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DETERMINANTS OF PROFIT IN OKRA PRODUCTION IN ANAMBRA WEST LOCAL GOVERNMENT AREA OF ANAMBRA STATE, NIGERIA

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ABSTRACT

This study examined the determinants of Okra production farmers in Anambra west Local Government Area of Anambra state. The specific objectives were to: describe the socio-economic characteristics of the okra farmers; determine the cost and returns of okra farming; analyze the factors that could influence profit in okra production and identify constraints facing okra farmers in the study area. The study population consist a sample of 50 okra farmers who were purposively chosen from five communities within the L.G.A. Data collections was done through the use of structured questionnaire. Data analysis was done using descriptive and inferential statistics. About 76% of the respondents were females with an average age of 39.9years. Majority (82%) of the farmers are married with the average years of schooling found to be 10.1 and average farming experience of 18.4 years. The analysis revealed that the average total revenue realized from the sale of okra is ₦467,502.42 and total cost expended ₦147,917.6. Furthermore, farmers made a gross profit of ₦329,767.82 from the sales, the net return ₦319,584.82 and return on investment was ₦3.16 which shows okra production is profitable in the study area. The study revealed that farming experience, farm size, fertilizer quantity, extension contact and gender are the socioeconomic characteristics that influenced the profit realized by the okra farmers. The study finally presents the variables limiting more profit in okra production as: High transportation cost, access to credit, inadequate extension visits, incidence of flood, pest and diseases, high cost of fertilizer, high theft of matured produce, high cost of labor, herders attack. The study recommended the need for government to provide inputs such as chemicals (pesticides and herbicides) at subsidized rates to farmers and also aim at solving major problem of vegetable production which includes flood and herds men attack. Also land restrictions on women should be addressed as okra production is female dominated and access to land was recorded as a significant variable to profit in okra production.

Keywords: Anambra, Determinants, Okra, Profit, Production

INTRODUCTION

Okra *Abelmoschus esculentus* (L.) is an economic crop for rural farmers in south east Nigeria because of the income generated from the sale of immature fresh leaves and dried fruits, which are made into diverse soup products as well as other delicacies. Swamy (2023) noted that *Abelmoschus esculentus* L. (Moench), is an economically important vegetable crop grown in tropical and sub-tropical parts of the world and is suitable for cultivation as a garden crop as well as on large commercial farms. Okra according to Amadi (2023) is an annual fruit vegetable crop belonging to

the Malvaceae family. Oladejo (2014) noted that it is among the most important vegetable crops in Nigeria contributing massively to the Nigerian diet as a main constituent of soup. Okra is rich in magnesium, folate, antioxidants, and vitamins C, K1 and A, which can help support healthy pregnancy, heart health, blood sugar and may even have anticancer properties (Natalie, 2023). According to Udoh, *et. al.* (2005) okra varieties vary by plant height, size of fruit, colour, early or late maturity and they include white velvet, green velvet, long pod, lady finger, dwarf green pods. Elkhalifa *et. al*., (2021) opined that Okra contributes to human nutrition by providing lipids, proteins, carbs, minerals, and vitamins.

The geographical origin of okra according to Priya, Varun, Brahm, Shubhendra, Sobita, Bilal and Abidia (2014) is disputed, with supporters of South Asian, Ethiopian and West African origins. However, according to some other authors, *A. esculentus* originated in India, Ethiopia, West Africa and Tropical Asia (Vidhi, 2023). Hinsley (2022) reported 13 accepted species in the genus *Abelmoschus,* and Four species of *Abelmoschus* are crops. *Abelmoschus esculentus* (okra) and *Abelmoschus caillei* (West African okra) are grown for their fruits (used as vegetables), *Abelmoschus manihot* (aibika) as a leaf vegetable, and *Abelmoschus moschatus* (ambrette, musk mallow) for its seeds (Swamy, 2023) .

Abelmoschus esculentus is cultivated throughout the tropical and warm temperate regions of the world for its fibrous fruits or pods containing round, white seeds. It is among the most heat and drought tolerant vegetable species in the world and will tolerate soils with heavy clay and intermittent moisture but frost can damage the pods. In cultivation, the seeds are soaked overnight prior to planting to a depth of 1-2 cm. Germination occurs between six days (soaked seeds) and three weeks (Priya *et.al.*, 2014). Ayeni *et.al.*(2023), noted that India produces the most okra in the world, followed by Nigeria and Sudan; Nigeria, according to Ekunwe (2018) is grown all year on approximately 2 million hectares. Okra in south east is produced both rain fed and irrigated during the dry season or what is also called the lean period.

Udemezue (2017) noted that Okra is one of the vegetable crops that are produced beyond the consumption of the small holder farmers in Ayamelum Local Government. Okra according to Osalusi *et.al.*(2019) are important protective food for the maintenance of health and prevention of diseases. Outside provision of good health support, it also provides money for the farmers involved in Okra production. Amadi (2023), observed that the cash realized from Okra production contributes significantly to the food security at the house hold level and enables farmers to attain a degree of independence within the family budget. Okra production, in Anambra state, is primarily done by small-scale farmers, and there is a need to evaluate their activities in other to identify its profitability and sustenance. According to Ayeni *et.al.* (2023), all parts of okra plant are useful, its leaves and tender shoots can be cooked and eaten by humans and also eaten fresh by livestock like cattle, goat, sheep, etc.'' The pods can be consumed fresh or dried form and it is a crop that can be grown for export because of its various uses (Osalusi et al., 2019). Dry season Okra production, is the cultivation of okra outside of the normal growing season with the aid of infrastructure such as greenhouses, irrigation, and watering cans, among other things.

Osalusi et. al. (2019) worked on Analysis of the Profitability of Okra production among Small holder Okra farmers in Akinyele Local Government Area, Oyo State, Nigeria shows that 90.7% of the Okro farmers were male. This means that males dominated okra farming in the study area which might be due to the fact that okra farming might be too tedious for females especially the process of land preparation. It is observed from the study that the highest percentage (36.0%) of respondents were at age bracket of 21-30 years. The result also shows that majority of the okra farmers in the study area (58.7%) had first school leaving certificate while 40.0% had no formal education. This means that majority of the okra farmers in the area can read and write.

In Kshash and Oda (2022), in economics of okra production in the ALQasim district, Babylon province Iraq. The majority of okra farmers were young, and in their active and productive years. Respondents were well educated with most having a secondary school and above education which should increase farm productivity and return. Many of the Okra farmers had several years of experience in farming. Most were small-scale farmers, small scale farms use more inputs and engage more workers which affects their returns and profit.

Oladejo (2014) Profitability and Efficiency Analysis of Okra Marketing in Iwo Agricultural Zone of Osun State, Nigeria in shows that the mean age of the respondents was 40.06 years. This shows that the respondents are still in their active stage. The female gender dominates okra marketing in the study area (98.6%). The male counterparts are probably in to production while female are found more in marketing and processing enterprises. Result further showed that 74.3% of the marketers are married. Okra marketing enterprise cuts across people of different marital status. The average year of schooling was 7.11 years.

Ayeni , Aremu and Olufemi (2023) in Stochastic Frontier Analysis of Technical Efficiency and Profitability of Dry Season Okra Production in Nigeria revealed that during the dry season, 93.9% of okra is grown by men. The arduous processes and tasks connected with dry season irrigation farming may explain the limited female participation. Findings also revealed that only 11.1% of the respondents were below 20 years of age, while majority, 28.9% falls within age 31 to 35 years age bracket. This indicates that the respondents were active, young, and agile. About 70% of the farmers are married. However, based on the educational level of the studied population, larger percentage had ‘‘Quranic’’ education (36.7%), while 23.3% and 17.8% had primary and secondary school education, respectively. Few of the respondents had a higher level of education. Meanwhile, the modal age experience was between 6 and 10 years at 43.9%, with the least experience of 16.1%, implies that the majority of okra dry season farmers have prior okra farming expertise. The number of years of farming experience may promote better agricultural techniques and help farmers. Farm experience can reduce or increase the application scales of tried-and-true farmer talents, as well as repair earlier faults or blunders. Farmers with many years of farming expertise may be better able to predict future okra market conditions in which they will sell their crop at higher prices and make more money. Farmers also engage in other occupations such as trading (15%) and livestock rearing (17.2%). Farmers’ average monthly wages from the principal occupation varied depending on the amount of land they cultivated and how much they contributed to dry season farming in the study area. Moreover, about 45% of the farmers earned at least N10,000 per month. The nature

of extension visit or contact varied among the respondents. Only 31.7% of the respondents had contact with extension agents in the last farming season.

Ume, Ezeano, Okeke and Gbughemobi (2016) in determinants of Okra (Abelmoschus esculentus) Production and Profitability in Ayamelum Local Government Area of Anambra State, Nigeria indicated that less than 38% of the respondents were below 40 years of age, while 62% were above 40 years of age. Table 1 indicated that most of the respondents were aged and this could be a hindrance to farming as they may not be able to withstand the rigors and stains in agriculture. In addition, 65% of the respondents had a household size less than 6, while 35% had above 6 persons. Large house hold size is desirable and of great importance in most developing countries, since most rural households relied more on members of the households than hired labour to work on their farms in order to curtail the minimally cost of production (Iheke, 2010). Besides, 33.3% of the respondents had no formal education, while 66.7% had formal education. Most of the farmers had formal education. The study further revealed that 25% of the farmers with farming experience of fewer than 10 years, while 75% had over 1 years. More so, 62.5% of the sampled farmers had contact with extension agent, while only 37.5% had no contact. In addition, the majority (90%) of the respondents cultivated one (1) hectare (ha) or less were and above 5 hectares were cultivated by 10%. The implication is that small farm holders dominated farming in the study area and many sub Saharan Africa and could threaten significantly household food security. Moreover, 33% of the farmers had access to credit either from formal or informal sectors, while 67% did not have access to credit.

Udemezue (2017) in Economic Analysis of OKRO Production by Farmers in Ayamelum Local Government Area of Anambra State, Nigeria revealed that majority (73.6%) of the farmers intercropped maize with okra, 58.8% intercropped cassava with okra, 56.9% intercropped maize, yam and cassava with okra, 35.3% intercropped yam with okra, 34.3% intercropped yam and cassava with okra and 19.6% intercropped maize and cassava with okra respectively. However, majority of the farmers planted maize with okra in the study area and this could be deduced to the fact that maize has more economic values than other crops in the table and also easier to maintain when intercropped with okra as a result of its hospitality to many crops. This finding rejected the findings of Farinde which disclosed in their studies that about 6% out of the 100% of the farmers intercropped maize with okra.

In Ayeni *et.al.*(2023) Stochastic Frontier Analysis of Technical Efficiency and Profitability of Dry Season Okra Production in Nigeria reveals that the total revenue from the sales of dry season okra produce for a typical farmer was ₦228,642.56 k/ha while the total fixed cost was ₦19,950.00k and variable input cost amounted to ₦146,151.63 k/ha. This gives a net farm income (NFI) of ₦126,201.63 k/ha. This shows that the dry season okra farmers under irrigation practices actually yielded a total amount of ₦126,201.63 profit per hectare. The outcome also showed that labor costs made up about 48% of variable costs, followed by fertilizer costs at 22% of variable costs. Table 2 profitability ratios also revealed that the profit margin, gross ratio, and return on investment were 0.55, 0.45, and 2.23, respectively. The return on investment of ₦2.23 shows the profit made for every one naira invested in dry season okra farming.

Ume *et.al.* (2018) in Allocative Efficiency in Okra (*Abelmoschus spp*) Production in Ayamelum Local Government Area of Anambra State, Nigeria showed that the cost and return of okra production revealed that cost of labour (37.6%) constituted the highest share of the total cost of production. Also cost of fertilizer, which constituted about 16.7% of the total cost. The least (3.4%) was cost of planting material and the average cost of production was ₦117,900 with net farm income of ₦482100. This implies that okra production is profitable in the study area.The return per investment was 1: 4.09, which means that in every ₦1 invested in okra production, ₦4.09 would be realized.

In Ekwune *et.al.*(2018) Economic viability of okra *(abelmoschus esculentus)* production in Ika south and north east local government areas of Delta state, Nigeria revealed that total cost variable was estimated to be ₦76,121.19/ha annually while the total fixed cost was ₦2735.11/ha per annum, amounting to a total cost of production of ₦78,756.52/ha per annum. The bulk of the total cost was spent on labour (40.5%) and fertilizer (23.20%). The total revenue was valued at ₦235,642.161/ha per annum. This gave a gross margin ₦ 159,619.92/ha per annum and a net profit of ₦156,884.81/ha per annum indicating that Okra production was profitable. The benefit-cost ratio (BCR) gave a value of 2.99 which means that okra production business is viable in the study area. The calculated return on investment (ROI) was 2.03 which means that every ₦1 invested returns about ₦2.03 was realized.

Udemezue (2017) in Economic analysis of Okra production by Farmers in Ayamelum Local Government Area of Anambra State, Nigeria shows that about 30.8% of the farmers spent ₦12000 on fertilizer application, 14.1% of them spent ₦5500 on land allocation, 15.4% spent ₦6000 on ridge making and 3.3% of the farmers spent ₦1,300 on agro-chemical respectively. However, majority (30.8%) of the farmers spent greater parts of their income on fertilizer application. The implication of this is that the farmers could have exhausted the fertilities of the land and therefore need to apply fertilizer in order to restore the virginity of the land. The average amount spent on okra production was ₦39,000. The result on return showed that majority (46%) of the farmers produced between 31-40kg of the okra, 19.6% of the farmers produced between 41-50kg and 14.7% produced between 51- 60kg of okra. The average number of bags produced by a farmer was 58kg. However, majority (34.3%) of the farmers realized between ₦61000-70,000, 15.7% realized between ₦51000- 60000 and 12.7% of the farmers realized less than ₦25000- 50,000. The average income from okra production was ₦97, 200.5k.

In Amadi (2023) Impact of Socioeconomic Characteristics and Productivity on Output of Okra Farmers in Ikwerre Local Government Area, Rivers State, Nigeria using stochastic frontier found the coefficient of labour significant at 1% level and had a positive sign and estimated coefficient of labour 0.9434, meaning that 1% increase in labour would lead to 0.9434% increase in output. This shows the importance of labour in Okra farming in the study area. The study further showed coefficient of farm size was found to have the expected sign (positive) and significant at 1% level. The result indicated that a unit increase in this input will lead to increase in the gross output of Okra. Bearing this in mind, the estimated coefficient for farm size being 0.89, implies that a1% increase in farm size will result in the increase of the output by 0.21%. The coefficient of 0.9035 for okra pods planted was positive and significant at 1% level and means that 1% increase in the okra seeds planted would increase output by 0.90%. This

implies that planting materials are important in Okra farming in the study area. The value of farm output is highly inelastic to the okra seeds planted and farm output can be significantly increased by increasing the use of planting materials. The study also revealed that the coefficient of capital was positive and significant at 1% level and implies that a percentage increase of capital input used would lead to 0.1269 increase in Okra output.

In Oladejo (2014), Profitability and Efficiency Analysis of Okra Marketing in Iwo Agricultural Zone of Osun State, Nigeria using Multiple regression analysis to determine the effects of transaction cost and selected personal variables on the revenue generated by respondents. Coefficient of determination) value of 0.894% showed that the estimated variables explained 89.4% variability in revenue, while F-value of 49.54 which is significant at 1% shows the goodness of fit of overall regression equation. The result revealed that purchase cost of Okra is negatively significant at 1%, which means that as purchase cost of okra increases, revenue decreases in the area. This is in line with a-priori expectation of the study as it explained the fact that as cost price increases, the purchasing power of marketers drop and the quantity of okra that the marketers were able to supply to the market reduces, which results in reduced revenue. Cost of transportation is similarly negatively significant at 1%. This also implies that cost of transportation is inversely related to revenue. This result is in line with a-priori expectation of the study since it is logical that as transportation cost increases it will have a reduction effect on the quantity of okra that the marketers will be willing or able to supply to the market. Reduction in quantity transacted will directly reduce revenue. Marketing experience is positively significant at 1%, which means that as the year of experience increases revenue also increases in the area. This is also expected because increase in years of experience is supposed to be synonymous with better entrepreneurial skill.

Ucha, Adikwu, Ahaiwe and Ogbulie (2018) in Socio economic Determinants to Okra Production among Women Farmers in Ivo Local Government Area of Ebonyi State, Nigeria. The result revealed that the coefficient of age of the respondents was negative in line with a *priori* expectation that farmers' ability to do manual jobs decrease with advancing in age and significant at 5% alpha level. Also the coefficient of education had indirect relationship with okra production at 99% confidence interval. The reason could be because most highly educated persons devote much of their time on salaried employment instead of farming as a vocation. In addition, the coefficient of membership of organization was positive and significant at 1% alpha level. Likewise the coefficient of off farm income was positive to farmers' production and significant at 10% risk level. Off-farm income may enable household members to better smooth consumption through their impact on income variability and such activities may increase on-farm productivity and total incomes. As well, the coefficient of extension services was positively related to farmers' production and significant at 5% probability level.

Ume *et.al.* (2016) in Determinants of Okra (Abelmoschus esculentus) Production and Profitability in Ayamelum Local Government Area of Anambra State, Nigeria. Based on the statistical and econometric criteria, Cobb Douglas production function was chosen as a lead equation and the coefficient of determination (R2) was 0.889, implying that 88.9% of the variation in the output of the pig farmers were accounted by various inputs included in the model, while

the remaining 2I.1% were due to error term. The statistical test of the coefficient of age was negative and significant at 10% probability level. The coefficient of the level of education was positive in line with apriori expectation and significant at 10 % alpha. Education status of the farmers is expected to have an effect on the profitability of okra production and the coefficient of the years of farmers' farming experience was positive and significant at % risk level.

Ayeni (2023) noted that Nigeria is endowed with ample irrigable water resources over a wide range of agro ecologic zones enough for the country to produce crop and crop products to feed the people and also to export to other nations. Despite this large agricultural potential and natural irrigable water resource endowment in Nigeria, there exist experiences of food shortage by the farming households because the agricultural resources were largely untapped and underutilized making poverty and hunger a critical developmental challenges (Babalola et al., 2020).

Amadi (2023) observed that despite its health benefits it is important to note that Okra has not contributed much to Nigeria economic development. This could be because farmers are not realizing enough profit from its production.

Udemezue (2017) ascertained that Okra is profitable in Ayamelum local Government area of the state; but its production is limited by land problem, inadequate labour force and distance from market (Ume *et.al.*, 2018). Despite the potentials of this crop to help combat some diseases and fertility improvement many people cannot afford it adequately in order to benefit from it as a result of the cost as it is not a soup to store. Regardless of all its economic benefits, okra as noted by Okoli (2021) is yet to reach its maximum yield potential because of several factors. They include according to him, use of locally unimproved variety, high incidence of pests and diseases, lack of irrigation for the small peasant farmers etc. Thus, enough attention needs to be given towards selecting high yielding cultivars of okra and ways to improve their agronomic potentials. Okra Anam is a populaname among okra sellers in the market yet there is a dearth of literature on profit made from okra production in Anambra west local government area. Based on the foregoing, the following research questions were asked; What are the socio-economic characteristics of okra farmers in the study area? What are the cost and return associated with okra production? What are the effects of socio-economic variables on profitability of okra farmers? What are the major constraints affecting okra production in the area?

METHODOLOGY

The study area for this research is Anambra West Local Government Area in the northwestern part of Anambra state, Nigeria with the headquarters at Nzam. The local government lies on the latitude 6.33N and longitude 6.83E with a land area of 613km^2. The estimated population of the local government in the last population census is 1 67,303 (NPC, 2006). The communities that make up the local government are as follows: Umueze Anam, Umudora Anam, Umuikwu Anam, Mmiata Anam, Umuoba-Abegbu Anam, Umuenwelum Anam, Oroma-Etiti, Inoma-Akator, nzam, Igbedor and Iyiora Anam. Farming and fishery are the major occupation of the people in the area because of Omambara river with a link with river Niger. Types of crops grown are yam, cassava, maize, Okro, sweet potato etc.

The population for the study constitutes all okra farmers in the area. Multi-stage random sampling technique was used to select respondents for the study, first stage involved the purposive selection of five communities out of the eleven communities that make up the local government which include Mmiata Anam, Umuoba Anam, Oroma-Etiti, Umueze Anam, and Umuenwelum Anam. Stage two involved random selection of 2 villages to give a total of ten villages. The final stage involved the random selection of 5 farmers each from the selected villages to arrive at the total sample size of 50 farmers that were used for the study.

Data for the study were collected from primary source. The data was collected using structured questionnaire and direct observation. The questionnaire included questions on the: socio-economic characteristics of Okra farmers, cost and return associated with Okra production, effect of socio-economic variables on profit realized and constraints of Okra production in the study area. The various objectives were analyzed using statistical tools and econometrics techniques. Objective (i) and (iv) will be analyzed using descriptive statistics such as mean, frequency distribution and percentage. Objective (ii) was achieved using budgeting techniques while objective (iii), effects of socio-economic factors of the respondents on the net farm income, was achieved using multiple regression technique.

Model Specification

To achieve the objectives of the study, the following models in data analysis were adopted:

Farm budget analysis: the budgeting technique was Net Farm Income. The difference between the Gross Revenue (GR) and the Total Cost (TC) gave the Net Revenue (NR).

Net farm income is expressed as;

NFI = GR – TC

Where,

NFI = Net Farm Income; TC = (TVC + TFC) = Px.X; GR =Gross Revenue = Py.Y; Py = Unit of output; Px = Unit of input; X = Quantity/quality of input; TC =Total cost (₦); TFC =Total fixed cost (₦); TVC = Total variable cost (₦)

Multiple Regression Model

The multiple regression models determined the relationship between the production output and socio-economic factors and implicitly specified thus:

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

$Y = a_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + e$

Where,

Y = Profit made from okra production, X_1 = Age (years), X_2 = Gender (Dummy, male = 1; female = 0). X_3 = Educational/attainment (years), X_4 = Marital status (Dummy, Married = 1, otherwise = 0), X_5 = farm size (ha), X_6 = Farming experience (years), X_7 = Household size (number), X_8 = Number of extension contacts (number), e = Error term

RESULTS AND DISCUSSIONS

Table 1: the distribution of farmers according to sex

Sex	Frequency	Percentage (%)
Male	12	24
Female	38	76
Total	50	100

Source: Field survey data 2023

Table 1 represents the sex of the Okra producers in Anambra west LGA, the table shows that the majority (76%) of farmers are female while the remaining 24% are male. The indication is that okra farming is female dominated in the area, this could be linked to the ease associated with vegetable production. This agrees with Ekwune (2018) who found that majority of Okra farmers were female in Delta State Nigeria.

Table 2: the distribution of farmers according to age

Age (Years)	Frequency	Percentage (%)	Mean ($\underline{X}$)
≤ 20	3	6	
21 – 30	7	14	
31 – 40	11	22	39.3
41 – 50	26	52	
51 and above	3	6	
Total	**50**	**100.00**	

Source: Field survey data 2023

The age of the okra producers is shown in table 2, the study revealed that greater proportion (52%) of the farmers are within the age of 41 – 50years, while the rest are within the age of 31 - 40 (14%), 21 – 30 years (22%), 51 years and above (6%) and < 20 years (6%) respectively. The study also found that the average age of the farmers was 38.7. This implies that okra farmers are still in their active year and have energy to work. This is in line with Kshash and Oda (2021) who found majority of the farmers to be between 30 and 45 years

Table 3: the distribution of farmers according to their marital status

Marital status	Frequency	Percentage (%)
Married	41	82
Otherwise	9	18
Total	**50**	**100**

Source: Field survey data 2023

The marital status of the farmers is represented in table 3, the result of the data analyzed summarized that the majority (82%) of the farmers are married, while the remaining 18% are otherwise single. This indicates that most of the farmers are by marriage institution are legally joined to either their husband or wife. Onubuogu *et al.* (2013) opined that married farmers tend to have easy access to production variables such as land and large family size which are traditionally owned and provided by household heads (husbands) to compliment family labour to enhance production, reduce the cost of hired labour and resource use efficiency of the household farmers This study conforms to Amadi.*(*2023) found majority of the respondents to be married

Table 4: the distribution of farmers according to level of education

Level of education	Frequency	Percentage (%)	Mean ($\underline{X}$)
No formal education (0)	2	4	
Primary (1 - 6 years)	6	12	
Secondary (7 - 12 years)	28	56	10.1
Tertiary (13 - 18 years)	14	28	
Total	**50**	**100**	

Source: Field survey data 2023

The level of education of the okra producers is presented in table 4, the study shows that the greater proportion (56%) of the respondents attended secondary school, while the remaining (28%) attended tertiary, primary (12%), post graduate and only about 4% of the farmers did not have any formal education. The average years of schooling was found to be 10.1, this as an indication that most of the farmers completed their secondary school, implying that majority of the farmers can read and write, this will help in adopting new practices. This finding aligned with Ayeni *et.al* (2023), who found that majority of Okra farmers had secondary education.

Table 5: the distribution of farmers according to farming experience

Farming experience (years)	Frequency	Percentage (%)	Mean ($\underline{X}$)
0 – 10	10	20	
11 – 20	16	32	18.4
21 – 30	23	46	
31 – 40	1	2	
Total	**50**	**100.00**	

Source: Field survey data 2023

Table 5 reflects the farming experience of the Okra farmers in the study area. The finding shows that greater proportion (46%) of the respondents had 21 – 30 years of farming experience, while the remaining (32%) had 11 – 20 years, 20% (0 – 10years), 2% (31 – 40years) respectively. Their average experience was 18.4years. The implication is that the farmers are really experience in okra farming. This indicates that they are well acclimatized with the activities and thus will be more efficient in their operations. This agrees with Amadi (2023) who found that majority of the farmers had farming experience above 20 years.

Table 6: the distribution of farmers according to household size

Household size (people)	Frequency	Percentage (%)	Mean ($\underline{X}$)
1 - 5	11	22	
6 – 10	28	56	9
11 – 15	9	18	
16 – 20	2	4	
Total	**50**	**100**	

Source: Field survey data 2023

The information in table 6 is showing that the majority (56%) of the farmers have a household size of 6– 10 persons, while the rest have 1 – 5 persons (22%), 11 – 15 persons (18%) and 16 – 20 persons (4%) respectively. Interestingly, the study revealed a mean size of approximately 9 persons in the area. This implies that farmers have enough household size capable of supplying cheap family labour in okra production. This aligns with Udemezue (2017) who found mean average household size of about 9 persons.

Table 7: the distribution of farmers according to extension visits

Number of visits	Frequency	Percentage (%)
None	31	62
1 – 2	12	24
3 – 4	5	10
5 – 6	2	4
Total	**50**	**100**

Source: Field survey data 2023

Table 7 represents the distribution of farmers according to number of times they recorded average extension visit per production cycle. The study revealed that majority (62%) had no extension visit, about 24% had only 1 or 2 visits, 10 % had about 3-4 visits and only 4% had extension visit up to 5 times. This implies that farmers do not have adequate contact with extension agents in Anambra west LGA. This agrees with Ume *et.al.*(2016) who found that about 66.7% of Okra farmers had no extension visit.

Table 8: Average cost and return in okra production

Item description	Quantity	Cost/unit	Total (Naira)
A. Revenue			
Total output (kg)	217.14	2,153	467,502.42
TOTAL REVENUE			
B. Variable cost			
Cost seed (kg)	2.3	2750	6,325
Cost of fertilizer	2.8	6,155.2	17,234.6
Cost of herbicides	3	1775	5,325
Cost of weeding			17,850
Cost of land preparation			32,700
Cost of fertilizing			9,700
Cost of planting			15,600
Transportation			13,700

Miscellaneous		19,300
Total Variable cost		137,734.6
C. Fixed cost (depreciation)		
Cutlass/hoe		1,793
Opp. Cost of land		4,700
Wheel barrow		3,690
Total Fixed cost		10,183
Total Cost = TFC+TVC	147,917.6	
D. Income Analysis		
Gross Margin (TR-TVC)	329,767.82	
Net return = TR-TC	319,584.82	
Net Return on investment (NROI) = NPI/TC	3.16	

Source: Field survey 2023.

The profit realized from Okra farmers is presented in Table 8. Details from the analysis revealed that the total revenue realized from the sale bags of okra was N467,502.42. The variable cost (operational cost) was N137,743.6, and the depreciated fixed cost value was N10,183; which summed the total cost expended to N147,917.6. Furthermore, farmers made a gross profit of N329,767.82 from the sales, the net return which is the profit after deduction of total cost is N319,584.82 and return on investment was N3.16, suggesting that for every 100kobo spent there was a return of about N3.16kobo which makes okra production a very profitable on in the area. This agrees with finding of Ayeni *et al.* (2023) who found that labour cost constituted the highest expenses incurred yet recorded return on investment of N2.23 and concluded that it is a profitable venture.

Table 9: effect of socioeconomic characteristics on profit of okra farmers

Socioeconomic variables	**Linear Estimate**	**t-test**
Intercept	-37926.227	-.772
Gender	-77393.391	-2.43*
Age	31.05	0.035
Fertilizer quantity	27346.64	1.344*
Household size	8742.17	1.608
Farming experience	25069.12	6.210***
Educational qualification	-254.42	-0.085
Farm size	94965.20	3.669**
Labour cost	-0.12	-0.155
Extension contact	17094.93	1.898*

R^2	0.91
F-stat	45.635***

Source: Field Survey, 2023

The relationship between socioeconomic characteristics of okra farmers and profit is presented in Table 9. The result of the multiple regression showed the coefficient of multiple determinant (R^2) of 0.91, which implies that 91% variation in profit in okra production was explained by the joint action of farmers' socioeconomic, while the remaining 9% unexplained was as a result of the error beyond the farmer's control. The significant F-stat. value of 45.635*** significant at 1% level of probability is an indication that the model was a good fit and that all the variables used in the analysis improved the result.

The coefficient of gender was negative and significant at 90% level of probability, this implies that a unit increase in female farmers will reduce profit by ₦77,393. This could be because men are more into more economic/cash crops like rice and yam production and females grow the vegetables.

The coefficient of quantity of fertilizer was positive and significant at 90% level of probability, this implies that increase in quantity of fertilizer will bring about increase in okra profit by ₦27,346. This finding conforms to Ayeni *et.al.*(2023) who found quantity of fertilizer to be positive and statistically significant at 90% level. This implies that fertilizer is an important factor (input) in okra production for increased profit.

The coefficient of farming experience was positive and significant at 99% level; this implies that a unit increase in the number of years the farmers spent in okra production increase profit by ₦25,069. This could be because experience will enhance farmers' knowledge and help inform his decision. This aligns with Ume *et.al.* (2016) who recorded positive significant farming experience at 95% risk level.

The coefficient of farm size was positive and significant at 95% level of probability, this implies that increase in farm size will increase profit realized by okra farmers by ₦94,965. This finding is in agreement with Ayeni *et.al.* (2023) who observed that farm size had 99% level of significance in profit determination of farmers in Okra production.

Furthermore, the coefficient of extension visit was positively significant at 90% level; this implies that an increase in number of times visited by extension agents will increase profit realized by farmers by ₦17,094. This aligns with Ucha *et.al.*(2018) who recorded 99% level of significance in extension visit impact to profit realized in Okra production.

The coefficient of age and household size, were positive but not significantly affecting profit, implying that they are not a significant determinant of profit in okra production in the study area.

However coefficient of educational qualification and labour cost were negative and statistically not significant in profit realized in Okra production in Anambra west local government area.

Table 10: constraints to Okra production in the area.

Constraints	SD	D	A	SA	Total Score	Mean	Decision
Inadequate farm land	10(1)	26(2)	9(3)	5(4)	109	2.18	Disagree
Access to credit	6(1)	3(2)	27(3)	14(4)	149	2.98	Agree
Inadequate extension visit	8(1)	9(2)	14(3)	19(4)	144	2.88	Agree
High irrigation cost	32(1)	7(2)	7(3)	4(4)	83	1.66	Disagree
Inadequate market	17(1)	16(2)	11(3)	6(4)	106	2.12	Disagree
Incidence of flood	7(1)	5(2)	25(3)	13(4)	144	2.88	Agree
High cost of fertilizer	8(1)	7(2)	19(3)	16(4)	143	2.86	Agree
High transportation cost	2(1)	7(2)	17(3)	24(4)	163	3.26	Agree
Poor storage facilities	21(1)	12(2)	14(3)	3(4)	99	1.98	Disagree
Pest and diseases	7(1)	9(2)	17(3)	17(4)	144	2.88	Agree
High cost of labour	11(1)	9(2)	18(3)	12(4)	131	2.62	Agree
Poor soil fertility	14(1)	19(2)	13(3)	4(4)	107	2.14	Disagree
Herders attack	11(1)	13(2)	10(3)	16(4)	131	2.62	Agree
Theft of produce	15(1)	3(2)	9(3)	23(4)	140	2.80	Agree
Cluster mean					**35.86**	**2.56**	**Agree**

Field survey, 2023

The constraints faced by Okra producers in the area is presented in table 10, the data was analyzed from the mean threshold of four point Likert scale. Decision rule was set at 2.5. Thus variables with a mean score of 2.5 and above were regarded as a problem while those below were not seen as a threat to Okra production in Anambra west LGA. Based on the fourteen (14) constraining variables identified, those with mean score of 2.5 and above includes; High transportation cost (3.26) , access to credit (2.98), inadequate extension visits (2.88), incidence of flood (2.88), pest and diseases (2.88), high cost of fertilizer (2.86), high theft of matured produce (2.80), high cost of labor (2.62), herders attack (2.62). Osalusi *et.al.* (2019) observed that pest & diseases and inadequate transport facilities were the major constraints faced by okra farmers in their area of study. However, variables such as poor soil fertility (2.14), inadequate market (2.12), poor storage facilities (1.98) and high irrigation cost were not considered as threat to okra production. The constraints also found a cluster mean of 2.56 implying that the problems identified were actually the major problems they encounter in okra production.

CONCLUSION AND RECOMMENDATIONS

Based on the major findings of this study, it could be concluded that okra production in the Anambra west local Government Area is a very profitable and lucrative business since every naira investment yield about ₦3.16kobo.

Based on the study findings, the study recommends the need for government to provide inputs such as chemicals (pesticides and herbicides) at subsidized rates to farmers. Adequate measures should be taken to improve the extension visit in the study area

Okra Farmers should be encouraged to form co-operative societies or join existing ones to enable them secure loans and enjoy bulk purchase discount. Female farmers should be given more access to land for production as the socioeconomic factors showed more women are more in okra production in the area.

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