

Research Article

Economic Analysis of Rice Production in Nkanu East Local Government Area of Enugu State, Nigeria.

Mgbakor, M.N.

Department of Agric. Economics and Extension, ESUT, Nigeria.

Miriam.mgbakor@esut.edu.ng

ABSTRACT

The main objective of the study is to analyze Economics of rice production in Nkanu East Local Government Area of Enugu State, Nigeria. The specific objectives of the study were to determine the socio-economic characteristics of rice producers in the study area, to determine the types of rice grown in the study area, to determine the profitability of rice production, and to determine the factors affecting rice production. The study was carried out through survey research design. A total of 90 respondents were randomly selected and 15 questionnaires were administered to six (6) communities in Nkanu East Local Government Area of Enugu State where rice is farmed. Analytical tool adopted for the study include; Descriptive statistics, Gross margin analysis and likert scale. The result of analysis showed that majority (53.33%) of the farmers in the study area was males. The age of the respondents between 41-50 years with 34.44%. Majority 72.22% of the respondent were married, the result of educational level shows that majority 55.55% had primary education while the least of respondent 4.44% has tertiary education. The study further indicates that most (58.9%) of the respondent had years of experience more than 11 years and the least (16.7%) of the respondent ranging between 1-5 years. Also, majority of the rice farmed in the study area was lowland rice with the percentage 63.33%. The research work also indicated that business of rice production in the study area was highly profitable with a BCR of 4.4. The result stated that eight major constraints faced by rice farmers are inadequate land, poor extension service, herdsmen conflict, insufficient funds, high cost of transportation, high cost of labour, cost of farm inputs and pest and diseases. Based on this study, some recommendations were made such as: farmers are encouraged to or form cooperatives to facilitate their access to credit facilities from government, financial institutions and non-governmental organizations. Farmers are also encouraged to plan at the appropriate time to limit losses due to pest.

KEYWORDS: Crop, Farmers, Nkanu East, Production, Rice

I. INTRODUCTION

In Nigeria like other West Africa countries, a lot of policy measures and programmes have been adopted since independence aimed mainly at elevating agriculture from its pitiable position of subsistence level to market-oriented level. Some of these policy measures and programmes include: The National Accelerated Food Production Project (NAFPP) NAFPP was established in 1973 aimed at accelerating the production of major staple crops. The programme which has three components; research, extension and agro-services used improved practices in place of traditional ones. It also provided facilities like credit, marketing, storage and processing facilities to farmers [1]. The River Basin Development Authorities (RBDA): The Federal Government in 1976 established eleven River Basin Development authorities under Decree No. 25. The RBDAS were aimed at development of land and water resources for general development of agriculture in Nigeria [2] Operation Feed the Nation (OFN); OFN was launched in 1976 by the Obasanjo Military Administration. It was aimed at mobilizing Nigerians to take active part in growing their own food which will lead to increase in food production in the country thereby leading to self-sufficiency in food production. OFN tried to encourage Nigerians irrespective of their occupation is to take part in farming no matter the size of the farm. Land Use Decree: The land use decree was promulgated in 1978 and incorporated into 1979 constitution [3] The decree was aimed at reforming the Land Tenure System which had constituted a

bottleneck to large scale farming in Nigeria. The decree gave a boost to agriculture by making land readily for large scale agricultural activities. In the decree, all land was vested in the hands of State Government that held them in trust for the federal government. The commodity Boards in 1977, the federal government established seven commodity boards under decree No. 29 in official gazette of 1977. The seven marketing boards replaced the dissolved regional boards. The seven boards took care of cocoa, rubber, cotton, groundnut, grains (for cereals) root crops (for cassava, yam and cocoa yam) and palm produce (palm oil and palm kernel). The seven boards were established mainly to encourage the increase in production and marketing of the various commodities, conduct research into production and encourage the processing of the commodities assigned to the various boards. Green Revolution: The civilian second republic or Shagari's administration in an effort to curb shortage of food in the country and increase food production launched green revolution in 1980. The program mainly aimed at boosting increase in 1980. The government mainly aimed at boosting increase in agricultural production in order to meet the food need of the country and reduce the drain in the country's foreign reserves through food importation. Credit Availability: The recognition of the role of credit facility to agricultural development prompted government to establish the Nigerian Agriculture Development Bank with its headquarters in Kaduna. The bank gives loans directly to individual farmers, organizations and established institutions. Acquisition and proper utilization of credit by farmers for any agricultural purpose promotes productivity and enhances profit [4]. Other credits are made available for agricultural development by commercial bank credit guidance directives and Federal Government Agriculture Credit Guarantee Scheme. Government expenditure: In a bid to avoid fund hampering increase in production of agriculture, the various governments in Nigeria have spent fortunes in the area of agricultural sector. Considerable priority was given to agriculture in all development plans launched in Nigeria. For instance, about N1, 646 million was planned expenditure on agriculture in the Third Development Plan of 1975-1980. Since most credit is being provided by financial institutions, it will be important to know the meaning of financial institution.

II. METHODOLOGY

2.1 The study area

Nkanu east is a local government area of Enugu state, located in Nigeria. It has the total area of 795km² and a total population of 148.774 according to 2006 census.

Nkanu East is a Local Government Area of Enugu State, Nigeria, bordering Ebonyi State to the east. Its headquarter is located in the town of Amagunze. Communities in Nkanu East Local Government Area include Akpawfu, Ugbakwa, Nkerefi, Mburubu, Nomeh Unateze, Nara Unateze, Owo, Ubahu, Amaechi Idodo, Ama Nkanu, Oruku, Amagunze, Umuode and Ihuokpara. Ihuokpara, as one of the most prominent towns in Nkanu-East has an ancient history that cannot be ignored when Nkanu and widely, Enugu State is discussed.

Nomeh is known for its agricultural produce, especially rice, yam, cassava, etc and various vegetables. A river, known as nvuna snaked through all the villages Nomeh, providing drinking water as well as aquatic environment that supports an all year round farming through irrigation.

Nkerefi borders the council area with Ohazara community of Ebonyi state. The community claims to be the largest community by land mass in the council area. They are prominent with rice and cassava farming.

According to Honorable Nnaji , "in the whole south east, you have two main popular brands rice, Abakaliki rice and Ugbawka rice. Ugbawka rice is often referred to as Uncle Ben's rice because of its quality"

2.2 Sampling technique

In carrying out this research multistage sampling technique was used. Both purposive and random sampling techniques were employed to ensure a good spread of respondents for the study.

In the first stage of the sampling procedure, within the fourteen communities as listed earlier, six communities were purposively selected from the local government area. This was done so that only communities that produce rice will be covered. The communities included Nkerefi, Ugbawka, Mburubu, Nomeh, Unateze, and Ihuokpara.

The second stage was the selection of respondents (rice farmers) with random sampling technique from the selected communities. Fifteen farmers were randomly selected from each of the six communities in the local government area. This gave a total of ninety respondents (farmers).

2.3 Data collection

Data for this study was collected from primary sources of data with the use of well-structured questionnaire shared to the rice farmers in the study area. Direct observation and interviews were also used to compliment the questionnaire to ensure authentic and reliable information. The primary sources of data were supported with secondary source of information such as journals, bulletins, textbooks, and other published materials which were of relevance to the research.

2.4 Data Analysis

Data for this study was analysed in order to achieve the specific objectives. Objectives (i), (ii) was realized using descriptive statistics such as frequencies, mean, percentage, tables etc to analyze the data. Objective (iii) was realized using Gross Margin Analysis, objective (iv) was realized using 4-point-Likert scale to analyze the data.

Where:

S.A= Strongly Agree (4)

A= Agree (3)

D= Disagree (2)

SD= Strongly Disagree (1)

$4+3+2+1= 10/4 =2.5$

GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Cost

TC = Total Cost

TFC = Total Fixed Cost

NI = Net Income

$GM = TR - TVC$

$TC = TVC + TFC$

$NI = TR - (TVC + TFC)$

BCR= Benefit Cost Ratio

$BCR= TR/TC$

III. RESULTS

3.1: Socio-Economic characteristics of the respondents.

The socio-economic characteristics of the respondents that were examined in this sub-section include; age, sex, marital status, educational qualification, occupation, household size and years of experience.

3.1.1 Age Distribution of Respondents

The ages of the respondents of both male and female producers who participated in this survey were determined by

categorizing them into six groups according to their age brackets. The age distribution of respondents is shown in table 3.1 below.

Table 3.1: Distribution of Respondent according to Age

Age (years)	Frequency	Percentage (%)	Mean
<20	0	0	
21-30	5	5.55	
31-40	15	16.66	54.62
41-50	31	34.44	
51-60	20	22.22	
>61	19	21.11	
Total	90	100.0	

Source: Field survey, 2022

3.1.2 Sex Distribution of Respondents

The respondents, both male and female in rice production in the survey area were categorized where they belong. Details are shown in table 3.2 below.

Table 3.2. Distribution of rice according producers to sex

Sex	Frequency	Percentage (%)
Male	48	53.33
Female	42	46.67
Total	90	100.0

Source: Field survey, 2022.

3.1.3 Marital status of the respondents

Marital status was determined in the study by asking the respondents to indicate which of the categories they belong and the frequency distribution is as shown in Table 3.3below.

Table 3.3 Distribution of rice producers according to marital status

Marital Status	Frequency	Percentage (%)
Single	20	22.22
Married	65	72.22
Widowed	5	5.55
Divorced	0	0
Total	90	100.0

Source: Field survey, 2022

3.1.4 Educational qualification of Respondents

Formal or non-formal system of education designed to educate youths and adults in various subjects of learning were investigated in the study. In this study the level of education was measured by asking the respondents to indicate the levels they attained and the result of the survey is presented in Table 3.4 below.

Table 3.4: Distribution of the farmers according to educational qualification.

Level of Education Attained	Frequency	Percentage (%)
No formal education	21	23.33
Primary education	50	55.55
Secondary education	15	16.67
Tertiary education	4	4.44
Total	90	100.0

Source: Field survey, 2022

3.1.5 Household size of the Respondents

A household is defined in English dictionary as people who live together in a single home. This section describes the distribution of respondents according to household size as shown below in Table 3.5

Table 3.5: Distribution of the rice producers according to household size

Size of Household	Frequency	Percent(%)	Mean
≤5	7	7.78	
6-11	63	70	9.4
≥12	20	22.22	
Total	90	100.0	

Source: Field survey, 2022

3.1.6 Years of experience of Respondents

Experience is an increased knowledge or skill gained through being actively involved in an enterprise over a period of time. It is this wealth of knowledge and skills acquired by the rice farmers in repeated number of years in an enterprise that is called farm enterprise experience. The production experience of the rice producers is shown in Table 3.6 below

Table 3.6: Distribution of respondents according to rice farm enterprise experience

Farm Enterprise Experience (years)	Frequency	Percentage (%)	Mean
1-5	15	16.7	11.02
6-10	22	24.4	
≥11	53	58.9	
Total	90	100.0	

Source: Field survey, 2022

3.2. Type of rice grown in the study area is shown in Table 3.7 below.

Table 3.7: Distribution of respondents according to type of rice used on the farm.

Types of rice varieties	Frequency	Percentage (%)
Upland	9	10
Lowland	57	63.33
Upland and Lowland	24	26.66
Total	90	100

Source: Field survey 2022.

3.3 Analysis of farm profitability

- I. Variable cost includes; labour cost, fertilizer cost, pesticide cost, herbicide cost and transportation cost. In addition to the variable cost is the cost incurred for the land leased by farmers.
- II. Total fixed cost consists of: cost of cutlass, hoe, wheel barrow, Labour cost: this includes land preparation, planting, weeding and harvesting.
- III. The quantity of fertilizer mostly used for urea is 5 bags while for NPK is 6 bags.
- IV. 6 bags of 50kg seed was used. The average variable cost out lay for rice production is shown in Table 3.8 below.

Table 3.8 Enterprise budget of variable costs for rice production

Farm operations	Unit	Qty	Cost (₦)	Total Cost (₦)	%
Variable cost items					
NPK	50kg.bag	6	13,000	78,000	31.4
Urea	50kg.bag	5	11,000	55,000	22.2
Harvesting	Man\day\h.l	10	3,000	30,000	12.1
Herbicide	Litre	24	1,000	24,000	9.7
Seed	Kg	600	27	16,200	6.5
Annual land rent	Ha	1	15,000	15,000	6.1
Land preparation	Man\day\h.l	5	2,000	10,000	4.0
Manual weeding	Man\day\h.l	10	1,000	10,000	4.0
Planting	Man\day\h.l	5	1,000	5,000	2.0
Herbicide appl.	Man\day\h.l	2	1,000	2,000	0.8
Transport	trips	1	1,500	1,500	0.6
Inorganic fertilizer appl.	Man\day\h.l	1	1,000	1,000	0.4
Total variable cost				247,700	100.0

Source: Field survey, 2022

Key: Qty= Quantity, h.l= hired labour, ₦= Nigerian currency (Naira), ha= hectare, %= percentage and appl.= application
The average fix cost of rice production in the study area is shown in Table .3.9 below.

Table 3.9: Average Fixed cost

Item (₦)	Unit cost(₦)	Qty	Total cost(₦)	Useful life	Depreciation(₦)
Hoe	12,000	2	24,000	8	3,000
Cutlass	7,000	2	14,000	5	2,800
Wheel barrow	25,000	1	25,000	10	2,500
Sickle	800	5	4000	5	800
Total					9,100

Source: Field survey 2022.

Table 3.10: Average Revenue

Item	unit output	Total output (kg)	Unit price(₦)	Total price(₦)
Rice	1 bushel (20kg)	2000	550	1,100,000

Source: Field Survey 2022.

Key, Qty= quantity, rev= Revenue kg=Kilogram

Revenue Estimation model:

$$TR = TP \times P$$

Where:

TR= Total Revenue in Naira (₦) Terms.

TP= Total output per a hectare of rice farm in Kg

P= unit price

1kg of rice = ₦550

Total output of rice= 2000kg

Therefore TR= 2000×550 = ₦1,100,000

$$GM = TR - TVC$$

Where:

GM= Gross margin

TVC = Total Variable Cost= ₦247,700

TR= ₦1,100,000

GM = ₦1,100,000 – ₦247,700

GM = ₦852,300

Net profit (NP) = Total Revenue – Total Cost

Total Cost (TC) = (TFC +TVC)

Where TFC= total fixed cost = ₦9,100

TC = ₦9,100 + ₦247,000

= ₦256,800

(NP) = ₦1,100,000 - ₦256,800

NP = ₦843,200

Profit margin (%) = NP/TR

Pm = ₦843,200/1,100,000

Pm=0.77%

Operating expense ratio (%) = TVC/TR

= 247,700/1,100,000

= 0.23%

Benefit Cost Ratio (BCR) = TR/TC

B.C.R = 1,100,000/247,700

= 4.4

An investment is profitable if the BCR is greater than 1

Gross ratio= TC/TR

= 256,800/1,100,000

=0.23%

Rate of return = NP/TC

= 843,200/256,800

=3.6

Rice production is profitable in the study area with gross margin (₦852,300) and benefit cost ratio of 4.4. Net Profit of (₦843,200). It should be encouraged and practiced more.

3.4 Constraints to Rice production in the study Area

Data on the constraints facing the rice farmers were obtained using 4-point rating scale that was structured into response options of : Strongly agree = (SA), Agree =(A), Disagree = (D) and Strongly Disagree = (SD) with corresponding values of 4, 3,2 and 1 respectively. The Cut-off point value was 2.50 was used for decision rule

Table 3.11: Mean Ratings of Farmers on constraints to Rice Production in the Study Area.

Constraints	SA	A	D	SD	Total Score	Mean Score	Decision Rule
	4	3	2	1			
1.Lack of Storagefacilities	10	16	25	39	177	1.97	Reject
2.High Transportation cost	50	20	15	5	295	3.28	Accept
3.Poor seed	-	-	27	63	117	1.3	Reject
4.Poor Extension Service	35	30	19	6	274	3.04	Accept
5.Inadequate land	7	40	33	10	283	3.14	Accept
6.High cost of labour	43	27	9	11	284	3.15	Accept
7.Cost of farm inputs	73	17	-	-	384	4.27	Accept
8.Lackof agrochemical and Fertilizers	5	18	22	45	163	1.81	Reject
9.Weather	8	11	14	57	150	1.67	Reject
10.Pest and diseases	60	25	-	5	320	3.56	Accept
11.Herdsman	40	12	18	20	252	2.8	Accept
12.Insufficientincome	70	20	-	-	340	3.78	Accept

Source: Field Survey 2022

IV. DISCUSSIONS

Table 3.1, shows that 34.44%, 22.22% and 21.11% of the farmers are within the age brackets of 41-50 years, 51-60 years and above 60 years respectively. This indicates low involvement of youths in rice production. This finding agrees with [5] and [6] assertion that most youths in Nigeria have left agriculture in favour of employment in non-agrarian sectors. From the table also, it can be deduced that 16.6%, 5.55% and 0% were within the age brackets of 31-40 years, 21-30 years and less than 20 years respectively. This indicates that the young and feeble do not participate prominently in rice production. According to [7] most of the very young are involved in academics and are not prominently in agricultural production. The mean age of the respondents was 55 years and this indicates that majority of the producers in Nkanu East Local Government Area fall within the productive ages. Farmers in their productive ages have the tendency to be very active in the enterprise's operation and more geared towards imbibing new innovation which in turn facilitates their adoption of new technology being a positive factor in agricultural production.

The table (3.2) shows that the majority of farmers are male of about 53.33% while 46.67% are females. This showed that men are more involved in rice production than women, simply because it is labour intensive and are mostly cultivated for selling purposes and consumption.

Table 3.3 indicates that majority of the rice farmers (72.22%) were married with 22.22%, 5.55% and 0% of them being single, widowed and divorced respectively. The added responsibility of marriage could be the reason to venture into rice production for household survival.

Table 3.4 shows that a greater percentage of the farmers have primary education as their highest educational attainment with about 55.55%, 23.33% with no formal education, 16.67% with secondary school leaving certificate and 4.44% with tertiary education. This means that majority of the rice producers in Nkanu East Local Government Area are literate. According to [8] and [9] education raises human capital and significantly increases a farmer's ability to make correct and meaningful choices for farm operations.

The household size from Table 3.5 shows that the household of 6-11 persons is the highest with 70%, the household of above 11 persons with 22.22% and the household of less than 5 persons 7.78% with a mean of 9 which implies that the number of household is important because it provides cheap and available labour for rice production.

Table 3.6 shows that 53% of the respondents have been rice farmers for more than 11 years while 24.4% of them have between 6-11 years of experience in rice production and 16.7% have been rice farmers between 1-5 years. The Table also shows that the mean years of experience in rice production is 11 years. This indicates that respondents were well versed in the enterprise and are likely to adopt new technologies if opportunity comes.

Table 3.7 indicates majority of the farmers use lowland variety with 63.33%, farmers using upland and lowland varieties on their farm with 26.66%, and those farmers using upland rice variety with 10%. This explains that most of the farmers cultivate lowland rice varieties which are as a result of the seed available and the soil type dominant in the region.

In table 4.8, total variable cost in this enterprise is ₦247,200. The highest cost (31.4%), was recorded for NPK, also 22.2% was for urea and 12.1% for harvesting. The analysis of other variable cost for herbicide, seed, annual land rent, land preparation, manual weeding, planting, herbicide application and transport had percentage cost share of 9.7%, 6.5%, 6.1%, 4.0%, 4.0%, 2.0%, 0.8%, and 0.6% respectively. The least (0.4%) cost was recorded for inorganic fertilizer application.

The result of the mean ratings of the responses of the rice farmers on the constraints of rice production in the study area showed 8 out of the 12 constraining items in Table 3.11 had mean values that ranged between 3.04 to 4.27 which are greater than the cut-off point value of 2.50 on 4-point rating scale. This indicated that the farmers agreed that the 8 identified items in the table are constraints to rice production in the study area. The constraints items with their respective mean values include: poor extension service (3.04), inadequate land (3.14), Cost of farm inputs (4.27), Pest and diseases (3.56), Insufficient funds (3.78), High transportation cost (3.28), herdsmen (2.8) and High cost of labour (3.15).

The findings of this study are in line with the report of [10] which identified the challenges of farmers to include: financial resource constraints and cost among others. On the other hand, the mean ratings on the remaining 4 constraint items in Table 3.11 ranged from 1.30 to 2.13 which are less than the cut-off point value of 2.50 on 4-point rating scale. This implied that the

rice farmers disagree with the 5 items as part of the constraints facing rice farmers in the study area. The 5 items and their corresponding mean values include: lack of storage facilities (1.97), poor seed (1.30), Lack of agrochemicals and fertilizer (1.81) and Weather (1.67).

Based on this finding, it was found that high transportation cost, poor extension service, inadequate land, high cost of labour, cost of farm inputs, pest and diseases and insufficient income among others constitute the major challenges facing rice farmers in Nkanu East Local Government Area of Enugu State.

V. CONCLUSION

There is growing empirical evidence to support the positive effects of financial inclusion on both household health and macroeconomic factors. Financial inclusion plays a role in the sustainable development of the rural environment in this sense, claims that access to financial credit enables poor rural smallholder farmers to invest in new areas of economic activity, increase their capital sources and address the challenges they face in the process. It has been reported that the majority of poor farming households who are impoverished should cultivate the habit of saving, receive loans for development, and transfer cash to improve their standard of living. Nonetheless, credit restrictions impact farm production through adverse effects on farm performance and expenditure by smallholders. Many smallholder farmers prefer to fund themselves, but since most of them are financially poor, it has never been simple to self-finance the required agricultural inputs; hence, the difference between inputs and planned agricultural output remains. Money lets farmers buy vital inputs to ensure improved agricultural output, which in turn helps households fight poverty.

Therefore, credit limits have strong implications for the battle against deprivation by families, as well as for the rate and distribution of income in a particular country's overall economy.

VI. RECOMMENDATION

Following the findings of this study, it is recommended that more government efforts should be involved in supporting commercial banks and other financial institutions in terms of funds to be extended to farmers to support their agricultural activities. In addition, the government should also establish a special fund which can be loaned to farmers at very low interest rates with absence of price and non-price barriers to farmers. This could serve for those who don't have qualifications such as collateral to secure loans. Credit facilities should be client-oriented and not product oriented. Proper and extensive monitoring activities should be provided for clients who are granted loans. Farmers should also be trained extensively on how to manage loans in order to be able to repay back the loans.

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