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Impact of Socioeconomic Characteristics and Productivity on Output of Okra Farmers in Ikwerre Local Government Area, Rivers State, Nigeria

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A B S T R A C T

This study investigates the impact of socioeconomic characteristics and productivity on output of Okra farmers in Ikwerre Local Government Area, Rivers State. The objectives of this study were to examine the socio-economic characteristics of the respondents in the study area, investigate how productivity improve the output of okra farmers in the study area, and identify the problems associated with Okra production in Ikwerre Local government area of Rivers state and examine how profitability of Okra farmers enhance production of small-scale farmers in Ikwerre LGA. The population of the study is 2989 registered okra farmers in Ikwerre Local Government Area. Data were collected from 149 respondents drawn from the study area using multi-stage sampling stage techniques.Data were analyzed using descriptive statistics such as frequencies, percentages, mean scores (four-point Likert scale), stochastic frontier production function, Gross margin and multiple regressions. The results from the analysis (gross margin) revealed that the total variable cost at N8, 530.130 and total revenue at N11, 520,000 gave a gross margin of N2, 989,870 and a rate of return of N1.35k. this implies that, Okra farming is profitable in the study area

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INTRODUCTION

Okra is an annual fruit vegetable crop belonging to the Malvaceae family. Abelmoschus has several cultivated species of economic importance, two of which was identified as Abelmoschus esculentus and Abelmoschus caillei (Siemonsma, 1982). Varieties vary by plant height, size of fruit, colour, early or late maturity etc. and they are namely; white velvet, green velvet, long pod, lady finger, dwarf green pods (Udoh, et al, 2005). Vegetables are among the stable food component whose production has continued to increase in most countries of the world. (Udoh & Akpan 2007). They are important protective food for the maintenance of health and prevention of diseases. They contain valuable food ingredients, which can be successfully utilized to build up and repair the body (Bakhru, 2003); (Edet & Etim, 2007).

The level of vegetable consumption in Nigeria is rising annually owing to the greater appreciation of their food value. (Haruna, 2003). According to Kebede and Gan, (1999), the source of farm income for small and limited resources farmers are basically arable crop production, Vegetable and non-vegetable crops. Its importance has been long recognized all over the world (Ndaeyo, et al, 2007). In Nigeria, okra is grown basically in all the states of the federation both as rain fed and irrigated crop. Also, it serves as a source of income to its producers,labourers and marketers (Alimi, 2004). Production of okra as a small-scale enterprise can financially empower the farmers especially those with little capital, limited access to land and working under labor constraints. (Lewis 1997). The cash they provide contributes significantly to the food security at the house hold level and enables farmers to attain a degree of independence within the family budget.

The economic importance of okra cannot be overemphasized. Okra contains carbohydrate, proteins and vitamin C in large quantities (Adeboye & Oputa, 1996). The essential and non-essential amino acids that okra contains are comparable to that of soybean. Hence it plays a vital role in human diet. For consumption, young immature fruits are important fresh fruit vegetable that can be consumed in different forms. They could be boiled, fried or cooked. In Nigeria, okra is usually boiled in water resulting in slimy soups and sauces, which are relished. The fruits also serve as soup thickeners (Schippers, 2000). The leaves buds and flowers are also edible. Okra seed could be dried. The dried seed is a nutritious material that can be used to prepare vegetable curds, or roasted and ground to be used as coffee additive or substitute. The impotence of Okra and its relative components cannot be over-emphasized. For instance, Okra leaves are considered good cattle feed, but this is seldom compatible with the primary use of the plant. Okra mucilage is suitable for medicinal and industrial applications. It has medically found application as a plasma replacement or blood volume expander. Industrially, okra mucilage is usually used in to glace certain papers and also useful in confectionery among other uses (Markose & Peter, 1990).

It is imperative to note that worldwide production of okra as fruit vegetable is estimated at six million tonnes per year. In West Africa, it is estimated at 500,000 to 600,000 tonnes per year (Burkil, 1997). In Nigeria, there are two distinct seasons for okra, the peak (June to September) and the lean

seasons (October to May). During the lean season okra fruit are produced in low quantities, scarce and expensive to get (Bamire&Oke, 2003). In the peak season, it is produced in large quantities much more than what the local populace can consume. Proper processing, preservation, marketing and utilization of okra is necessary to arrest the wastage being experienced during the peak season. Such efforts should involve the development of appropriate technologies for processing and preserving okra to produce products of high market value. This will enhance the standard of living of the farmers and processors. It is however important to assess the level of okra production processing and preservation to serve as a guide in selecting appropriate methods and techniques.

Okra is of the genus; Abelmoschus, family; Maluaceae and is widely distributed in the tropics, subtropics, and warmer portions of the temperate region. Okra is used for human consumption in different forms, (boiled, fried or cooked), preparation of vegetable curds, coffee additives, and confectionary. Okra production offers income and employment opportunities to the poor, especially women who form a substantial producer. Several studies have shown that the production and productivity of okra in Nigeria is dwindling in recent year as yield less than 1.8 tons per hectare, thus limiting the ability of the crop to perform its' traditional role in economic development.

It is important to note that despite the importance of Okra it has not contributed much to Nigeria economic development. Take for instance, food insecurity, hunger and unemployment are cardinal issues of the millennium development goal of many developing countries as well occupied Centre stage for debate in several world conferences and summits (Okoye &Onyenweaku, 2007). Among the staple food that is deficit but the most affordable and accessible source of micronutrient especially in Nigeria and other developing countries of Africa where the daily diet is dominated by starchy food is vegetable (Udo, 2005). Among the important indigenous vegetables that are grown in Nigeria, okra is widely cultivated and consumed in northern and western Nigeria (Evensteil, 2009). Also, okra farmers face, difficulty in getting funds, bad access road to farm, lack of storage facilities, difficulty in controlling weed, pest and diseases. This study therefore attempts to answer the following questions: What are the socioeconomic characteristics of okra farmers in Ikwere LGA? What is the profitability level of Okra production? and what are the problems associated with Okra production?

To achieve this, the paper is organized into five sections. Following this introduction, this paper is organized as follows: Section two is the, theoretical, empirical and literature review, section three presents the methodology of the work, section four shows analysis of the study and discussion of findings, while section five concluded the study with relevant policy recommendation from the findings.

THEORITICAL FRAMEWORK

Cobb-Douglas Production Theory

The Cobb-Douglas production theory was propounded by Cobb-Douglas (1928). The theory states that production function is normally applied to denote the association of outputs to inputs overtime. Cobb-Douglas acknowledged an abridged economic view whereby productive activities are based on the quantity of labour and capital used. The equation they adopted to represent production was in this form: Y = P(L,K) = Where; P = Aggregate outputs (representing the financial value of all final good and services created in a year)

L = Labour input (the aggregate number of man hour per year) K = Capital input (the financial value of all machinery, equipment as well as buildings) A = Aggregate factor output and β are the production elasticity of labour as well as capital. These values are static which are based on the existing know-how. Given the stated production function, the marginal productivities of factors will be given as: MPPk=∂y/∂k =AaKa-1Lβ and MPPL = ∂y/∂L = AβK aLβ-1
Therefore, the productivity of the factor inputs is what can propel output growth.

Theory of Cost

The theory of cost was propounded by Ibrahim, et al (2014). The theory states that the cost of producing any goods or services as the value of the resource used in producing them in their best alternative since there are other alternative means of attaining these production goals. Production naturally is aimed at either maximizing output, maximizing profit, maximizing utility; minimizing cost or a combination of or all these. Importantly, there exists a close relationship between production and cost. According to (Ojiako, et al, 2018), the cost of production at a given time is dependent on the prices of the factor inputs, the quantity of output produced and the production period. Mathematically, it is as follows;
C = f (X, T, P, K) Where; Explicit; C = Total cost X = Quantity of output T = Technology P = Prices of the factor input K = Fixed factors

Also, the cost of production that accrues to a business or firm consists of both explicit and implicit costs. Explicit cost is the cost made by a resource or resources used in production, such as payments for raw materials, firm's payroll or payment for a firm's overhead cost. Conversely, the implicit cost is self-owned. It has to do with the firm's self-employed resources (Ibrahim, et al, 2014). There are two types of costs associated with production; Fixed cost (FC) and variable cost (VC). Fixed cost are costs that do not change as production is increased or decreased, e.g., rent, interest on loans, insurance, depreciation. The payment is in advance of production. They exist even if the output is zero. Variable cost, on the other hand, is a cost that varies with the level of output, e.g., direct labour, raw materials and components, packaging costs, heating and lighting to (Ojiako, et al, 2018).

Empirical Literature

Nosiru, et al (2012), in their study, Determinants of improved productivity of Okra (Abelmoschus esculentus) by farmers in lowland areas of Ogun state, Nigeria, using descriptive statistics and inferential statistics, observed that the mean age of respondents was 26.80 years, 78% of the respondents were male, mean year of okra production experience 13.60 years, mean farm size cultivated by the respondents was 1.22 acres, while the mean years of education 12.66 years.

Findings from their study showed that more than 70% of the respondents planted Okra on a small scale; the respondents had an average household size of 4.34 members. They also observed that the most significant socioeconomic characteristics include sex, household size and frequency of contacts with ADP officials. In the same vein they observed that the economic variables most significant in the course of the study were family labour, fertilizer, herbicides, and variety of seeds. Finally, they observed that farmers cultivating improved seeds were more productive than others cultivating local varieties.

Farinde et al, (2007), In their study, an overview of production, processing, marketing and utilization of Okra in Egbedore local government area of Osun state, Nigeria, using descriptive and inferential statistics, observed that the mean age of the respondents was 57.56 years; mean years of okra production experience was 16.91 years; mean farm cultivated by the respondents 1.5ha, they observed that all the respondents were married with 49% literate. They observed that the mean person`s day of family labour was 6.03 and that of hired labour was 1.25 person`s per month in three months. Findings from their study showed that majority of the respondents planted okra on a small scale destined by land tenure system and probably due to the problem of unavailability of storage, processing and preservation facilities. In the same vein, they observed that processing and preservation are carried out using traditional techniques of slicing, sun-drying, and grinding (using mortar and pestle).

Ume, et al (2018), in their study, Allocative efficiency in Okra production in Ayamelum local government area of Anambra state, Nigeria, using net farm income analysis and ordinary least square regression, observed okra production in the study area was profitable with positive net farm income of 482,100 naira. They observed that farmers did not achieve optimum allocative efficiency in the use of any resources such as fertilizer, seeds and pesticides. Findings from their study showed that the farmers in the study area were operating at increasing returns to scale

Osalusi et al (2019) in their study, Analysis of the profitability of Okra production among small holder okra farmers in Akinyele local government area of Oyo state, Nigeria, using frequency distribution, production function and budgetary analysis, observed that most of the respondents were male and were married. They observed that the major problems faced by the respondents in the study area were inadequate transport facilities, weather condition and high cost of input. In the same vein, they observed that the estimated cost and returns of Okra producers realized per Okra farmer per annum were 161,137 naira and 77,317.76naira respectively. Finally, they observed that Okra farming is lucrative in the study area with profitability index of 56.38 and a rate of return of 117.50% and operating cost ratio of 38.59%.

METHODOLOGY

Area of Study

The study was conducted in Ikwere Local Government Area (LGA), Rivers State Nigeria. Ikwere local government is in Rivers state,South-South geopolitical zone of Nigeria. The headquarters of the LGA are in the town of Isiokpo with the LGA comprising of several towns/communities such asOmagwa, Omudeme, Elele, Omuanwa, Apani, Ipo, Igwuruta, Ubima, Ozuaha and Aluu The estimated population of Ikwere LGA is put at 211,081 inhabitants with the majority of the area dwellers being members of the Ikwere ethnic affiliation. The Ikwere dialect of the Igbo language is commonly spoken in the LGA while Christianity is the most practiced religion in the area. A number of popular festivals are held in IkwereLGA and these include the new yam and the wrestling festivals.

Research Design

Survey research design was employed in this study where structured questionnaires will be used to generate data from the sample size for the purpose of the study.

Population of the Study

The populations of the study were all registered farmers from Ikwerre LGA. According to Rivers state ministry of agriculture (2018), there are 2989 okra registered farmers in Ikwerre LGA.

Sample and Sampling Technique

The simple size of this study is one hundred and forty-nine (149) registered Okra farmers drawn from the population of the study. This was determined using multi-stage method. (See sample procedure below)

Sampling Procedure and Sample Size

Multi-stage sampling was used in selecting the sample size of the study. In the first stage, all registered okra farmers will be selected. The next step is the obtaining of the list from the local government council office. Finally, a sampling proportion of 5% will be randomly selected.

Table 1. Summary of the Sampling Procedure for the Study Area

S/N	Name of Community	No. of Registered Farmers	5% of The Registered farmers
1	Omagwa	240	12
2	Omudeme	377	19
3	Elele	258	13
4	Omuanwa	355	18
5	Apani	448	22
6	Ipo	239	12
7	Igwuruta	268	13
8	Ubima	282	14
9	Ozuaha	257	13
10	Aluu	265	13
	Total	**2989**	**149**

Source: Researchers initiative, 2022

The simple random sampling technique was employed to collect the needed samples from the population of the study. The study made do of the Taro Yamane formula to determine the sample size.

Method of Data Collection

Respondent's information were collected using well-structured and designed questionnaire and interviews. The questionnaire was divided into sections to capture the specific objectives of the study.

Method of Data Analysis

Objective (i) was achieved using tabular presentation of frequency distribution, and percentages. Objective (ii), was analyzed using stochastic frontier production and stochastic frontier cost function model. Objective (iii) was achieved viz., 4-point Likert scale.

Model Specification

Gross Margin

GM= TR-TVC,

Where, GM= Gross margin TR= Total revenue TVC= Total variable cost Likert Scale Rating Technique

Likert scale rating technique was used particularly to identifying the problems associated with okra production in the study area. This was done on a four-point basis. The rating is presented in the following order:

Strongly agreed (SA) = 4, Agreed (A) = 3, Disagree (D) = 2, strongly disagree (SD) = 1. The mean scores of the respondents based on the 4-point scale will be 4 + 3 + 2 + 1 = 10, 10/4 = 2.50. Using the interval scale of 0.05, the upper limit cut-off point will be 2.50 + 0.05 = 2.55. The lower limit was 2.50 – 0.05 = 2.45. On this basis, any mean score (MS) below 2.45 (i.e. MS < 2.45) will be regarded as not important. Those between 2.45 and 2.55 will be considered as important (i.e. 2.45≥MS≤2.55). Mean score greater than 2.55 (MS>2.55) will be considered very important.

RESULTS AND DISCUSSION

The results of this research is represented using tables, charts, frequencies and percentages.

Socio-Economic Characteristics

Table 1 gives a summary of the results of the socio-economic characteristics of Okra farmers in Ikwerre Local Government Area of Rivers State**. (See appendix)**

Gender of Respondents: In table 1, it is indicated that majority of the respondents are females, representing 53.7% of the population and 46.3% of the population being males. From the result, it is indicated that both men and women are into Okra farming in the study area, although with a larger percentage being women. This results agrees with the findings of Ekunweet al (2018), Nwaobiala and Ogbonna (2014) who reported that a larger percentage of respondents in their study area were females.

Age of Respondents

In table 1, it is shown that the age of respondents spread through 16 to 65 years. It is indicated that 19 respondents are between ages 16-25 years with a

percentage of 12.8%, 43 respondents indicated that they are between 26-35 years which represents 28.9% of the population. 54 respondents were identified to be within the age range of 36-45 years, representing 36.2% of the population, 30 respondents were between 46-55 years comprising of 20.1% of the population while 3 respondents were within the age range of 56-65 years making 2.0% of the population. From the table, majority (36.2%) of the farmers fell within 36-45 years with 40 years being the mean age. This implies that majority of the farmers are in their active age and are likely to adopt new innovations faster than the older ones in Okra farming. This finding agrees with Ekunweet al(2018), Moyibetal. (2013), Gireiet al. (2014) and Onubuoguetal.(2014)that majority of farmers within the age range of 41 to 50 years are still in their active age, more receptive to innovation more technically efficient, effective and could survive the stress and strain associated with Okra farming.

Marital Status

Table 1 indicates that 40 respondents (representing 26.8%) indicated that they are single; 81 respondents representing (54.4%) indicated that they are married; 12 respondents (representing 8.1%) indicated that they are separated/divorced; while 16 respondents (representing 10.7%) indicated that they are widowed. The implication from the result revealed that over 50% of the respondents are married. This shows that Okra farming in the area is an enterprise of married individuals, who are seen to be responsible according to societal standards (Ohenet al., 2014 and Onumaduet al., 2014). This finding supports the result of Onubuogu and Onyeneke (2012), Esiobu and Onubuogu (2014) and Onubuoguet al. (2013) 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.

Ethnicity

Majority (72.5%) of the respondents are from the Ikwerre ethnic group, while other ethnic groups identified in the study area include Igbo (22.1%), Kalabari (0.7%), Ogoni (0.%), Ibibio (0.7%), Efik (2.7%), and Ed0 (0.7%). The implication of the result is that the study area is dominated by the Ikwerre ethnic group which is expected.

Educational Status

In table 1 32 respondents (representing 21.5 %) indicated that they had no formal education, 29 respondents representing (19.5%) indicated that they had Primary education; 50 respondents (representing 33.6%) indicated that they had secondary education; while 35 respondents representing (23.5%) indicated that they had tertiary education and 3 respondents representing 2.0% of the population indicated that they had other forms of education. This implies that majority (33.6%) of the farmers had secondary education. Furthermore, approximately 78.6% of the farmers had trainings in formal educational institutions which no doubt increases their literacy levels. It is expected that the higher level of education will contribute significantly to decision making of a farmer. Exposure to high level of education is an added advantage in terms of achieving huge yield/output, efficient marketing and sustainable Okra farming

(Esiobu et al., 2014). This finding supports Osalusiet al. (2019), Moyib et al. (2013); Girei et al. (2014) that higher level of education determines the quality of skills of farmers, their allocative abilities, efficiency and how well informed they are of the innovations and technologies around them. It also supports the result of Onubuogu and Onyeneke (2012) and Onumadu et al. (2014) that individuals with higher educational attainment are usually faster in adoption of improved farming technologies.

Mode of Farming

Table 1 indicates that 58 respondents, representing 38.9% are part time Okra farmers while 91 respondents, representing 61.1% are full time Okra farmers. From the result, it is evident that majority of the respondents are Okra farmers. This finding agrees with that of Ekunweet al. (2018).

Years of Experience

Result in Table 1 indicates that 30 respondents (representing 20.1%) had farming experience of 1-5years, 31 respondents (representing 20.8%) had farming experience of 6-10 years, 10 respondents (representing 6.7%) had farming experience of 11-15 years, 31 respondents (representing 20.8%) had farming experience of 16-20 years, while 47 respondents (representing 31.5%) had farming experience of above 20 years. From the result, it is evident that a greater percentage of the population have good experience in Okra farming. This finding supports Onubuoguet al., (2014) who reported that farmers with more experience would be more efficient, have better knowledge of climatic conditions, better knowledge of efficient allocation of resources and market situation and are thus, expected to run a more efficient and profitable enterprise. It also supports the findings of Onubuogu et al., (2013) and Esiobu et al., (2014) that previous experience in agribusiness management enables farmers to set realistic time and cost targets, allocate, combine and utilize resources efficiently and identify production constraints.

Total Land Area (ha.)

Table 1 also reveals that 3.4% of respondents had a total land area of less than 0.5 hectares, 18.8% had a total land area of 0.5 to less than 1.0 hectares, 37.6% had a total land area of 1.0 to less than 1.5 hectares which makes up majority of the population of respondents, 30.2% had a total land area of 1.5 to less than 2.0 hectares and 10.1% had a total land area of above 2.0 hectares. This implies that the farmers in the study area are mainly smallholder farmers operating on less than or equal to 1.5 hectares of farmland as seen in Ekumweet al. (2018). This could be as a result of land tenure system predominant in the area or due to the increasing population. Large farm size increases agricultural productivity and improves farmers' resource use efficiency.

Extension Agents' Visit

It is also revealed in table 1 that 91.9% of the respondents have never had extension agents visit their farm, 3.4% of the respondents' farms have been visited once, 2.7% of the respondents indicated that their farms were visited weekly, 1.3% of respondents indicated that their farms where visited fortnightly and 0.7% of respondents identified that their farms were visited yearly by extension agents. The implication of this finding is that extension work in the study area is very

poor. Hence, extension contacts which is a channel through which agricultural innovations and information are passed to farmers for improvement in their standard of living, production and productivity is missing. This could bring about low productivity and poor resources efficiency due to lack of innovative information (Onubuogu et al., 2013; Oladebo and Oyetunde, 2013; and Onumadu et al., 2014).

Stochastic Frontier Estimation of Production Function of Okra Farmers in Ikwerre Local Government Area of Rivers State

The result of the maximum likelihood estimate of the stochastic frontier function of Okra farmers in the study area is represented in the table 4.2 below.

Table 2. Stochastic Frontier Estimation of Production Function of Okra Farmers in Ikwerre Local Government Area of Rivers State

Variable	Parameters	Coefficient	t-ratio
Constant:	$\boldsymbol{\beta}_0$	0.8486	108.0018*
Farm labour	β_1	0.9434	13.9660*
Farm Size	β_2	0.2125	8.7855*
Okra seeds	β_3	0.9035	4.2637*
planted	β_4	0.1269	10.8794*
Capital			
Inefficiency	δ_0		10.9497*
Function	δ_1	0.7995	
Constant	δ_2		1.8265*
Age of	δ_3	0.2271	
farmers	δ_4		-10.9498*
Household		-0.4510	
size		0.4696	10.4797*
Farming	σ^2		
experience	γ	-0.1098	-1.7063*
Gender			
Diagnostic			
statistics		0.1276	
Sigma		0.9585	15.1573*
squared		136.3749	30.4869*
Gamma		24.9450	
Log			
likelihood			
function			
LR Test			

Source: Computation from Frontier 4.1(2022)
*Significant at 1%

The result revealed that the variance parameter estimates for sigma squared and gamma are 0.1276 and 0.9583 respectively. They are both significant at 1% level. The sigma squared indicates the goodness of fit and correctness of the distributional form assumed for the composite error term while the gamma indicates the systematic influences that are unexplained by the production function and the dominant sources of random errors. This implies that the inefficiency effects make significant contributions to the technical efficiencies of the Okra farmers in the study area. The estimated gamma parameter of 0.95 indicates that about 95 % of the variation in the value of farm output was due to differences in their technical efficiency.

The coefficients of the parameters of the production function estimated are positive except two. This means that the total farm output value increases by the value of each of the positive coefficients as the value of each variable increases by unity while the total farm output value decreases by the value of the negative coefficient, as the variable increases by unity. The result of the stochastic frontier production function model is discussed as follows;

Labour (β1)

The coefficient of labour was significant at 1% level and had a positive sign. The estimated coefficient of labour is 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. This is supported by several studies which confirmed the importance of labour in farming. Studies by Ndubueze-Ogaraku and Ekine (2015) and Onubuoguet al. (2014) have shown the importance of labour in farming, particularly in developing countries where mechanization is rare on small scale farms. It appears that labour will continue to play an important role in the farming of Okra in the study area, affecting its efficiency, until those factors constraining mechanization are removed. The magnitude of the coefficient of labour shows that total value of farm output is inelastic to the level of labourused. The implication of this is that the total value of farm output can be increased by employing more labour.

Farm Size (β2)

The 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 result is in line with the findings of Ndubueze-Ogaraku and Ekine (2015), Ochi et al, (2015) and Amodu et al. (2011). They all reported farm size to be significant and positive. The result could mean that it is possible to expand farming activity in the study area. Statistically, the magnitude of the coefficient of farm size show that total value of farm output is inelastic to land area cultivated.

Okra seeds planted (β3)

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 result agrees with the findings of Amodu et al. (2011) and Onubuoguet al. (2014).

Capital (β4)

The coefficient of capital as shown in table 2 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. The findings follows that of Eze et al., (2012); Girei et al, (2013); Ogunbameru and Okeowo (2013); Onumadu et al., (2014).

Profitability Analysis of Okra farmers

The profitability and gross margin analysis of Okra farming is presented in table 2 From the table, costs were dominated by variable costs which include; cost of labour, okra seeds planted, fertilizer, land preparation, agro chemicals (pesticides) and other costs incurred during production. The average prevailing market prices of Okra harvested were used to derive the gross farm revenue or the total value of production.

The profitability analysis of Okra production in the study area is showed N2, 989,870 as the gross margin. The rate of return of 1.35k implies that for every N1 invested 35k was gained by the respondents. This implies that Okra farming is profitable and can be said to be a worthwhile venture in the study area.

Tabel 3. Profitability Analysis of Okra farmers in the Study Area

Gross Margin Analysis (Items)	Cost (Naira)
Variable Cost	
Cost of labour	6,830,500
Cost of okra seeds planted	208,330
Cost of fertilizer	153,500
Cost of land clearing	768,000
Cost of weeding	540,800
Cost of agrochemicals(pesticides)	21,000
Cost of storage	8000
Cost of hoes, cutlasses, etc	248,300
Total Variable Cost(TVC)	**8,530,130**
Revenue	
Total output	7,680
Selling price of harvested Okra/bag	1,500
Total Revenue(TR)	**11,520,000**
Gross Margin (TR-TVC)	**2,989,870**
Rate of Return=TR/TVC	**1.35**
Note: 1bag of harvested Okra=5kg	

Source: Author's Computation, 2022

Testing Hypothesis

The regression results of the tested hypothesis is presented in the Table 4.6 below. Multiple linear regression analysis was employed in testing the hypothesis using Statistical Package for Social Science (SPSS), version 16. The tested hypothesis is given thus;

HO: Socio-economic characteristics of respondents do not significantly influence the output of Okra farmers in the study area.

Table 4. Relationship between Socio-economic Characteristics and Output of Okra Farmers

Variables	Coefficients	Std. Error	t-statistics	Sig.
Constant	-592670.945	227568.978	-2.604*	0.010
Gender	-84652.630	52658.348	-1.608^{NS}	0.110
Age	8589.804	3294.341	2.607*	0.010
Educational s	129547.135	25578.194	5.065*	0.000
Marital statu:	55324.065	39011.553	1.418^{NS}	0.159
Ethnicity	-73667.537	28658.696	-2.571*	0.011
Household si	13423.054	23599.466	0.569^{NS}	0.571
Total land ar	99111.259	26626.927	3.722*	0.000
Mode of Farr	210848.862	59273.335	3.557*	0.001
Years of	26339.254	18557.006	1.419^{NS}	0.158
experience	-89846.860	37281.419	-2.410*	0.017
Extension ag	0.745			
visit				
R-squared				
Adjusted R-squared	0.687			
F-Statistics	10.262			
F- Probability	0.000			

Source: Computed from SPSS, 2022

Note: * significant at 5% and NS- Not Significant

Results from table 4.6 showed that age, educational status, ethnicity, total land area and extension agents' visit are significant at 5% level; gender, marital status, household size and years of experience are not significant at 5% level. The R-squared value of 0.745 explains the goodness of fit and the level of variability in Okra output that is explained by the explanatory variables. The results as stated above confirm that there is a significant relationship between the socio-economic characteristics and Okra output in the study area. Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Constraints (Problems) of Okra farmers in Ikwerre Local Government Area

The results of the constraints faced by Okra farmers in the study area are shown in table 4.5. The mean value is used as a yardstick for determining which constraints are the most serious of the others stated.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the findings, it is therefore safe to conclude that Okra farming is profitable in Ikwerre Local Government Area of Rivers State. Furthermore, amongst other constraints, the recent activities of herdsmen and Cattle poses a major setback in the farming of Okra in the study area. It was concluded that the respondents` socioeconomic characteristics had significant influence on the output of Okra farming thus influencing the farmers' resource efficiency.

Recommendations

Based on the findings, the following recommendations are made;

The nutrient level in the soil should be maintained through better farm management practices such as, shifting cultivation, mulching, cover cropping, mixed farming and controlling erosion to avoid washing away the soil nutrients.

Education was revealed to significantly affect the productivity of Okra farmers. Thus, farmers should be encouraged to acquire higher educational qualifications. Education enhances the adoption and appreciation of improved technologies needed for better resource use.

The government should endeavor to meet the financial needs of farmers so that they can easily afford inputs to improve their production.

FURTHER STUDY

Since this study was specifically carried among Okra farmers, other researchers could extent their researchers to the influence of socio-economic characteristics on the productivity of other prominent crops grown in the Niger Delta, Nigeria

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