SOCIO-ECONOMIC FACTORS AFFECTING THE PRODUCTION OF OKRA PRODUCTION AMONG RURAL FARMERS IN IGABI LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

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ABSTRACT

The study estimates the cost and returns to Okra production by small scale farmers in Igabi Local Government Area of the State. A multistage random sampling technique was used to select 120 for the study. Data were collected on age, sex, type of input costs and revenue generated from Okra producing farmers. Descriptive statistics and budgetary analysis, and regression model were used for the analysis. Farmers were aged between 15 and 54 years with a mean of about 30 years and a mean household size of (9) persons. Farmers produced between 2 and 35 (50kg) bags of Okra per year an average of (2.2 ha.) Variable costs constitute about 57.8% of the total costs with labour contributing the highest single cost (40%). Profitability index estimates shows the enterprise is profitable with a gross ratio of 0.37 and a return on investment of 2.43. Socio-economic determinants of farmer profit were Age (β = 28380.0, p<.01) output (β = 5224.1, p<.01) and total cost (β = -5.808, p<.01), marital status (β = 36462.5, p<.05,) and farming experience (β = 5639.5, p<.1). high fertilizer cost, labour cost and herders' threats were the most serious constraints. It was recommended that farmers form themselves into cooperatives societies to enable them harness group pressure to procure fertilizers at reduced prices. Also, stakeholders in governance should beef up the security architecture in the L.G.A to reduce incidences of cattle herders-farmers clash. extension stakeholders should educate Okra farmers about improved management to further boost their productivity.

Keywords: Profitability index, Socio-economic, Vegetables production, Rural

INTRODUCTION

Vegetables production as part of agriculture have been a source of livelihood for many people in Nigeria rural farmers. were left in the hand of rural farmers. These set of farmers are resource poor and operate on small-scale with its attendant problems. Small-scale farmers are constrained by lack of credit, which translates to inadequacy of working capital (Kibaara, 2005), bringing about the vicious cycle of poverty. Vegetable production in Nigeria constitutes about 4-6 percent of total staple food production. It is an important protective food for the maintenance of health and prevention of diseases as they contain vitamins, minerals and chemical compounds that are essential for human health (FAO,2006). *Abelmoschus esculentus L. Moench* is a popular vegetable in tropical and sub-tropical countries of the world; it is grown for its "pod" (Ojeniyi and Folorunso, 2003). It is a member of the hibiscus family, Malvaceae and has the typical floral characteristics of that family originating from Africa. It is now widely distributed in the tropics including Nigeria (National Research Council, 2006). It is an important vegetable crop occupying a land area of 277,000 hectares with a production of 731,000 metric tonnes worldwide and productivity of 2.63 t /ha-1 in Nigeria (FAO, 2006). They also contain valuable food ingredients, which can be utilized to build up and repair the body tissue (Edet and Etim, 2005).

America, fresh okra fruits are used as vegetable while the roots and stems are used for preparing brown sugar. Okra pods are used for oil extraction. The protein found in okra is very important in human diet, it helps to build muscle tissue and make up enzymes which control all the hormones that control the organs. The soluble fibre in okra helps to lower serum cholesterol, reducing the risk of heart disease, the other half is insoluble fibre which helps to keep the intestinal tract healthy decreasing the risk of some form of cancer especially colorectal cancer. Nearly 10% of the recommended level of vitamin B6 and folic acid are present in half a cup of cooked

okra, vitamins are required for good vision, help bone growth, proper circulation of blood and aids digestion (Wolford and Banks, 2006). Okra is a good source of calcium which helps to keep bone strong and lessen the chance of fractures. (Grubben and Denton, 2004). The seeds however can be roasted and used as substitute for coffee (Farinde and Owolarafe, 2007).

Okra production in the study area has not attracted the same research patronage like other crops such as maize, rice and millets possible because it is a vegetable. Its production could be said to have remained in the hands of small-holder rural and semi-urban farmers. These farmers like most other farmers in Nigeria are resource poor and operate on small-scale. Because of the tendencies of these small-scale farmers to using the traditional rudimentary tools and their poor access to the use of mechanized and other improved agricultural implements their output could drastically be reduced as a result of low efficiency and productivity. Okra can be produced both in the raining and dry season making it a farming enterprise that can ensure continuous income for the farmer throughout the year in the study area. This attribute enhances incomes and livelihoods of small rural farming households thereby alleviating their poverty. Achieving rural development/employment cannot be possible without adequate knowledge and promotion of their immediate economic activities (World Trade Organisation, 2005). It is against this back drop that the study seeks to provide answers to the following research questions: What are the socio-economic characteristics of Okra producing farmers that affects their profit in the study area? what are the problems associated with the production of Okra in the study area? Specifically, the objectives are to: examine the cost and returns to Okra production in the study area? determine the effect of are the socio-economic characteristics of Okra producing farmers on their profit in the study area? identify

the problems associated with the production of Okra in the study area?

MATERIALS AND METHODS
Study Area
Igabi Local Government in Kaduna state is located on latitude 10° 47′ 0″N and longitude 7° 46′ 0″E (Fig.1). It is one of 774 Local Government Areas (LGAs) in Nigeria, and one of the four that constitute Kaduna metropolitan city. It was created in 1989 out of Zaria Local Government, having 12 wards with headquarters in Turunku. The Local Government is made up of three districts namely: Igabi, Rigachikun and Rigasa. (Igabi, 2020). According to the Kaduna state population dynamic report, (2018), the L.G.A with a 3% growth rate has a projected population of 632,575 as at 2020

. It is bordered to the North by Giwa and Zaria L.G.A. to the east by Soba, to the south by Chikun and Kaduna North L.G.A and to the west by Birnin Gwari L.G.A The local government is dominated by farmers who produce crops on commercial level. The climate ranges from Sahel to Sudan savannah with an annual rainfall in the south of about 1200mm which may span from May-October. The region has two main prevailing winds which are from North to East during the dry season from the Sahara Desert and the South-West monsoon winds from the gulf of the guinea. The area is situated on a height of about 650m above sea level with minimum and maximum temperature of 12.8°c and 35°c respectively. The major farming practice includes livestock production, crop farming (maize, millet, cowpea, guinea corn, rice etc).
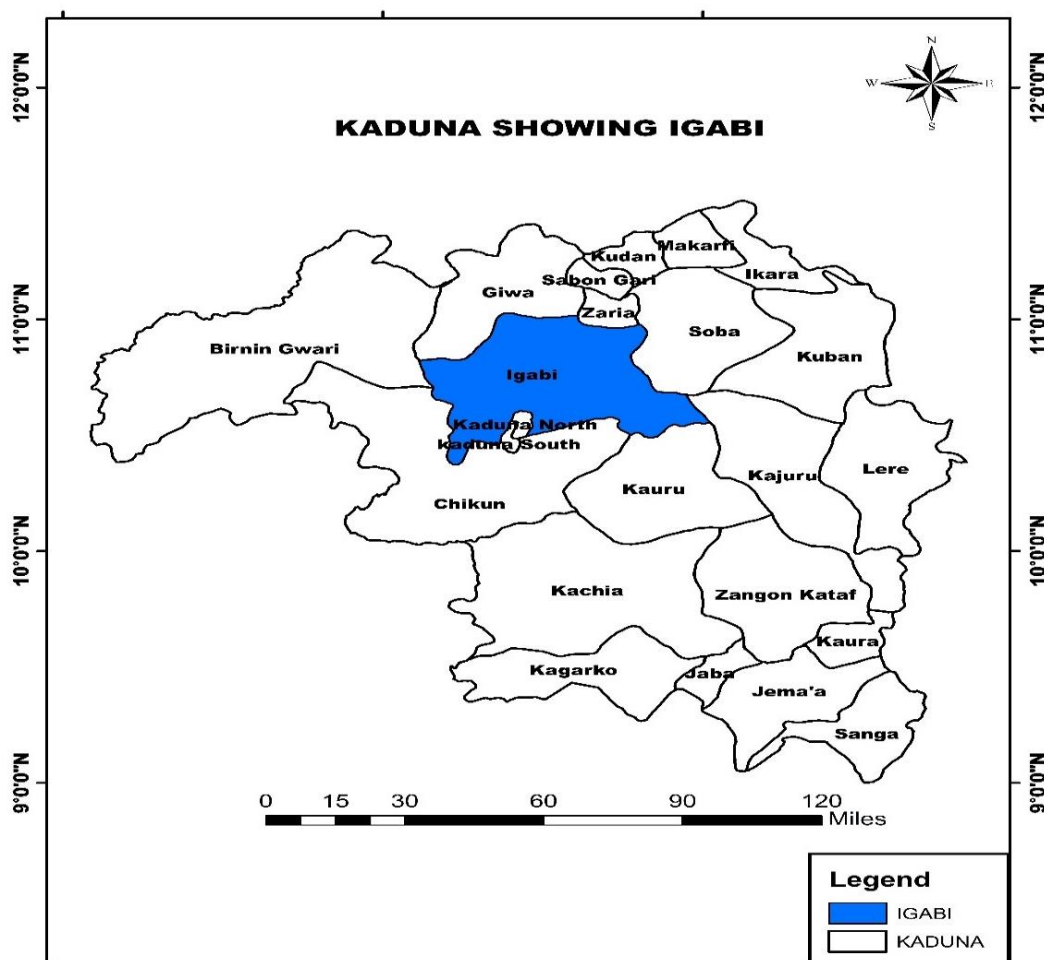

Figure 1: Digital Map of Igabi Local Government area of Kaduna State, Nigeria.

A cross-sectional data was collected from 150 farmers using a multi stage sampling techniques. In the first stage, the L.G.A (Igabi) was purposively selected from all the Local Government that made up Kaduna state for reasons such as proximity, paucity of fund and intensity of farming activities. In the second stage, a random selection of five districts namely; Rigachikun, Rigasa, Turunku, Igabi and Afaka were selected. In the third stage; one village was randomly selected from each of the districts. the last stage involves random selection of 30 farmers per village in each of the villages to make a total of 150 farmers. Only one hundred and twenty questionnaires were retrieved and used for the study.
Primary data collected using structured questionnaires includes data on socio-economic characteristics of farmers

such as age, sex, level of education, membership of associations and societies etc. also, input and output data, cost, transportation, cost and revenue generated from the farming activity were collected. The data was subjected to descriptive statistics, budgetary, productivity index and regression analysis.

Farm budgetary technique
The farm budget is a detailed physical and financial plan for the operation of a farm for a period. It allows the estimation of total expenses (costs) as well as receipts (revenue or receipts) with a production period (Balogun *et al*, 2007). Musa etal, (2006) pointed out that the farm budgeting technique gives a measure of profitability therefore the model

was applied to evaluate the profitability of Okra production in the area. The measures applied includes: Gross margin, Gross ratio and Returns on Investment (ROI). Where,

$$GM = GFI – TVC \qquad (1)$$

Where

GM = Gross Margin (₦), GFI = Gross farm income (₦), TVC = Total variable cost (₦)

Returns on investment (ROI)
This is the returns on every naira invested in the enterprise. It is defined as the gross margin divided by the total variable cost (Balogun et al, 2007)

$$\text{Returns on investment (ROI)} = \frac{GM}{TVC} \qquad (2)$$

Gross Ratio (GR)
This is the profitability ratio that measures the overall success of the farm. The lower the ratio the higher the returns per naira. It expressed as:

$$GR = \frac{TFE}{GI} \qquad (3)$$

Regression Analysis.
Linear regression analysis was used to establish the socio-economic effect on profitability of Okra production. The implicit form of the model is specified as shown below,

$$Y=(X_1, X_2, X_3, X_4, X_9, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, \varepsilon_0) \qquad (4$$

Where,

Y_i = Gross Margin, X_1 = Gender, X_2 = Age (years), X_3 = Age squared, X_4 = Marital status, X_5 = Level of education (years spent in school), X_6 = Household size (number of household members), X_7 = Farming Experience (years), X_8 = Output (Kg), X_9 = Asset holding, X_{10} = Total revenue (₦), X_{11} = Total Cost (₦).

RESULT AND DISCUSSION
Socio-Economic characteristics of the respondents
The socio-economic characteristic of okra producers examined in the study includes: age, gender, marital status, educational background, household size, years of experience in Okra farming as well as well as general farming experience. The results in table 1 show that the farmers age ranged between 15 and 54 years with a mean of about 30years implying a good level of youthful and productive households farming heads. The household size was fairly large with an average farmer having about nine (9) persons. This could be attributed to the cheap and timely labour derived from keeping large families by typical rural farmers. The average Okra farmer has about seven years of okra farming experience, the farmers farm holdings were small (2.2 ha) on an average producing between 2 and 35 (50kg) bags of Okra per year. The mean productivity index was about 17 bags implying that an average farmer produces 850 kg/ha. Most of the farmers had at least secondary school education, this is good enough for adoption of innovations and technologies that could transform their agricultural practices.

Table 1: Descriptive Statistics of some Socio-economic Variables

Variable	Mean	Standard Deviation	Min	Max
Age	29.85	8.47	15	54
Household Size	8.62	4.54	2	25
Okra Farming Experience	6.58	5.47	1	30
Output	30.40	55.5	2	35
Farm Size	2.29	1.42	1	10
Total annual income from Okra	66044.9	89275.58	10000	5000
Mean Productivity index	16.51	25.08	1.25	145
Years in Education	12.22	5.95	0	21

Source: Field Survey, 2020

Cost and Returns to Okra Production in Igabi L.G.A
The results of cost and returns to Okra production in the study area is as presented in table 2. the results show that the fixed cost represents about 43.2 percent of the total cost. Labour constitute the highest single cost (40%) followed by land (32.6%) of the total cost respectively. These cost items can significantly affect the level of profit if not properly managed by the farmer. The average cost of production was about ₦

36000, while the gross income was N 97079.8 per ha with a net farm income of ₦ 61,119.76. the returns on investment was estimated at 2.43 implying that the enterprise is highly profitable as every naira invested ears about ₦2.43 kobo. This is good returns considering the scale of investment (small scale rural farmers), Also, the gross ratio obtained for the study was 0.37. this value expresses the overall success of the enterprise.

Table 2: Cost and Returns to Okra Production in Igabi L.G.A

Items estimate	Mean cost/ha (₦)	Percentage of total cost (%)
Fixed input	2,750.00	7.647
Land Rent	8,200.00	22.603
A. Total Fixed Cost	**10,850**	30.172
Variable Cost of Items		
Cost of Seed	2000.00	5.56
Fertilizer(Kg)	6419.00	17.85
Insecticide	3749.00	10.43
Pescticides	2,694.00	7.49
Labour	10,250.00	28.53
B. Total variable Cost	**25,110.00**	69.83
C. Total Cost (A+B)	**35,960.00**	
D. Gross Farm income (GFI)	**97,079.76**	

Net Farm income	**61,119.78**	
Gross Ratio	**0.37**	
Returns on Investment	**2.43**	

Source: Field survey 2020

Socio-economic factors Affecting Okra Production Among Rural Farming Households

The regression results were presented in table 3. The values of the adjusted R^2 and F-statistics were used to evaluate the overall explanatory power of the regression model. The significance of the parameter's estimates was evaluated by means of t-test at 1%, 5% and 10% levels of probability (Balogun et al, 2007). The R^2 of 0.804 indicate that eighty percent of the variation in profit was accounted for by the explanatory variables included in the equation. Socio-economic and production variables were included in the model. Age, Fertilizer, Labour and total cost were significant at 1% level of probability. The significance of age and labour were positively related to the output implying that as those variable inputs increases, output increases. This result means that as the farmer matures in age production output also increases, this may be attributed to the fact that farmers tend to accumulate experience in management and other things that can help him increase his expand his farm enterprise as he grows. However, Age squared and total cost exhibited an inverse relationship with output meaning that employing too much of these variables is capable of reducing the output. As farmers grow older, a point is reached when diminishing returns sets in. At this point, old age begins to have negative effect on the production outcome of the farmer possibly because of decreasing physical fitness. This is clearly demonstrated by the positive relationship between age, age squared and output. When the farmers are at their prime, they can organise there their production activities to get the better results but as soon as the farmer comes out of his productive age, diminishing returns sets in as indicated by the negative and significant relationship of age squared. Marital status is positive and significantly affect the production of Okra in the study area at 5% level of probability implying that married farmers produce more than single farmers. Considering the fact that Okra is a vegetable, the involvement of the family may well have helped in improving timeliness of operation, harvesting and marketing which eventually lead to better productivity. Furthermore, application of fertilizer was found to have positive effect on production of okra at 10% level. Undue increase in total variable cost incurred in production were found to significant affect production in an adverse manner.

Table 3: Socio-economic Determinants of output of Okra Farmers in Igabi L.G.A Using Linear Regression

Output	Coef.	t- value	
Gender	-5791.415	-0.27	
	(21683.96)		
Age	28380.005***	3.20	
	(8881.144)		
Age squared	-433.458***	3.06	
	(141.749)		
Marital status	36462.556**	2.03	
	(18002.824)		
Level of education	-6801.35	-0.65	
	(10495.501)		
Household Size	-462.91	-0.19	
	(2492.787)		
Fertilizer	-5639.596*	-1.88	
	(3004.405)		
Labour	5224.131***	12.10	
	(431.888)		
Farm Size	4593.548	0.58	
	(7878.654)		
Asset holding	1723.036	0.11	
	(15624.076)		
Total revenue	.173(.387)	0.45	
Total Cost	-5.808***	-3.60	
	(1.612)		
Constant	-412492.12	-2.72	
	(151925.88)		
R-squared	0.804	Number of obs	120.000
F-test	31.620	Prob > F	0.000
Akaike crit. (AIC)	2977.700	Bayesian crit. (BIC)	3016.006

*** p<.01, ** p<.05, * p<.1
Note: Figures in parentheses are standard error

Constraints to Okra Production

The farmers were faced with many constraints including high cost of labour, inadequate capital, low farm gate prices for products (Okra), cattle threats (herders clash) poor extension contact. Table 4 shows the ranks in the various constraints identified by the farmers. The most serious constraint confronting the okra farmers was high cost of fertilizer as indicated by about 74% of the sampled farmers. Also followed closely with this is high cost of labour 90(75%), pests and diseases 89(74.2%). Other notable constraints

include poor extension visits 83(69.2%) and poor infrastructure 81(67.5%) in the study area.

Table 4: Distribution of the respondent based on Constraints to Okra production in the Area

Constraint (item)	Yes	No	Rank
High cost of Labour	90(75%)	30 (25%)	2nd
Inadequate capital	77(64.2%)	43(35.8%)	7th
Low Prices	66(55%)	54(45%)	12th
Availability of quality seeds	70(58.3)	50(41.7)	11th
Cattle threat	90(75%)	30(25%)	2nd
Lack of suitable land	71(59.2)	49(40.8%)	9th
Pest and Diseases	89(74.2)	31(25.8)	4th
Inadequate Agricultural Extension	83(69.2)	37(30.8%)	5th
High Price of Fertilizer	92 (76.7)	28(23.3)	1st
Poor Infrastructure	81(67.5)	39(32.5)	6th
Land tenure Problem	76(63.3)	44(36.7)	8th
storm, drought and flood	75(62.5)	45(37.5)	9th

Source: Field survey 2020

CONCLUSION

The study revealed that Okra production in the study area is profitable as indicated the profitability index employed (the returns on investment ROI and the gross ratio GR). The regression model used for the analysis was well fitted to the model with about 80% of the variation in okra production profitability been explained by the variables included. The most serious constraints as expressed by the farmers were fertilizer costs, labour cost and herders' threats. The study recommends improved security architecture and farmers cooperatives societies for better access to inputs.

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