Scaling up economic opportunities: Gender profitability differentials in Broiler marketing in Abia State, Nigeria

Agwu, N. M., Oteh, O. U., Okpokiri, C. I., Nwachukwu, C. N. and Ogbugha, G. A.
Michael Okpara University of Agriculture, Umudike, Nigeria
Corresponding author: ogboteh@gmail.com.

Abstract

With the increasing rate of unemployment in Nigeria, many people are turning to agriculture for better economic opportunities. The study examined broiler marketing and profit differentials between male and female broiler farmers and factors that influence profits along gender lines in Abia state, Nigeria. Given the paucity of secondary data, primary data was sourced from 120 respondents (60 males and 60 female) with the aid of a structured interview schedule. Descriptive statistics, gross margin ratio, z-statistic and multiple regressions analysis were used to analyze the data. Results showed that poultry farming is a lucrative business for both genders as shown by the benefit-cost ratio N, 255.05 for male and N225.64 for female producers. The profit differentials should a N359,314.08 significant difference in profit between male and female farmers. This difference arises from both social and economic exigencies that challenge most female entrepreneurs. It affects their economic participation in opportunities that improve inclusive growth and transform the local economy. The profit potential of this business can be leveraged to increase investment and transform the local economy for sustainable opportunities for Nigeria teeming youth.

Keywords: broiler, gender, local economy, marketing, profitability

Introduction

In recent times, many economies in Africa are fraught with challenges leading to less impressive growth based on economic indicators. Despite the forecasted growth rate, the structure of these economies cannot address employment challenges. Unemployment is one of the direct consequences of a lack of economic opportunities. It adversely affects the family and social lives in terms of reduced economic responsibilities for many households (heads). The desire to contribute to family economic responsibilities has exacerbated the increasing demand for women to assist and thus seek better economic opportunities – altering old model of men as household bread-winners. This has advanced understanding in rural Africa that there is no gender discrimination in life and financial challenges. Unemployment creates push-pull sentiments that propel individuals to look for better economic opportunities.

Consistently, the government has championed policies aimed at transforming local economies to improve citizen's welfare; create enabling environment for private businesses to improve economic opportunities. In doing this, the Nigeria government has identified agriculture as one of the key priority sectors to transform local economies for public welfare. Therefore, agriculture and food marketing system which in time past was criticized as unattractive has been recognized as a potent source of the rural economy, economic growth and development (Oko-Isu et al., 2014; Nicholas et al., 2012). This is in the response of a growing consensus that transforming local and national economy requires identifying critical areas in which a country has available human and natural resource endowments. Without doubt, no nation can develop beyond investment in its factor endowments because the economic transformation of a nation is dependent on those factors (Oteh and Eleodinmuo, 2016). The pace of economic transformation in Nigeria, when compared with other developing economies, especially Asia reflects the potency of investing

and harnessing in these factors endowment. Nigeria has real opportunity to capitalize on her resource endowment as well as on opportunities from changes in the global economy to promote economic transformation through agricultural commodity-based industrialization (UNECA, 2013) and value addition to promote economic opportunities.

One of the critical blocks in agricultural transformation is livestock farming. Livestock farming and marketing provides a wide range of opportunities for people. This includes but not limited to nutrition such as diversification of diets to economic opportunities such as job and diversification of income. For instance, Food and Agriculture Organization (FAO) 2019 report on Mongolia estimated that livestock farming contributes 35% to household income. Among the many livestock farming, many unemployed people in Nigeria earn a decent living from poultry production and marketing. Generally, poultry production is known to be advantageous over other forms of livestock production. Some of these advantages are its low capital outlay, simple management practices, ability to grow and mature fast, and its widespread consumption among religion and health circles (Okpokiri et al., 2018). Evidences such as Okoh et al. (2010) and Okitoi et al. (2007) revealed that poultry production has traditionally been supervised and financed by men, while women and youths provide labour and marketing resources due to social constructs that have limited the roles women play in family, society and business. Although the contributions of women are mostly neglected in agricultural engagements, most small-scale enterprises (SMEs) in developing economies constitute women and young people with positive entrepreneurial traits (Agwu et al., 2017). Despite gender roles, women have participated in poultry production and marketing at a small, medium and large-scale basis in Nigeria (Adisa and Akinkunmi, 2012), especially during festive periods given that these products are choice meat among Nigerians. It is widely demonstrated that women, as well as men globally engaged in a wide range of productive activities essential for household welfare, agricultural productivity and economic growth in order to better household economic welfare and opportunities. Akanji (2006) opined that women entrepreneur has low business performance compared to their male counterparts. This view is not entirely accurate as women in Nigeria and other parts of the world have shown to be excellent in business and marketing activities, especially with the right enabling environment. Women substantial contribution and voice in agricultural economic analysis and policies have continued to be systematically undervalued, while men's contribution remains the pivotal, often the sole focus of attention (Fabiyi et al., 2007). The study looks at the issue of gender performance within a broader perspective to advance understanding of gender mainstreaming and dynamism as a basis to develop a gender-responsive strategy. Most authors maintained that women consistently receive lower levels of compensation in terms of returns from marketing activities when compared to the level of returns of men in the same line of business in Nigeria (Agwu *et al.*, 2017). However, there are little or no studies comparing profits in activities carried out by gender, particularly in the area of broiler production and marketing, especially during and after the festive period with high market potential. This study aims at closing the gap in the literature. Therefore, this study analyzed the profitability differentials among male and female operated broiler enterprise in Abia state, Nigeria.

Research methodology

This study was carried out in the Abia state of Nigeria. The state is made up of 17 local government areas fused into three agricultural zones, namely; Aba zone, Ohafia zone and Umuahia zone. Agriculture is the primary occupation of the rural people, and the average farmland consists of parcels of land with farm size ranging from about 0.1 -10hectares. The presence of many agricultural institutions such as National Root Crop Research Institute (NRCRI), Michael Okpara University of Agriculture, Umudike (MOUAU), Forestry Research Institute of Nigeria and Faculty of Agriculture, Abia State University, Uturu in the state offers unquantifiable advantage and add to Abia state capacity in their agricultural production, implementation and dissemination of research findings to benefit smallholder agricultural businesses such as poultry farmers. This has severe implication on household exposure to agriculture. Also, the proximity of the state to many commercial centres such as

Port-Harcourt, Uyo, Owerri and other major cities with large consuming population provide substantial market opportunities for many agricultural production and marketing including poultry meats and allied products. .

A multi-stage sampling procedure was adopted in this study. The first stage involved the random selection of two (2) local government areas from each of the three agricultural zone in the state. Next, two (2) communities were purposively selected from each of the selected local government areas based on concentration of poultry farmers. This was followed by the selection of one village each from each of the selected communities. Finally, ten (10) broiler farmers (respondents) (comprising of five (5) males and five (5) females) were selected respectively from each of the selected villages. In all, one hundred and twenty (120) broiler farmers were selected for this research. Data were collected with the aid of a pre-tested questionnaire. Information were gather on variable cost such as cost of chick purchased, labour, firewood, transportation and fixed cost such as building, processing equipment.

Data Analysis: The study employed multiple regression analysis to determine the factors that influence profitabilityamong the respondents. Gross margin ratio analysis was adopted to analyze cost and return to broiler production in the study area, while paired Z- statistics was employed in comparing profit between male and female farmers. These tools were adopted based on the characteristics of the variables of interest, objectives and consistency with the works of other authors such as Nwachukwu and Oteh, 2010; Nwaru and Iwuji, 2005; Agwu and Ibeabuchi, 2011; Agwu *et al.*, 2017. The empirical model specification of these tools is presented below:

Model Specification

Gross Margin Ratio
Gross Margin = Total Revenue (TR) – Total Variable Cost (TVC)
Net Revenue = Total Revenue (TR) – Total Cost (TC)

$$\text{Benefit} - \text{Cost Ratio (BCR)} = \frac{\text{Total Revenue (TR)}}{\text{Total Cost (TC)}}$$

$$\text{The Gross Margin Ratio} = \frac{\text{Total Cost (TC)}}{\text{Total Revenue (TR)}}$$

Where:
TR = Total Revenue = Sales of broilers + Manure
TC = Total Cost = Total Fixed Cost (TFC) + Total Variable Cost (TVC)

The Paired t – statistic

$$\boldsymbol{T} = \frac{\bar{\boldsymbol{X}}_{\boldsymbol{1}} - \bar{\boldsymbol{X}}_{\boldsymbol{2}}}{\sqrt{\frac{\boldsymbol{S}_{\boldsymbol{1}}^{\boldsymbol{2}}}{\boldsymbol{n}_{\boldsymbol{1}}} + \frac{\boldsymbol{S}_{\boldsymbol{2}}^{\boldsymbol{2}}}{\boldsymbol{n}_{\boldsymbol{2}}}}}$$

Where:
X_1 = Mean of male respondents
X_2 = Mean of female respondents
S_1 = Standard deviation of male respondents
S_2 = Standard deviation of female respondents
n_1 = Total number of male respondents
n_2 = Total number of female respondents

With regards to the regression model, the explicit form of the model is given as

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e_i$$

Where:

Y = Profit of broiler (₦). The explanatory variables constitute important factors that are consistent with the theoretical expectation and the results from previous empirical studies on factors that exert influence on gender practices and profitability (Esiobu and Onubuogu, 2014; Agwu et al., 2017).

X_1 = Age (years)
X_2 = Education (years)
X_3 = Farm size (number of birds)
X_4 = Marital Status (years)
X_5= Household size (number)
X_6 = Years of experience (years)
X_7 = Income (₦)
X_8 = Total fixed cost (₦)
X_9 = Total variable cost (₦)
e_i = Error term (which is assumed to have zero mean and constant)
a = Constant term
$b_1 \ldots b_7$ = Coefficients of the variables.

Results and Discussions

Levels of profit along gender lines

The levels of profit among male and female broiler farmers in Abia State are presented in Tables 1 and 2. From the result, as presented in Table 1, the level of profit of most male respondents (78.3%) is within N1.00 – N 1,000,000; this indicates that their level of profit is relatively high. This can be attributed to partly sentiments of gender social constructs that allow men more access to credit facilities, resource inputs and favourable business connection than the women in the same line of business. They leverage on these to make high profits. Jeiyol et al. (2013) opined that male farmers have access to credit sources and donor agencies than their female counterparts.

Table 2 shows that most female broiler farmers level of profit falls between N1,000 – N600,000 (78.3%). Although profitable, however, when compared to their male counterparts, males seem to record more profits. This result confirms the opinion of Agwu et al. (2017). Olorunwa (2018) from his budgetary analysis confirmed that poultry farming is highly profitable and a single broiler bird nurtured to maturity had a total cost of ₦1509.8 made up of ₦274.19 fixed cost estimated and ₦1235.60 variable cost, with gross revenue per bird at ₦2169.99. Net profit of ₦660.11 per bird was estimated, and this gives a net margin-to-cost ratio of 0.44 which implies that a ₦1 investment in broiler production, all things being equal, would yield 44 kobos in return. The difference could be as a result of particular social and economic exigencies that challenge women's role in business. Agwu *et al*., (2017), had opined that women, despite several challenges, continue to advance and push for better opportunities

.

Table 1: Distribution of levels of profit among male broiler farmers in Abia State

Profit (N)	Frequency	Percentage (%) (n = 60)
1 – 1,000,000	47	78.3
1,000,001 – 2,000,000	9	15.00
2,000,001 – 3,000,000	3	5.00
3,000,001 – 4,000,000	0	0
4,000,001 – 5,000,000	1	1.7
Total	60	100

Source: Authors computations

Table 2: Distribution of levels of profit among female broiler farmers in Abia State

Profit (N)	Frequency	Percentage (%) (n = 60)
1,000 – 600,000	47	78.3
600,001 – 1,200,000	9	15.00
1,200,000 – 1,800,000	2	3.4
1,800,000 – 1,400,000	2	3.3
Total	60	100

Source: Authors computations

Estimates of the cost and returns of male and female broiler farmers in Abia State, Nigeria

Table 3 compared the cost and returns of male and female broiler farmers using the gross margin ratio analysis in the study area. Result in Table 3 showed the Gross margin ration of the business in order to compare profitability ratio of male and female broiler farmers.

The result shows the revenue of N56,584,100 at the total cost of N222,248.2500. The gross margin was N56,494,083.2500. This implies that broiler production in Abia state Nigeria was profitable because the net revenue was N56,461,851.750 at a benefit-cost ratio (BCR) of 255.0480. The result implies that every N1.00 spent in broiler production in Abia State among the male farmers N225.048 was realized. Also, the Gross Ratio (GR) was 0.003921, which implied that every N1.00 return to the project, N0.003921 was being spent. This means that broiler production in Abia State Nigeria was highly profitable.

Table 3: Comparison of the cost and returns analysis for male and female broiler farmers in Abia State Nigeria

Item	Value for male (N)	Value for female (N)
Total revenue (TR)	56,584,100.0000	33,143,700.000
Total Variable Cost (TVC)	190,016.7500	123,343.0000
Total fixed cost (TFC)	32,231.5000	23,544.8333
Total Cost (TC) = TFC + TVC	222,248.2500	146,887.8333
Gross Margin (TR – TVC)	56,494,083.2500	33,020,357.0000
New Revenue (TR – TVC)	56,461,851.7500	32,996,812.1700
Benefit-Cost Ratio (BCR) = TR/TC	255.0480	225.6395
Gross ratio (TC/TR)	0.003921	0.004432

Source: Authors computation

With regards to the female broiler farmers, the result showed the revenue of ₦ 33,143,700.00 at the cost of N146, 887.8333. The gross margin was N33, 020,357.000 while the net revenue was N32, 996,812.1700. Like their male counterpart, broiler production/enterprise in Abia state was

also profitable among the female farmers because the net revenue was positive and a benefit-cost ratio (BCR) of more than one (₦225.6395). As a rule of thumb, a project is viable when the projected revenue is positive, and the benefit-cost ratio is more than one. The result implies that for every N1.00 spent in broiler production in Abia state among female broiler farmers, N225.6395 was realized. Also, the Gross ratio (GR) was 0.004432, which implies that for every N1.00 return to the project, N0.004432 was spent. Result highlights the fact that women are good economic managers who can achieve more with less resource. Oladimeji et al. (2017) found out that women are making a high profit from the enterprise. Therefore, gender roles notwithstanding poultry production are very profitable, and with good management and housing system, both male and female poultry farmers are bound to make a high profit (Okpokiri *et al*., 2018).

An estimate of the profit differences between male and female farmers in Abia State Nigeria

Paired Z test statistics was adopted to compare profits. The result in Table 4 shows that there was a significant difference between the profit of the male and female broiler farmers in the study area, given that the mean value of male farmers was more than that of female broiler farmers. This result is without prejudice to the meaningful contributions of female farmers to global food and nutrition security. It, however, highlights the importance of creating equal opportunities for both male and female and more especially to develop a gender-responsive criterion to assess the performance of women to maximize their potential to address livelihood challenge and transform their economy.

The above view is essential because it will help create opportunities for investment in rural economy and development, which will offer better livelihood options for many youths and discourage migration. The recent migration and refugee crisis in Europe could be address with an incentive to, especially female broiler farmers to improve their earnings and create better opportunities for their families and society. The mean difference of N359,314.08 (Three hundred and fifty-nine thousand, three hundred and fourteen Naira, eight kobo) could have been due in part to economic and social exigencies - women generally do not possess equal opportunities in terms of access to allocative and productive resources such as human capital in the form of managerial and technical skill; which impinge upon their overall efficiency (Agwu *et al*., 2017). This finding highlights implications of structural biases on the struggles for gender equality in most societies across the world especially in many developing countries where these factors converge to create unequal access between male and female and thus widening inequality in our societies. Despite the above, many women create better livelihood alternatives for jobs for people in their communities.

The above findings led to the rejection of the null hypothesis since there was a significant difference in profit made among male and female operated broiler enterprise in Abia State, Nigeria.

Table 4: Paired Differences in Profit between Male and Female broiler farmers in Abia State, Nigeria

	Mean	N	Std. Deviation	Std. Error Mean	95 % Confidence Interval of the Difference		Z	df	Sig. (2-tailed)
					Lower	Upper			
Male	708575.08	60	802171.83						
Female	349291.00	60	496726.43						
	359314.08		954659.33	123245.99	112699.43	605928.77	2.915**	59	.005
Male-female									

Source: Authors computation

** Denotes 10% Level of Significance

Factors that influence profitability among broiler farmers in Abia State

Table 5:Regression estimates of the determinants of profitability among male broiler farmers

Variable	Linear	Exponential	Semi-log	+ Double-log
Constant	75267.879	11.989	-152415.878	8.164
	(0.118)	(12.528)***	(-0.071)	(3.475)***
Age	79.277	0.26	-851340.026	0.989
	(0.011)	(2.047)*	(-3.032)***	(3.221)***
Marital status	-502801.021	-0.109	-177509.740	-0.360
	(-3.298)***	(-0.476)	(-1.030)	(-1.905)
Education	-10710.193	-0.062	179959.281	0.134
	(-0.288)	(-1.113)	(0.395)	(0.269)
Household size	33570.819	0.007	239445.345	0.357
	(1.242)	(0.182)	(1.428)	(1.949)*
Experience	-4618.662	-0.020	13129.308	0.015
	(-0.353)	(-1.029)	(0.111)	(0.120)
Farm size	598.988	0.000	696054.301	0.971
	(5.245)***	(2.801)***	(4.734)***	(6.041)***
Income	0.505	2.326E-6	-10667.605	0.072
	(0.976)	(2.996)***	(-0.134)	(0.829)
Total fixed cost	1.078	2.746E-6	-19055.432	-0.044
	(0.639)	(1.082)	(-0.184)	(-0.392)
Total variable cost	1.007	1.962E-6	-414183.724	-0.657
	(1.855)	(2.406)**	(-2.736)***	(-3.982)***
R^2	0.682	0.664	0.616	0.785
0F-ratio	11.942***	10.979***	8.906***	20.246***

Source: Authors computation

Figures in parenthesis are the t-values

* = significant at 10%; ** = Significant at 5%;*** = Significant at 1% and + = Lead equation

The result in Table 5 showed that the binary log functional form was chosen as the lead equation, based on the R^2 (coefficient of multiple determination), F-value, conformity of the signs of the coefficient with established theoretical rule of thumb. R^2 was 0.785, which indicates that 78.5% of the variation in the dependent variable was explained in the model. The F-ratio of 20.246 indicated that the model was statistically significant at one per cent level of probability.

The coefficient of age was positive and statistically significant at 1% probability level. This means that as the age of the male respondent's increases, the probability that the profit level will also increase. This signified positive relationship between age and profitability in broiler enterprise. Over the years, age has been associated with experience and people who have higher years of experience in a given business are likely to do things better than others. Thus, they may likely increase their profit. This result is, therefore, plausible. However, studies by Hoy et al. (1999), Nwaru and Iwuji (2005) contradict this result as they reported a negative relationship between age and profit.

Farm size was significant at a 1% confidence level with a positive sign. This means that a large number of birds could probably lead to an increase in profit because of economies of scale. Given that output is higher due to a more significant number of birds, higher profits are expected. This aligns with Martey et al. (2012) who opined that farm size influences the level of agricultural commercialization. This could result in profitability. Large farms are more likely to be profitable than small farms, reflecting economies of scale in production enterprise (Hoppe, 2015).

The Total variable cost (TVC) was statistically significant at 1% probability level with a negative coefficient; signifying a negative relationship between TVC and profit in broiler production. This conforms to *a prior* expectation. Any increase in cost without a corresponding increase in total revenue reduces profit. It is consistent with Ohajianya et al. (2010) who opined that high cost of input would lead reduction in output and income generated. Evidence such as Bamiro et al. (2001) shows that feed cost constitutes more than 65% of cost of raising poultry products.

The result in Table 6 showed that the binary log functional form was chosen as the lead equation based on the R^2 (coefficient of multiple determination), T-value, conformity of the signs of the coefficient with *a prior* expectation. R^2 was 0.805, which indicates that 80.5% of the variation in the dependent variable included in the model. The f-ratio of 52.717 indicated that the model was statistically significant at 1% level of probability.

Marital status was significant at 1% level with a negative coefficient, which indicates that an increase in engagement of married female in broiler production would result in a reduction in profit. This result implies that single female broiler farmers made a higher profit than their married counterparts. This could be as a result of family pressure and shared alternative of married females as they combine broiler business with housekeeping. This finding aligns with Benabdeljelil et al. (2002) who opined that poultry production like most farm animals need seven-day-a-week care if they are to do well and perform their functions in creating employment opportunity, providing cash income and a means of animal protein supply for consumption. This implies in the absence of capable hands; the female farmer may employ extra hand (labour), which will affect profit.

Just like their male counterparts, farm size for female broiler farmers was positively significant at a 1% confidence level. This means that a large number of birds could probably lead to an increase in output. This aligns with Martey *et al.*, (2012) who opined that farm size influences the level of agricultural commercialization. This could result in profitability. Large farms are more likely to be profitable than small farms, reflecting economies of scale production (Hoppe, 2015).

Income was significant at 1% level of probability with a positive coefficient. This means that as the income of the respondents increased, there will be a corresponding increase in profit. This could be that an increase in income would motivate the farmers to invest more and put more effort into the business. This would increase profit. This result agrees with

Nwosu (2007) who opined that higher income would enable the farmer purchase technologies which will lead to an increase in profit and help in the expansion of the business. It is also in line with Agwu *et al.*, (2017) who opined that income leads to an increase in volume or quantity traded and thus expansion of the enterprise.

The total variable cost was statistically significant at 1% probability level with a negative coefficient. This implies that as cost increases, the profit level of the female farmer's decreases. This increased cost is an expenditure that would improve profit potential of female producers. This is consistent with the finding of Ohajianya *et al.*, (2010) who opined that high cost of input would lead to a reduction in output and income generated. The variable cost, such as feed, constitute the highest cost input in broiler production and is in line with Agwu et al., (2017). Feed cost accounts from between 65% and 75% costs of raising poultry.

Table 6: Regression estimate of the determinants of profitability among female broiler farmers

Variable	Linear	Exponential	Semi-log	+ Double-log
Constant	-68978.898	9.626	193830.780	4.783
	(-0.316)	(14.009)***	(0.149)	(2.567)***
Age	7739.308	0.026	-57233.152	0.848
	(2.049)*	(2.194)*	(-0.272)	(2.817)***
Marital status	-35763.431	-0.431	21067.223	-0.392
	(-0.451)	(-1.728)	(0.189)	(-3.015)***
Education	6511.424	0.063	-420244.592	0.057
	(0.587)	(1.810)	(-2.339)**	(0.222)
Household size	-7083.701	-0.008	-150714.343	0.054
	(-0.388)	(-0.132)	(-1.112)	(0.279)
Experience	-11007.418	-0.048	52807.994	-0.027
	(-1.369)	(-1.907)	(0.723)	(-0.262)
Farm size	386.105	0.001	273278.927	0.758
	(5.123)***	(2.709)***	(3.308)***	(6.423)***
Income	1.243	3.795E-6	56791.186	0.281
	(4.063)***	(3.940)***	(0.956)	(3.310)***
Total fixed cost	1.583	6.2501E-6	66179.163	0.040
	(0.989)	(1.240)	(0.950)	(0.402)
Total variable cost	0.531	2.214E-6	-437137.300	-0.441
	(0.961)	(1.273)	(-4.217)***	(-2.980)***
R^2	0.827	0.763	0.662	0.805
F-ratio	26.601	17.931***	10.864***	52.717***

Source: Authors computation

Figures in parenthesis are the t-values

*, **, and *** represents 10%, 5% and 1% level of significant respectively and + = Lead equation

Conclusion and policy implications

The study highlights the need for specific structural and strategic policy interventions that will assist address impediments to gender advancement in business ventures such as specific variable factors that hinders profit potential of female farmers. Therefore, removing barriers that create unequal opportunities for both genders will enhance overall efficiency in business practices. The pathway to transforming the local economy involves identification of these barriers, characterization of the barriers, exposure assessment and risk assessment. This will assist in policy formulation. There is a long list of barriers which hinder the productive capacity of women participation in agriculture and its allied sectors. For instance, in many countries, ' women are paid less than men, even when they put in more working hours. Addressing these will assist in achieving inclusive growth in the local economy.This study also opens conversation on the role the scale of operation and its impact on profitability. It highlights the issue of access to finance to improve economic venture. To improve economic transformation, there is need to support smallholder farmers and other value chain actors with policies and other incentives, strengthen their access to market information and engage all stakeholders.

References

Adisa, B. O. & Akinkunmi, J. A. (2012). Assessing participation of women in poultry production as a sustainable livelihood choice in Oyo state, Nigeria. *International journal of plant, animal and environment sciences*, 2(2):73-82

Agwu, N. M., Oteh, O. U., & Amama, G. C. (2017). Gender differentials in profit among oil palm processors in Abia state, Nigeria. *Journal of Gender, Agriculture and Food Security, 2*(2), 23-32.

Akanji, O. O. (2006). Microfinance as a strategy for poverty reduction. *Central Bank of Nigerian economic and financial review*, 39(4): 111 – 134

Bamiro, O. M., Shittu, A. M, & Kola-Olutokun, A. S. (2001). Private feed production as cost reduction strategy: Effects on the profitability of poultry business in Ogun State, Nigeria. *The Ogun journal of agricultural sciences*, 1(1): 37-51.

Benabdeljelil, K., Arfaoui, T. & Karari, E. (2002). Improving family poultry farming in Morocco: Constraints and possibilities. A paper published by the international network for family poultry development. Accessed from www.infpd.net/econference/view/id/28

Esiobu, N. S. & Onubuogu, G. C. (2014). Determinants of income from pineapple production in Imo State, Nigeria: An economic model approach. *Journal of economics and sustainable development*, 5 (22): 122-132

Fabiyi, E. F., Danladi, B. B., Akande, K. E. & Mahmood, Y. (2007). Role of women in agricultural development and their constraints. Pakistan journal of nutrition, 6(6):676-678

Hoppe, R. (2015). *Profit margin increases with farm size*. A publication of the United States Department of Agriculture (USDA). Accessed from https://www.ers.usda.gov/amber-waves/2015/januaryfebruary/profit-margin-increases-with-farm-size/ on 23/11/2018

Hoy, F., Mcdougall, P. P. & Dsouza, D. E. (1999). *Strategies and environments of high-growth firms* in D. L. Sexton and J. D. Kasarda (eds), The state of the Art of entrepreneurship, Boston, Pws-Kent, 341 – 357.

Ironkwe, A. G. (2001). *Gender involvement in yam miniset technology development, transfer and utilization in South-east agro-ecological zone of Nigeria*. Unpublished PhD Dissertation. Department of Rural Sociology and Extension. Michael Okpara University of Agriculture, Umudike, Abia State.

Jeiyol, E. N., Akpan, S. B., & Tee, T. N. (2013). Gender Analysis of Access to Credit by Rural Small Scale Farmers in Benue State Nigeria.

American International Journal of Social Science, 2(6), 70-78.

Martey, E., Al–Hassan, R. M. & Kuworn, J. K. M. (2012). Commercialization of small-holders agriculture in Ghana: A tobit regression analysis. *African journal of agriculture research*, 7(14): 2131-2141

Nicholas, D. C., Mulangu, F and Porto, G. (2012). *Food production and consumption trends in Sub-Saharan Africa: Prospects for the transformation of the agricultural sector*.

United Nations Development Programme (UNDP) working paper 2012-011, Regional Bureau for Africa.

Nwachukwu, I. N. & Oteh, O. U. (2010). Analysis of brand preference for vegetable oil in Abia State, Nigeria. *Nigeria agricultural journal*. 41(1): 129-133

Nwaru, J. C. & Iwuji, O. (2005). *Marketing margins and their determinants in plantain marketing in Owerri Agricultural Zone of Imo State, Nigeria*. In A.

M. Orheruata, S. O., Nwokoro, M. T. Ajayi, A. T. Adekinle, and G. N. Asumugha, Agricultural rebirth for Improved Production in Nigeria (eds.), In Proceedings of the 39th Annual Conference of the Agricultural Society of Nigeria, the University of Benin, Benin City, Nigeria, 385 – 387.

Osuagwu, C. O., Henri-ukoha, A., OkerekeEjiogu, N. & Anyaoha, N. O. (2010). Allocative efficiency among maize farmers in Imo State, Nigeria. *Report and Opinion*, 2(12): 139-147

Olorunwa, O. J. (2018). Economic analysis of broiler production in Lagos state poultry estate, Nigeria. Journal of investment and management, 7(1): 35-44

Okitoi L. O., Ondwasy, H. O., Obali, M. P. and Murekefu, F. (2007). Gender issues in poultry production in rural households of Western Kenya. *Livestock Research for Rural Development. Volume 19, Article #17*. Retrieved April 30, 2020, from http://www.lrrd.org/lrrd19/2/okit19017.htm

Okoh, S. O., Rahman, S. A. and Ibrahim, H. I. (2010) Gender participation in commercial poultry production in Karu and Lafia Areas, Nasarawa State, Nigeria. *Livestock Research for Rural Development. Volume 22, Article #160*. Retrieved April 30, 2020, from http://www.lrrd.org/lrrd22/9/okoh22160.htm

Oko-Isu, A., Nwachukwu, I. N., Oteh, O. U. & Njoku, M. E. (2014). Analysis of entrepreneurial behaviour among cassava farmers in Ebonyi State, Nigeria. *International journal of agricultural science, research and technology in extension and education system*, 4(2): 67-74

Okpokiri, C. I., Agwu, N., & Onwusiribe, C. (2018). Comparative analysis of battery cage and deep litter poultry housing systems in Abia State, Nigeria. *Alanya Akademik Bakış, 2*(1), 107-120. DOI:10.29023/alanyaakademik.350986

Oladimeji, Y. U., Abdulsalam, Z., Ajao, A. M., Abdulrahman, S., & Abdulazeez, R. O. (2017). Profit efficiency of broiler production among public servant household heads in Kwara State, Nigeria: A coping strategy. *Asian Journal of Economics, Business and Accounting, 2*(2), 1-8.

Oteh, O. U. and Eleodinmuo, O. P. (2016). *Re-industrializing Nigeria agriculture: Implication for agripreneurship development and youth engagement*. In Eyisi, J. and Icha-Ituma, A. (eds) building entrepreneurial universities in a developing economy: Issues, challenges and prospect. FUNAI press, Federal University, Ndufu Alike, 193-205

United Nations Economic Commission for Africa (UNECA) (2013). Making the most of African's commodities: industrializing for growth, jobs and economic transformation. Economic report on Africa. United Nations Economic Commission for Africa (UNECA)