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BROILER BIRDS PRODUCTION PERFORMANCE OF NEW FARM ENTRANTS IN UYO, AKWA IBOM STATE, NIGERIA

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Abstract
The study assessed broiler birds performance of new farm entrants in Uyo Local Government Area of Akwa Ibom State, Nigeria. Both primary and secondary data from AKADEP reports and other publications relevant for the study were used. A structured questionnaire was employed to obtain information from fifty (50) purposively selected poultry farmers in Uyo Local Government Area that has been in the business for a period of five years and below. Descriptive statistics, gross margin analysis, Rate of Returns on Investment and multiple regression models were used to analyze the data. Results showed that new entrants were dominated by male (68%) broiler farmers. Majority of the respondents (86%) had formal education and the average educational attainment was junior secondary school (9years). The mean age of the respondents and household size were 42 years and 5 persons, respectively. Most of the farmers had secondary source of income, only 18% of the respondents accessed credit facilities. The total variable cost was ₦537026.7 and *the total revenue was* ₦584120.40 *while gross margin per farmer was* ₦47093.3. *Rate of. Returns on Investment (RROI) was 8.7%. The result of the regression model indicated that, educational status* ($P<0.05$) *and experience in poultry farming, access to credit, income level and amount of credit to farmers all had significant* ($P < 0.01$) *influence on the level of gross margin in the study area. The study recommends that the State Government should continue to accommodate more young people in the State new farm entrant scheme -Integrated farmers' Scheme (IFS). Also new farm entrants should be supported with grants and other credit facilities to raise their level of production and gross margin. Farmers should be trained to produce their feed as this would reduce feed cost and improve their gross margin.*

***Key words**: Broiler Birds Rate of Return on Investment Gross Margin Variable Cost.*

Introduction
Agricultural development is the foundation for economic development. It has also been described as the natural engine room for economic development and a reliable key to industrialization for developing countries of the world. The future of farming is dependent on continued entry by new farm operators. The united State Department of Agriculture defines beginning farmers (new farm entrants) as individuals or groups who have operated a farm for five (5) years or less and if there is more than one operator all must have less than 5 years of experience. Errington and Lobley, (2002); Caskie, Davis, Campbell and Wallace, (2002); Lloyds, (2003). ADAS, (2004) highlighted some of the challenges of adjustment facing the farming industry thus; an ageing farming population, a common absence of successor, and economic barriers hindering new entrants to the industry. Starting a farm business is complicated because it encompasses so much in no particular order. Farmers must consider business planning, finding land, securing equipment, developing or securing infrastructure. The threat of entry depends on the extent to which there are barriers to entry. These barriers must be overcome by new entrants if they are to compete successfully. Johnson, Scholes and Whiffington (2005) suggested that the existence of such barriers should be viewed as delaying entry and not permanently stopping potential entrants. Gasson, Crow, Errington, Hutson, Marden, and Winter (2011) asserted that new farm entrant face a number of obstacles to establish a viable farming business. These include access to land, labour, capital, housing, markets, skill development and the networks associated with acquiring the resources. The particular obstacles faced by new farm entrants vary depending on access to resources and geographic location. The rising value of agricultural land and its limited availability is a major barrier to new entrants Gasson *et. al.*, (2011). Land fragmentation is also an issue in

countries like Nigeria where land is traditionally divided between multiple successors (Burton and Walford, 2005). Access to capital is a major issue for new entrants, high interest rates and low profitability of many farming enterprises makes it difficult to repay loans. High loan default caused by poor returns tends to erode the trust for beginning farmers this worsen the chances of acquiring credits from lending institutions for farming businesses.

A farm setting is an extension of the vision and values of the individual who starts it and it has to be carefully planned to make sure that it fits within that vision as well as within the particular place where the farm is established. New farms need to have a well-designed business plan that takes into consideration individual infrastructure and financial needs, the viability of marketing strategies, the farmer's production capacity and knowledge (Ebong 2000). Education attainment, training, farm management skills and planning, are essential in starting a new farm business. For most beginning farmers, it is advisable to start small to allow time for details to be worked out, for additional learning to occur, and to mitigate the size and scope of problem that will inevitably arise. In each farm business, definition of the goals and objectives is important, profit goals - How much income do you need from the farm, goals on natural resources and environment sustainability and performance indicators. .Ebong, 2000 posited that farm business managers use key performance indicators to evaluate their success at reaching targets. Performance indictors help managers and employees assess their business performance, how far and how well the business has progressed, and also demonstrates how effectively a farmer is achieving key business objectives. Each enterprise will use different type of performance indicators to measure success based on specific business goals and targets. Agricultural businesses have their own specific challenges, from funding needs, high cost of basic farming equipment, Changing weather patterns, primitive technology and problems associated with land. Therefore, apart from having the zeal to start a farm, it is very necessary to have a plan. A business plan details what you hope to do and how you expect to succeed. A plan also considers the things that might go wrong and how to prepare for the unexpected. Pinto-Correia and Breman (2009). Business strategic planning is the first step down the road of successful farm management Every new farm entrant should have a farm business plan. According to Holz-Clause (2009) a feasible business plan is the proposal where the business will generate adequate cash flow and profits, withstand the risks it will encounter, remain viable in the long-term and meet the goals of the owners.

Gasson, Crow, Errington, Hutson, Marden, and Winter (2011) asserted that new farm entrant face a number of obstacles to establish a viable farming business. These include access to land, labour, capital, housing, markets, skill development and the networks associated with acquiring the resources. The particular obstacles faced by new farm entrants vary depending on access to resources and geographic location. The rising value of agricultural land and its limited availability is a major barrier to new entrants Gasson *et al*., (2011). Land fragmentation is also an issue in countries like Nigeria where land is traditionally divided between multiple successors (Burton and Walford, 2005). Access to capital is a major issue for new entrants, high interest rates and low profitability of many farming enterprises makes it difficult to repay loans. High loan default caused by poor returns tends to erode the trust for beginning farmers this worsen the chances of acquiring credits from lending institutions for farming businesses.

In Nigeria, Livestock farming is one of the major agricultural activities that contributes towards achieving development goals and poverty reduction which therefore requires the entry of new and young farmers into the system. Poultry production or farming is one of the agricultural business that is common in Nigeria. It is the practice of rearing domestic birds for the purpose of egg or meat production for human consumption. (Adebayo and Adeola 2005). reported that poultry have a significant effect on Nigerian economy, that about ten (10) percent of the Nigerian population are engaged in poultry production, mostly on subsistence and small or medium-sized farms. Poultry (chicken) is important and relatively cheap source of meat and egg. Chicken production comprises commercial poultry production of broilers and layers, and the traditional poultry production, made up of various types and sizes of birds.

USDA, (2014) reported that commercial poultry production in Nigeria was estimate at about 800 million USD. Poultry sector contributed about 25% of the agricultural domestic products of the Nigeria economy (FAO 2010). (Sonaiya, 2000) and (Umoh, 2008) observed that there is a remarkable and increasing demand for protein food sources in Nigeria, this calls for a serious and pressing need for expansion and improvement in productivity of poultry enterprises, which provide a better economic option for improving the supply and consumption of the protein food source. The increase in demand for protein foods has profound implications as it presents opportunities and incentives for new investments in poultry business. The increase demand projection which is an incentive for investment in poultry production will attract new farm entrants into poultry business. Small-scale poultry-keeping plays an important role as a source of food for urban and rural households in Akwa Ibom State providing nutrition and income from sales of eggs and chicken (Kitalyi; 2000) Umoh (2008) pointed out that despite the various efforts by the government to encourage productivity in all aspects of agriculture there is consistent low turnout in the area of poultry production. For example, the Akwa Ibom State government under its ministry of agriculture and Natural resources in 1998 established the Integrated Farmers Scheme to recruit new young and energetic people into agriculture. This scheme was borne out of the observation that despite the natural endowment of rich fertile lands, clement weather and a virile workforce, of the state, most of the basic staples food stuff were brought in from the neighboring states and the farming population is aging. The scheme therefore targeted the young jobless and energetic school leavers and employs the integrated farm management approach of crops, livestock and fisheries production combination. Grobbelaar (2004) pointed out that most new entrants to poultry farming go bankrupt few years after opening the farm he posited that good management is the key to poultry farming success,. Many people who want to venture into faming usually do so for a number of reasons but the most prevalent one being to attain financial freedom. Most beginners fail to study the business and evaluate the chances of succeeding. It is in the light of this, that the study was conducted to assess the socio-economic characteristics of the new poultry farmers, determine their Return on Investment and the factors that determine the gross margin of the new farmers.

Methodology

Study Area

The study was conducted in Uyo metropolis in Akwa Ibom State, Nigeria. The State is located at latitude 4^0 33^1 and 5^0 33^1 North and longitude 7^0 25^1 and 8^0 25^1 East and occupies a total land area of 4,244 Km^2 with an estimated population of about 3.9 million (NPC 2006). The State is bounded to the North by Abia State, to the East by Cross River State to the West by River State and to the South by the Atlantic Ocean. Administratively the state has 31 local government areas and Uyo Local Government being the state capital is one of them. The annual precipitation ranges from 2000-3000mm per annum. Uyo Local Government has an estimated population of 309, 573 people (NPC 2006). Agriculture is the major occupation of the people either as primary or secondary occupation, the ecological zone of the Local government favors the growing of tree crops, roots, tubers, cereals vegetables and rearing of livestock. The major livestock reared in the area is pigs and poultry.

Sampling Procedure/Sample Size

The target population of this study was all broiler poultry farmers who have been in the business for about five years and below. Simple random sampling technique was used to select 10 villages in Uyo. A list of poultry farmers in the selected villages in the Local government was obtained from AKADEP extension agent in the study area. This list served as the sampling frame for the study. Five farmers in each of the selected villages were purposively selected. A total of fifty farmers (50) who had less than 10 years of experience were purposively selected for the study.

Data collection

For the purpose of this study, both primary and secondary data were used. The secondary data was obtained from AKADEP and other publications relevant for the study. A list of poultry farmers in the selected villages in the Local government was obtained from AKADEP extension agents in the study area. The primary data was obtained through the use of a well-structured questionnaire for the selected poultry farmers. Questionnaire consisting of subsections to reflect the specific objectives of the study was used to collect the data for the study. Information that was

collected included: socio-economic characteristics of the respondents such as age, gender, level of education, household size, income of the farmers. Also, information on the, experience in poultry farming, access to credit facilities, amount of credit were obtained.

Analytical Techniques

The study employed descriptive statistics such as (mean, frequency and table) budgetary techniques such as gross margin analysis and Rate of Return on Investment. Also inferential statistics such as Ordinary Least Square (OLS) multiple regression model was used to determine the effects of some socio-economic characteristics on gross margin of the respondents in the study area

The model is specified thus:

GM = TR – TVC

Where:

GM = gross margin

TR = ∑PQ

∑ =Summation

PQ = Price X Quantity

TR = total revenue

TVC = Total Variable Cost

(ii) Multiple Regression analysis was carried out to identify the determinants of farmers gross margin an indicator of project performance

The implicit form of the model was specified as follows:

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

Where;

Y = gross margin (in Naira) per farmer

X_1 = Age (years)

X_2 = Gender

X_3 = Educational status (no of years of schooling)

X_4 = Household size (No of members of the household)

X_5 = Income level of the farmers (₦)

X_6 = Experience in poultry farming (years)

X_7 = Access to credit facilities (dummy)

X_8 = Amount of credit (₦)

(iii) Rate of Return on Investment (ROI) was employed to measure total earnings from the business as percentage of the amount invested in the business. It is express mathematically thus:

Rate of Return on Investment (ROI) =: $\frac{Revenue - Cosi\ of\ Investment)}{Total\ cost}$ X 100

Results and Discussion

Socio-Economic Characteristics of Respondents

Table 1 presents the socio economic characteristics of farmers in the study area. From Table 1, 62 percent of the respondents were male while 38 percent were female. The dominance of males in the enterprise agree with the findings of Adesigen, Adeleke, Adelalu, and Solako, (2007) who reported that men were more than women in poultry business. The predominant age group of the respondents were between 31- 40 (30%,) the least age bracket among the representative farmers was those with their age greater than 61 years. The average age of the respondents was found to be 42 years this means that majority of the respondents were still in their youthful age. From Table 1, those who were married (44%), constituted the largest proportion of the respondents those who were single, widowed, divorced and separated were 24%, 12%, 14% and 6%, respectively. A greater percentage of respondents (86%) had at least primary education. 14% had between 1-6 years of education, 16.0 percent had 7-12 years of schooling while 55% percent had from 13 and above years of education. The presence of about 55% of the farmers with over 13years of formal education may be due to the injection of young graduates into agriculture through the State government integrated farmers scheme programme. Increase in educational attainment will lead to improvement in adoption of modern farming technologies. The high percentage of farmers who have attended at least a primary school contradicts the age long assertion that the farming vocation is dominated by illiterates. As reported by Emaikwu, Chikwendu and Sani, (2011), education is not only an important determinant of adoption of agricultural innovation but also a necessary tool for successful implementation of agricultural project such as broiler enterprise.

Also, the result from Table 1 indicated that the highest (26%) percentage of the respondents has a household size of between 5 to 6 members. 22 percent of the respondents have a household size of 1-2 members while 20% of the respondents has a household size of 7-8 members. 18% of the respondents have between 3-4 household size while only 14% had a household size above 9 members. The

mean household size of the respondents was found to be 5 persons. The large household size as indicated in this study implies that, there would be more family labour to meet labour requirement in the farm, thus reducing the cost of hiring labour.

Table 1: Socio-Economic Characteristic of Respondents

Socio Economic Characteristics	Frequency	Percentage (%)
Gender		
Female	19	38
Male	31	62
Total	**50**	**100**
Age (Mean 42 years)		
<21		
21 - 30	10	20
31 - 40	15	30
41 - 50	14	28
51 - 60	7	14
>60	4	8
Total	**50**	**100**
Marital Status		
Single	12	24
Married	22	44
Divorced	7	14
Widowed	6	12
Separated	3	6
Total	**50**	**100**
Level of Education(yrs) (Mean 9 yrs)		
No formal Education	7	14
Primary Education(1-6 yrs.)	7	14
Secondary Education (7-12yrs.)	8	16
Diploma (13-14 yrs.)	18	36
Degree	10	20
Total	**50**	**100**
Household size *Mean household size = 5*		
1 - 2	11	22
3 - 4	9	18
5 - 6	13	26
7 - 8	10	20
≥ 9	7	14
Total	**50**	**100**
Farming experience (Years) (Mean 3 years)		
< 1	9	18
1 - 2	16	32
3 - 4	21	42
≥ 5	4	8
Total	**50**	**100**

***Source**: Field Survey, 2017*

Table 1 showed that 42% of the respondents had 3-4 years of farming experience 32% had 1-2 years of farming experience, 18% had less than 1 year of farming experience. All the respondents in this study were relatively new in the broiler business. Emaikwu *et. al*, (2011) reported that years of experience in poultry business influenced profitability indicating that the more years they put in the business, the more experienced they become and the more they would increase their flock size depending on the prevailing circumstances. This highlights the need to sensitize the farmers to sustain their business in order to reap the benefits that comes with long experience. Good profit margin is an indicator that the farmer will continue in the business. The average farming experience of the respondents was 3 years indicating that they are relatively new in the business.

Table 2 Access to Credit Facilities:

Items	Frequency	Percentage (%)
Access	9	18
No Access	41	82
Total	50	100

Source: Field Survey, 2017

Table 2 showed that 18% of the respondents had access to credit facilities while 82% had no access. Finance is a very important factor for a successful business operation inadequate funds for any business operation is a serious problem (Idylin, 2004). This has implication on the scale of the farm operation in the study area, as most of the farmers will likely operate on a small scale or have limited capacity to expand their operation.

Table 3: Available Sources of Credit for poultry farmers in the study Area

Description	Frequency	Percentage (%)
Osusu	4	8
Personal Savings	41	82
Cooperative Organization	2	4
Bank	1	2
Poultry Farmers Association	Nil	Nil
Government	2	4
Total	**50**	**100**

Source: Field Survey, 2017

Table 3 shows that majority of the farmers (82%) finance their poultry business through their personal savings 2% raised capital through bank loans, 4% obtained loan through government institution, 8% sourced funds through Osusu, (informal credit scheme) while 4% raised funds through cooperative organization. Personal savings has been generally agreed to be the most reliable and productive source of agribusiness finance (Ebong, 2000) there is need to augment savings with loans as an alternative source of finance for meaningful and effective economic investment.

Table 4: Average Monthly Income (from all Sources) of the Respondents

Description (Naira)	Frequency	Percentage (%)
< 50000.00	27	54
51000.00 - 100000.00	13	26
101, 000.00 - 150, 000.00	7	14
151, 000.00 - 200 000.00	2	4
> 201, 000.00	1	2
Total	**50**	**100**

Source: Field Survey, 2017

Table 4 indicated that 52% of the respondents had a monthly income less than N50,000.00.Twenty percent (20%) had a monthly income of between ₦51000.00-₦100000.00 14% had between ₦101000.00-₦150000.00 while, 8% had between ₦151000.00 - ₦200 000.00. The table also showed that 6% of the respondents had a monthly income of more than ₦201, 000.00 from both primary and secondary sources.

Table 5: Average Variable Cost of Broiler Production (Average of 500 broiler birds) in the Study Area

Variable Cost Items	QTY	Unit Price(₦)	Amount (₦)	Percentage (%) Contribution to TVC
Mortality (8.8%)	44 birds	147.70	6498.80	1.20
Day old chicks	456	147.70	67351.00	12.54
Vaccination	-	-	8570.00	1.59
Medication	-	-	31241.00	5.81
Labour (salary)	1person	6000.00	12000.00	2.23
Fuel	12.56 ltrs	145.00	1821.20	0.34
Electricity	-	-	4800.00	0.89
Wood shavings	4.68 bags	292.00	1,366.56	0.30
Charcoal	8.9 bags	602.6	5363.14	1.00
Feed (starter)	20.78bags	3,700.00	97,509.00	
Feed (finisher)	78.86	3,750.00	295725..00	73.22
Transportation	-	-	3160.00	0.58
Disinfectant	-	-	1621.00	0.30
Total Variable Cost			**537026.7**	**100**

Source: Field Survey, 2017

Table 5 shows the average variable cost structure of broiler production (average stock of about 500 birds) in the study area. From the table, feed (73.22%) cost contributed highest to the variable cost component. This is consistent with the report by Bamiro *et. al*. (2001) who reported that feed, has been the major factor militating against the poultry industry as hampers production, not only on the basis of high cost but also due to low quality feeds supplied by the feed millers which has a negative impact on the productivity. Also, Ekunwe *et. al.* (2006), studied Economics of deep litter system in Oredo Local Government Area of Edo State, Nigeria reported that feed cost contributed highest to the variable cost component and took about 84.44%; of the total variable cost. The least variable cost item was cost of wood shavings (0.30%). The cost of day-old chicks was about ₦67351.00 (12.54%). Cost of Vaccination and medication was ₦39811.00 (7.40%). Labour cost for one farm worker during the production period was ₦12000.00 (2.23%) and cost of transportation was about ₦3,160.00 (0.58%) , average mortality (8%) was ₦6498.80 and the cost of fuel was ₦1821.20 (0.34%).

Table 6: Average Revenue and Gross Margin (GM) from Mature Broilers Production in the Study Area

Revenue Items	Qty.	Average/Unit	Amount ₦
Mature birds	456	1250.00	570000.00
Manure (bags)	57.4	246,00	14120.40
Total Revenue			**584120.40**

Source: Field Survey 2017

Gross Margin = TR-TVC 584120.40-537026.7 = 47093.3

Rate of Returns on Investment

Rate of Return on Investment (ROI) =: $\frac{Revenue - Cosi\ of\ Investment)}{Total\ cost}$ x100

$\frac{584120.40-537026.7}{537026.70}$ x 100 = 8.7%

Table 6 shows the average revenue obtained from the sales of 456 broiler birds in the study area. Poultry manure from sales of 57.4 bags of manure at an average unit price of ₦246.00 during the production period was ₦14120.40. The total gross margin per farmer at the level of production as at the period was found to be 47093.3 while the gross margin per a broiler bird was N94.18. The Rate of Return on Investment was 8.7%. This is quite low and

may discourage new farmers to continue in the business.

Table 7 Determinants of farmers gross margin in the study areas.

Variables	Coefficients		T	P-Value
	B	Std. Error		
(Constant)	2.109	4.213	0.501	0.619
Age	0.009	0.006	1.50	0.174
Gender	0.023	0.121	0.191	0.850
Educational Status	0.414	0.197	2.106	0.041**
Household Size	0.001	0.026	0.038	0.959
Experience in Poultry Farming	0.799	0.111	7.204	0.000***
Access to credit	0.210	0.044	4.828	0.002***
Income level	1.170	0.434	2.699	0.010***
Amount of credit	0.469	0.029	16.172	0.000***
R^2	0.853			
F-Statistic	29.621			
F-Probability	0.000			

Source: Field Survey 2017 Keys Significant levels are denoted as **Significant at 5% (P<5%), ***Significant at 1% (P<1%)

The result of the Ordinary Least Square (OLS) regression analysis of the determinants of level of Gross margin of the farmers as presented in Table 7. In the result the R^2 value of 0.853 implies that about 85% of the total variations in gross margin of farmers are explained by the explanatory variables included in the model that is gender, age, educational status, household size, and experience in poultry farming, access to credit, income level and amount of credit. The result showed that out of the eight explanatory variables, five positively and significantly affected the level of Gross margin of the farmers.in the study area. These are educational status Experience in poultry farming, access to credit, income level of the farmers and amount of credit to farmers. The coefficient of educational status was 0.414 with P-value of 0.041 implies that a unit increase in educational attainment of a farmer will cause a corresponding change of ₦0.414 increase in gross margin. (P= 0.041< 0.05%), Experience in poultry farming has a coefficient of 0.799, with P-value of 0.000. P< 1% (level of significance), implying that a one year increase in poultry farming experience will increase the farmer's gross margin by ₦0.79. The coefficient of access to credit is 0.210 with the t-value of 4.828 and P-value of 0.002 P<.1% implies that access to credit has a significant impact of ₦0.210 on the farmers gross margin. The effect of income level of the farmers on the gross margin was statistically significant with a regression coefficient of 1.170 and P-value of 0.010. It implies that a unit increase in the income level of the farmers will have a corresponding increase of ₦1.17 in the gross margin. This result is expected since most of the farmers fund their poultry business through personal savings. It is true that the higher the income of the farmers, the higher the probability to save to invest in the poultry business. Amount of credit to farmers has the coefficient of 0.469 and P-value of 0.000; (P<1%), it implies that an increase in the amount of credit to farmers might increase the farmers gross margin by ₦0.47 all things being equal. The F-statistic of 29.62 was significant indicating the adequacy of the regression model. It means that the model is a good fit and has a very high explanatory power.

Conclusion

It has been established in this study that majority of new broiler farmers in Uyo Local Government area of Akwa Ibom State were at their productive age as evidenced in the average age of 42 years and were more males (62%) than females in the business. Most of them 44% were married and had at least (86%) primary school education. The total gross margin per farmer at the level of production as at the period was found to be 47093.3 while the gross margin per a broiler bird and the Rate of Return on Investment were ₦94.18 and 8.7% respectively. The result of the regression analysis to identify the determinants of the farmers gross margin indicated that educational status, experience in poultry farming, access to

credit, income level and amount of credit to farmers were the factors that had significant effect on the gross margin of the farmers. The study, therefore recommends that Government should continue to accommodate more poultry farmers in the new farm entrant model - Integrated Farmers' Scheme (IFS). Also new farm entrants should be supported with grants and other credit facilities to raise their level of production and gross margin.. Farmers should be trained to produce their feed as this would reduce feed cost and improve their profit margin.

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