers in the study area were lack of credit facility and lack of extension workers with the mean values of 2.63 and 2.43 respectively.

Table 6 Constraints of broiler production among civil servants

Constraints	Total score	Average	Rank
High cost of feed	546	4.56	1
High cost of vaccines	543	4.52	2
Poor marketing system	499	4.16	3
High cost of chicks	463	3.86	4
Lack of government incentives	401	3.34	5
High rate of mortality	391	3.26	6
Lack of credit facility	316	2.63	7
Lack of extension workers	292	2.43	8

Source: Authors’ computation, 2020

5. CONCLUSION AND RECOMMENDATIONS

Broiler production among civil servants has a strong influence on their purchasing power, and has the potential to alleviate poverty. The results concludes that broiler production is not only profitable but also has a significant effect in reducing poverty among civil servants in Plateau State, Nigeria. Engaging in agricultural production like broiler production by urban and peri-urban households enables households to have diversified income, enhance their food security, increase agricultural production and most importantly reduce shocks of unpaid salary and arrears. Based on our findings, it is very important for adequate institutional framework to be put in place by all the three tiers of Nigeria’s governments to provide trainings on new techniques related to broiler/poultry production, this will encourage better production and increased income. Such trainings could improve efficiency and will enable farmers to learn a lot of farming techniques, create employment and promote overall agricultural development. The poultry association (PAN) should form a formidable association to enjoy economic of scale in input acquisition including purchases of vaccines and medications directly from the suppliers and also making it available to its members at subsidized prices, establish their own modern feed mill in the state to provide feeds to the farmers at cheaper rates due to high

price of feeds. The PAN is encourage to invite experts like veterinary doctors to give them training on how best to keep their birds in areas of feeding, housing, medication and sanitation as this will reduce mortality rate. Government ban on importation of poultry meat is plausible and should be further imbibed by the citizens to consume home grown poultry meat.

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