Socioeconomic Determinants of Good Agricultural Practices in Broiler Production among Commercial Poultry Farmers in Yenagoa Local Government Area, Bayelsa State

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This study was on socioeconomic determinants of Good Agricultural Practices (GAPs) in broiler production among commercial poultry farmers in Yenagoa Local Government Area (LGA) of Bayelsa State. The objective was to describe the socio-economic characteristics of poultry farmers while the hypothesis was; the socioeconomic characteristics of commercial poultry farmers do not determine their GAPs implementation in broiler production. With multi-stage sampling, data were collected from 90 randomly selected poultry farmers registered with Agricultural Development Program. Primary data obtained with structured questionnaire administered to the commercial poultry farmers were analysed with percentage, mean and Ordinary Least Square Regression Analysis. From results, majority (84%) of Yenagoa LGA poultry farmers were males whose mean age was 40 years. They were mostly married (59%), had average household size of 7 persons, stocked on the average 152 birds per production cycle ad made average income of ₦263,000.00. Also, farmers had average farming experience of 6 years and mean years of formal schooling of 15. Regression result at $\alpha \leq 0.05$ indicates; Age (X_1) with t-ratio = -3.7364, Education (X_3) with t-ratio = 5.5011, Stock size (X_4) with t-value = -2.0971, Farming experience (X_5) with t-ratio = -1.9969, Household size (X_6) with t-ratio = -3.0858 and income (X_8) with t-ratio = 5.3017 were the socioeconomic variables that determined GAPs implementation among commercial poultry farmers in Yenagoa LGA. Thus legislation and advocacy by government, donor agencies and stakeholders focused on farmers' socioeconomic variables of importance in sustaining GAPs implementation was recommended.

KEYWORDS: GAPs implementation, poultry farmers , LGA, Agricultural Development

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1. INTRODUCTION

Food is universal and central to healthy life and living among living things. Consuming food in rightful combinations of the various food classes; otherwise balanced diet is even healthier and more essential for humans. Growth and repair of worn-out tissues as a continuous process in humans and animals, have been attributed to the need for consumption of protein. Again, in existence are two classes of protein - first class (which is animal based) and second class (which is plant based). Achieving adequate first class protein (meat) requirement however, remains a far cry or even a mirage particularly in developing nations. For instance, by Food and Agriculture Organization (FAO) minimum threshold of 35kg per capita consumption of meat, Nigerians average consumption of approximately 1.9 kg (FAO, 2018), shows a deficit or shortfall of 33.10 kg (Nnadi, 2024). Situations like this therefore, calls for intensification of livestock production. This does not require much campaign!

According to Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) (2017), Nigeria's most active and fastest-growing livestock subsector remains the poultry industry; with over 180 million birds. In line with this, Shaw, Nielson and Rose (2019) reported quick expansion of particularly the broiler segment of the poultry industry; that offer good number of potential economic and health advantages for nations and their citizens in sub-Saharan Africa. Although, World Bank (2021) reported a 2.0% decline in 2020; of the poultry birds' population and anticipated recovery by 2.3% in 2021 and 3.1% in 2022, due to increasing demand and population growth, these growth rates by now in the opinion of Nnadi (2024), may have exceeded World Bank's projection.

Protein deficiency among urban and rural poor households will continue unabated; as their daily meals go with near or complete absence of meat. Therefore, increasing meat production via broiler production by poultry farmers is required as perhaps one sure way of bridging the seeming domestic demand-supply gap of poultry products. The need to do so sustainably is imperative; thus laying credence to the eminence of the Good Agricultural Practice (GAP) in production among poultry farmers.

GAP is one of the frontline topics within the global best practices discourse. Tariengco (2024) viewed GAP as set of standards for safe and sustainable agricultural production with a drive to maximize yields and optimize business operations at minimized production costs and environmental impact. Again, Tariengco (2024) specified that GAP in raising animals includes minimum use of non- therapeutic antibodies or hormones, avoiding feeding livestock with animal by- products (such as processed animal protein), and ensuring adequate clean farm's equipment and machinery to prevent the spread of disease. Four (4) pillars of GAP identified by FAO (2023) are; economic viability, environmental stability, social acceptability, and food safety and quality. Three out of the four pillars of GAP (environmental stability, social acceptability, and food safety and quality) seem to focus on consumers; thus GAPs implementers could become market oriented.

The likelihood of GAPs implementation by poultry farmers to ensure broiler production that meets required standards for food safety, animal welfare, and environmental sustainability orchestrates GAP's exceptional role, in global food security and economic development. Thus, farmers' adherence to specific guidelines by regulatory bodies for GAP are particularly important and need not be overemphasized. Achieving GAPs by farmers however, may be hinged on their socioeconomic variables; a seeming driver to put in perspective. Educational level; a social variable of a farmer, could be driver of a farmer's willingness or desire to implement GAP of ensuring adequate clean farm's equipment and machinery to prevent the spread of disease. However, the farmer's inability to back this desire with payment (an economic variable) renders it ineffective and of no consequence.

Indeed, it is common knowledge that the socioeconomic variables affect either positively or negatively. Thus, its implication for poultry farmers in their implementation of GAPs in broiler production is extremely important and requires empiricism. Few works on GAPs such as Poultry farmers' awareness and performance in Good Agricultural Practices implementation in broiler production in Yenagoa Local Government Area, Bayelsa State (Nnadi, 2024) has been conducted. However, non has been found on Socioeconomic determinants of good agricultural practices in broiler production among commercial poultry farmers in Yenagoa Local Government Area, Bayelsa state. This formed basis for this work. This study specifically therefore, described the socioeconomic characteristics of commercial poultry farmers while socioeconomic characteristics of commercial poultry farmers do not determine their use of GAPs in broiler production in Yenagoa Local Government Area, Bayelsa State was the hypothesis that guided this work.

2. METHODOLOGY

This study was conducted in Yenagoa Local Government Area (LGA), Bayelsa State. The area is located within latitudes 4° 15´ North and 5° 25´ South, and longitudes 5° 22´ West and 6° 45´ East. It is bounded in the East and West by Ogbia and Kolokuma/Opukuma LGAs respectively, while in the South and North respectively, by Southern Ijaw LGA and Ahoada West LGA of River State. The population of Yenagoa LGA was put at 353,344 persons (National Population Commission (NPC), 2006) and a 2023 population projection of 497508 persons at 2.4 annual growth exponential (Nnadi, 2024). It lies within the rainforest zone; characterized by a humid equatorial climate and annual rainfall range of between 2000mm to 4000mm, alternating rainy seasons; with rains between March to November and dryness between December to February, and a short dry spell between July and September often referred to as August break. It has a maximum temperature average of 30°C with a relative humidity ranging between 55 and 90 percent. The predominant people are Ijaw ethnic group along with Epie/Atissa speaking groups. The occupations of the people are; fishing, crop and livestock farming, and trading. Other traditional livelihoods include; hunting, wood sawing, palm oil milling, palm wine tapping among others. From a list of two hundred and eighty-one (281) registered poultry farmers obtained from Agricultural Development Program (ADP) office in Yenagoa LGA, Bayelsa state, ninety (90) poultry farmers were randomly selected for the study and structured questionnaire administered to them. However, on retrieval, only 70 copies (78%) of the questionnaire were found usable for the analyses and thus were used. Descriptive tools of mean and percentage as well as inferential tool of multiple regression were used in the analysis. The multiple regression model is expressed thus;

$Y= f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8)$

Where;

Y = use of GAP (Number of GAPs used by farmers)

X_1=age (in years)

X_2=Sex (Dummy; male=1, female=0)

X_3=education level (number of years spent in formal schooling)

X_4=farm size (stock size/number of birds kept per season of production)

X_5= farming experience (years in broiler production)

X_6=family size (number of persons in a household)

X_7= marital status (Dummy; Married =1, Single = 0)
X_8=monthly income (₦)

3. RESULT PRESENTATION

3.1 Socioeconomic Characteristics of Poultry Farmers in Yenagoa LGA, Bayelsa State

Table 1: Socioeconomic characteristics of poultry farmers in Yenagoa LGA, Bayelsa State

Variables	Item	Frequency (f)	Percentage (%)	Mean
Sex	Male	59	84.29	-
	Female	11	15.71	
	Total	70	100.00	
Marital status	Single	19	27.14	-
	Married	41	58.57	
	Separated	8	11.43	
	Widowed	2	2.86	
	Total	70	100.00	
Age	22.34	49	70.00	40 years
	44-63	19	27.10	
	>63	2	2.9	
	Total	70	100.00	
Household size	4-6	29	41.43	7persons
	7-8	25	35.72	
	>8	16	22.85	
	Total	70	100.00	
Education	12-15	19	27.14	15years
	16-19	49	70.00	
	20-23	2	2.86	
	Total	70	100.00	
Experience	2-7	54	77.14	6years
	8-13	10	14.29	
	>13	6	8.57	
	Total	70	100.00	
Production cycle	1-3	39	55.71	3.33
	4-6	31	44.29	
	Total	70	100.00	
Stocking size	50-199	34	48.57	152birds
	200-349	31	44.29	
	>349	5	7.14	
	Total	70	100.00	
Income per cycle (₦)	40,000.00-199,000.00	33	47.14	₦263,000.00
	200,000.00-349,000.00	29	41.43	
	>349,000.00 Total	8 70	11.43 100.00	

Source: Field data, 2024

The above Table 1, shows results on the socioeconomic characteristics of poultry farmers in Yenagoa LGA of Bayelsa State. To this end, the results of the variables indicated as follows;

3.1.1: Sex: Greater majority of poultry farmers in Yenagoa LGA are male with a record of 84.29% while the remaining 15.71% is made up of female.

3.1.2: Marital Status: The result on marital status of poultry farmers in Yenagoa LGA, shows 27.14%. single, 11.43% separated and 2.86% widowed. Those who are married ad coupled recorded the highest percentage of 58.57%.

3.1.3 Age: From the result in the Table 1, poultry farmers between 24yrs-43yrs represented 70% of poultry farmers in Yenagoa LGA. Those between the ages of 44yrs-63yrs represented 27%, while those above 63yrs represented 2.86% respectively. On the average, poultry farmers are 40 years old.

3.1.4: Household Size: Yenagoa LGA poultry farmers maintaining the household size range of between 4-6 persons, recorded 41.43%. Those with 7-8 persons and above 8 persons constituted 35.73% and 23.85% respectively. On the average, 7 persons was recorded.

3.1.5: Education: Education was viewed in this study, as the number of years spent in school. Thus result in Table 1 above indicated that 27.14% of the poultry farmers in Yenagoa LGA have between 12yrs - 15yrs of schooling. Greater majority (70%) of farmers had between 16yrs-19yrs of schooling, while the remaining 2.86% of the farmers spent between 20yrs-23yrs in formal schooling. On the average, 15yrs of formal schooling was recorded.

3.1.6: Experience: Distribution of poultry farmers according to years of experience (Table 1) shows that majority (77.14%) of farmers had been into poultry production for between 2yrs-7yrs. Those who had between 8yrs-13yrs of farming experience represented 14.29%, while the remaining (8.57%) had more than 13yrs of experience. A mean farming/experience of 6yrs was recorded.

3.1.7: Production Period: The result on number of times(period) of production in a year by poultry farmers indicated that, 55.71% of the farmers produce between 1-3 times/ periods in a year. while 44.29% produce between 4-6 times/periods in a year. On the average, farmers produce 3 times/periods in a year.

3.1.8: Stock Size Per Production Period: While 48.57% of farmers in Yenagoa LGA produce 50-199 birds per production cycle, 44.29% produce between 200-349 birds and those who produce above 349 birds per production period constituted 7.14% only. On the average, poultry farmers produce 152 birds approximately per period.

3.1.9: Income Per Production Period: Majority of Yenagoa LGA poultry farmers (47.14%), earn between ₦40,000.00 - ₦199,000.00 per period of production. Those who earn between ₦200,000.00-₦349,000.00 per period of production represented 41.43% while farmers who earn above ₦349,000.00 per period of production constituted 11.43%. On the average, poultry farmers earn ₦263,000.42 per period of production.

3.2: Relationship between Socioeconomic Characteristics of Poultry Farmers and their Use of GAPs in Broiler Production in YELGA

Table 2: Regression Output for Relationship between Socioeconomic Characteristics of Poultry Farmers and their Use of GAPs in Broiler Production in Yenagoa LGA

Variables		Coefficient	Standard Error	T-Ratio
Intercept		-27.4915	8.9182	3.1190*
X_1 (Age)		-1.9706	0.7201	-2.7364*
X_2 (Sex)		-0.9041	0.8166	-1.1072
X_3 (Level of Education)		0.4167	0.0758	5.5011*
X_4 (Stock Size)		-0.0219	0.0104	-2.0971*
X_5 (Years of Experience)		-0.0023	0.0012	-1.9969*
X_6 (Family Size)		-0.2670	0.0865	-3.0858*
X_7 (Marital Status)		0.5698	0.6655	0.8562
X_8 (Income)		4.7030	0.8877	5.3017*
R^2	0.7755			
F - Value	5.5042			
* Significant at 5%				

Source; Field survey data, 2024

The Semi-log functional form, gave the lead equation with the highest value coefficient of multiple determination, R^2 = 0.7755, F-value = 5.5042 and the highest significant variables (6) at 0.05 levels. The coefficient of age (X_1), was -1.9706, with a t-ratio of -3.7364 as against the coefficient (-0.9041) and t-value (-1.1072) of sex (X_2). Years of education (X_3), recorded a coefficient of 0.4167 and a t-ratio of 5.5011 while Stock size (X_4), recorded a coefficient of -0.0219 and a t-value of -2.0971. Also, the coefficient of years of experience (X_5), and its t-ratio, stood at -0.0023 and -1.9969 respectively while household size (X_6) recorded a coefficient of -0.2670 and a t-ratio of -3.0858. Similarly, the coefficient of marital status (X_7) was 0.5698, while its t-ratio 0.8562 as against the poultry farmers' income (X_8) coefficient (4.7030) and t-ratio (5.3017).

4. DISCUSSION

4.1.1: Sex: The result on sex distribution of poultry farmers in Yenagoa LGA, Bayelsa State, shows heavy dominance of male in the poultry industry. This may be so; as poultry farming is time intensive and require close attention which ordinarily, a married woman for example, may not be freely disposed to; due to competing time and attention required between keeping her home and

rearing her birds. This may be the reason fewer women venture into poultry farming. Also, investment in poultry could somehow be capital intensive; for which many women may not have the capital for. In line with this finding, high cost of veterinary services was reported by Adeyonu et al (2021); Anosike (2018). There is need to improve and encourage women participation possibly by funding.

4.1.2: Marital Status: The venturing into poultry production business by the married majority; who perhaps find the business lucrative despite its seeming dirty nature as against fewer singles could have stemmed from the fact that the business could be adjudged fit for income generation to enhance family and household up-keep and demands. In consonance with this, Olaniyi *et. al.* (2008), and Aromolaran *et. al.* (2013) reported that most people go into poultry farming because of the huge profit others make. On the other hand, a single with no wife or husband, child/children nor some dependent/relative(s) legally bound to carter for, is at liberty or freedom to be choosy of income generating activities; lucrativeness notwithstanding.

4.1.3 Age: The result on age distribution of poultry farmers in Yenagoa LGA as presented in Table 1 above, is plausible; as majority of the people were relatively youths. Youthfulness is required for poultry business because youths possess the zeal, strength and stamina that matches the tedium involved in rearing, keeping and managing poultry farm; especially as commercial business enterprise.

4.1.4: Household Size: From the result on household size distribution of Yenagoa LGA poultry farmers displayed on Table 1, a household size of 7 persons on the average, though could have serious implication for good standard of living, could become very much desirable among poultry farmers due to ease and access to family labour. The result portrays a typical African family; where people give birth to many children with the desire to integrate family into the culture of farming. This, seem to be in tandem with family farming; a culture though indigenous to Africa is currently promoted globally with the International Year of Family Farming celebrated in 2014 to create awareness of significant role played by family farmers in global food and nutrition security and the consequent designation of the 2019–2028 as the United Nations Decade of Family Farming (FAO, 2019).

4.1.5: Education: The result showing greater majority of poultry farmers in Yenagoa LGA possessing at least one degree or the other is considered good as it points to high possibility of farmers' use of GAPs in broiler production. There seem to be high influx of persons from other professional areas such as Medicine, Nursing, Pharmacy Medical Laboratory among others into agricultural production. This thrives because agriculture in the country is not professionalized even as investible funds most times are not accessible to real farmers for investment in farming. Also, quick returns in agricultural business especially broiler production that attract investors into the sector, make many to jettison their degrees and certificates in face of difficult times and unemployment; to make ends meet.

4.1.6: Experience: The average of 6years farming experience among poultry farmers in Yenagoa LGA, Bayelsa State; implying that greenhorns dominate the unit remains comprehendible. Yenagoa LGA, houses the state capital; and most of her communities are either urban or peri-urban. The spate of rural-urban migration in the midst of unemployment in the country has remained unabated. Thus, youth migration from rural areas within and without Bayelsa State to Yenagoa cities and communities in search of greener pasture may not be out of place. This trend, in addition to the drift from other professional areas to particularly the poultry sector as earlier inferred may likely push out of business; older farmers who possibly may not withstand competition. Having those with few years of experience at the frontline of poultry production may not pose much predicament; as years is not the only way to gain experience. Their experiences could be enhanced and beefed-up by their educational background as well.

4.1.7: Production Period/Cycle

The result on the number of times or periods of 3 on the average that farmers produce broiler birds, could be suggestive of farmers' production being driven by festivals particularly Christmas, New Year and Easter; when demand is usually high within the area. This trend is commendable; as it portrays farmer's consciousness of the interplay of market forces of demand and supply. Despite this, there is room for improvement; as meat consumption should be on daily bases rather than on ceremonials.

4.1.8: Stock Size Per Cycle of Production

Given the average production of 150 birds per period for 3 times/periods, farmers produce nearly 500 broiler birds in a year. This could be evident of small and medium scale commercial production which dominates and characterises Nigeria and Africa's agriculture; as also found by Nnadi et al, (2018), World Bank (2013) and Beyalee (2011).

4.1.9: Income Per Production Period

With approximately 3 periods of production annually, farmers' average annual income from broiler birds amounted to Seven hundred and eighty-nine thousand Naira (₦789,000.00). Also with 150 birds per production period, farmers make about ₦1,730.26 per bird on the average. This amount could be considered the farm gate price. This price; when compared with the high market prices for broiler birds of most times not less than ₦5,000.00 especially during the festive periods seems to confirm the assumption that middlemen receive more than the producers in marketing. This calls for worry; particularly at this time in the history of Nigeria, when the inflationary trend seems to be galloping. There is urgent need to curb middlemen's over exploitation of both producers and consumers.

4.2.: Relationship between Socioeconomic Characteristics of Poultry Farmers and their Use of GAPs in Broiler Production in YELGA

For the hypothesis that there is no significant relationship between the socio-economic characteristics of poultry farmers and their use of GAP in broiler production in Yenagoa Local Government Area, the semi-log functional form, gave the lead equation with the highest value coefficient of multiple determinations, $R^2 = 0.7755$, F-value = 5.5042 and the highest significant variables (6). This implied that a total of 78% approximately of the independent variables were significant. The result shows that; Age, Level of Education, Stock Size, Years of Experience, Family Size, Marital Status and income were all significant at 0.05 levels. This indicates the goodness of fit of the model and the relevance of the variables fitted into the model.

The age (X_1) of farmers though significant, had negative relationship with their GAPs; implying that the less the age, the more the use of good agricultural practice; suggesting more GAPs implementation among the youths than the old farmers. Also, the variables of Stock size (X_4), experience (X_5), and Household size (X_6) respectively of poultry farmers in Yenagoa LGA, exhibited significant but negative relationships with their GAPs; implying that a unit increase in the variables leads to a unit decrease in their GAPs implementation respectively. On the contrary, the variables of education (X_3) and income (X_8) showed significant and positive relationship with the GAPs implementation of Yenagoa LGA poultry farmers; implying increasing or decreasing of same units of variables and GAPs in same direction. Thus the more the level of education/income, the more the use of good agricultural practices in broiler production and vice-versa.

5. SUMMARY, CONCLUSION AND RECOMMENDATION

GAPs as a global standard has come to be. Implementing it or not could make or mare a country's product; particularly at world market places and in face of competition among comity of nations. Age, stock size and household size of the farmers had inverse relationships with their GAP(s) while education and income indicated positive relationships with their GAP(s), To this end therefore, this work concludes that GAP(s) implementation in broiler production among commercial poultry farmers in Yenagoa Local Government Area, Bayelsa State is determined by their socioeconomic characteristics. Government, donor agencies, existing and intending farmers and indeed all stakeholders through legislation and advocacy focused on the socioeconomic variables of importance in sustaining GAPs implementation for optimal broiler production among commercial poultry farmers was recommended.

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