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PROFITABILITY ANALYSIS OF OFADA RICE PRODUCTION IN OGUN STATE, NIGERIA

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ABSTRACT

The paper undertook an economic analysis of Ofada rice production in five prominent rice growing areas of Ogun State. A two stage purposive sampling technique was employed to select a total of 120 rice farmers from five local government areas which are major areas known for Ofada rice production in the state. Primary data were collected for the study through structured questionnaire and Focus Group Discussion (FGD) among rice farmers groups in the study area. Analytical tools adopted for the study included frequency, percentages, gross margin analysis and profitability ratios. Results of the analysis showed that majority of Ofada rice producers in the study area are male (73.33%). In terms of age, more than half of the respondents fell within the age range of 41 -50 years (63.33%) these farmers were young and within their active productive lives. Results of the distribution of respondents by annual income in the study area revealed that majority of the respondents (60.83%) obtained an income of between ₦201,000 and ₦400,000.00 per hectare. However, 22.50% of the respondents obtained an income of less than ₦200,000.00 per hectare. The gross ratio, operating ratio, return per naira invested and profitability index were calculated to be 0.95, 0.80, 1.90 and 1.80 respectively. The gross margin of rice production per hectare was also estimated to be ₦222,020.00. All these indicate overall profitability of the enterprise. However, an average low yield of 2.5 tonnes per hectare was recorded due to constraints encountered during production. Some of the identified constraints in the study area are lack of capital (25.83%), lack of tractor for land clearing (10.83%), lack of good farm roads (16.67%), and inadequate processing and storage facilities (11.67%). It is then recommended that access to adequate capital, mechanical equipment and other incentives through farmers' cooperatives and government aid for construction of farm roads could help increase rice production in the area and this will in turn help Nigeria to achieve a much desired self-sufficiency in rice production.

Keywords: Budgetary technique, Nigeria, Ofada rice, Ogun State, production, profitability ratio.

INTRODUCTION

Rice is the most consumed staple by Nigeria's over 200,921,797 million people across the states and geopolitical zones (Terwase and Madu, 2014; World Population Review, 2019). It is a unique crop grown virtually all over the country, because it requires a wide range of temperatures between 20 and 38°C during growth and a long period of sunshine. The prevalent types of rice production systems in Nigeria are the rainfed upland, rainfed lowland and irrigated lowland systems (Singh *et al.,* 1997).

Demand for rice has grown significantly over the last 40 years in Nigeria at a much faster rate than in any other African country (Sahel Newsletter, 2015). According to Osagie

(2014) there is lopsidedness in the level of rice production in Nigeria as compared to it's demand. This is because the Nigerian population growth rate is increasing at a faster rate than food production thus leaving the country in a situation of food insecurity. Due to this shortfall, Nigeria currently spends about a billion naira daily in importing rice, a development which agricultural production experts say is helping to put farmers to work in countries such as United States of America, India and Thailand where Nigeria mostly imports rice; while putting farmers out of work in Nigeria (Akpokoje and Ogundele, 2003). Falola *et al.,* (2012) has also noted that a very grave consequence of this excessive importation is the huge drains on the country's foreign exchange earnings over time. This shift from a self sufficient nation to an importing nation also made rice to become a strategic commodity in the Nigerian economy.

To solve this eminent problem, the Nigerian government recently came up with a policy decision to ban importation of polished rice completely by 2015 so as to encourage local investors. Due to this development, there is now a considerable political interest in increasing the production and consumption of local rice in Nigeria (Frederic *et al.,* 2003). Estimates are that the demand for rice in Nigeria will increase to 35 million tonnes by 2050, and to be able to meet this demand, rice production in Nigeria must be developed by boosting local production.

Ofada rice is a name for a heritage variety of local rice grown in south-west Nigeria (Gyimah – Brempong *et al*., 2016). It is grown almost exclusively in Ogun State, a state in South-West Nigeria and named after a town known as Ofada in Ogun State. The town is known for its Agricultural potentials mostly in the cultivation of rice on its vast arable land. Ofada rice types are mostly blends, and are not indigenous to Africa. They contain *Oryza glaberrima* (African rice) as well as the more common *Oryza sativa* Asian rice, and may be categorized as either brown/red Ofada or white Ofada on the basis of unmilled seed colour, grain size, shape, and shade (PropCom series, 2007).

A lot of potentials exist in Ofada rice cultivation and processing for local consumption and exportation. According to a recent report, very massive potentials exist in exporting Ofada rice to the UK and USA. This is so because there are about 340,000 Nigerians living in the UK and having a potential demand of over 120 tonnes of Ofada rice annually. The market in the US seems even to have more potentials of growth than the UK market as there are about 2 million Nigerians living in the United States of America. Ofada rice can be packaged and sold to this population in 1 kg or 2 kg bags like the old Uncle Bens rice (Premium Times, 2019). Currently, Nigeria is making efforts through the presidential rice initiative to improve local rice production in Nigeria by encouraging commercial large scale rice farmers.

Nigeria plans to raise production of local rice to 300,000 metric tonnes a year. This will reduce importation by 15 per cent and cut costs by 342 million naira a year (Vanguard Newspaper, 2016). This is a welcome development as agricultural production in Nigeria is still in the hands of small scale, peasant farmers who are presently faced with limitations in expanding production and other difficulties due to lack of technical know how. This study then aims at examining the profitability of Ofada rice production in the study area by assessing the cost and returns of its production and identifying constraints mili-

tating against the production of this valuable crop so as to proffer recommendations for increase in its production.

METHODOLOGY

The study was carried out in Ogun State, Nigeria. The State is one of the south western states in the country. It's bounded in the south by Lagos State and bounded in the north by Oyo Sate. The study was based on primary data collected from 120 Ofada rice farmers drawn from a two stage purposive sampling technique from five prominent Ofada rice growing communities from five local government areas in Ogun State. The primary data were sourced through focus group interviews from one rice production farmers group in each community with the aid of structured interview schedule. The selected communities are Eggua from Yewa North local government area, Imewuro Community from Ijebu North East local government area, Ifo community from Ifo local government area, Araromi imobi from Ijebu East local government area and Mokoloki community from Obafemi Owode local government area.

Apart from Ofada rice, other major food crops grown in the area include; cassava, cocoyam, plantain, maize and vegetables.

Sampling Technique

A two stage purposive sampling technique was used to select the respondents for the study.

Stage 1: The first stage of the levels was to purposively sample five local government areas which are prominent rice growing areas of Ogun State. They are Yewa North, Ijebu North East, Ifo, Ijebu East and Obafemi Owode Local government areas.

Stage 2: At the second Stage, 5 autonomous rice growing communities were purposively sampled, one from each Local Government Area. Finally, information about 24 rice growing farmers per community was obtained from farmer's groups in form of focus group interviews in each community. This made a total of 120 respondents used for the study.

Methods of Data Analysis

Generally, descriptive statistics such as mean, frequency distribution and percentages were used to describe the socio-economic characteristics of the respondents. Cost and return analysis was carried out to assess the profitability of rice production by the respondents. This includes determination of gross margin, gross ratio, operating ratio, profitability index and return on capital invested by the respondents.

Profitability Analysis

1. Gross margin analysis

Gross margin is the difference between the total revenue, (TR) and the Total Variable Cost (TVC). It is a useful planning tool in situations where fixed capital is just a negligible portion of the farming enterprises.

GM = TR – TVC

Where GM = Gross Margin,
TR = Total Revenue (gross value of output),
TVC = Total Variable Cost.

2. Gross Ratio

Gross Ratio is a profitability ratio that measures the overall success of the farm. The lower the ratio, the higher the return per naira invested.

$$GR = \frac{TFE}{GI}$$

Where GR = Gross Ratio, TFE = Total Farm Expenses and GI = Gross Income

3. Operating Ratio

Operating Ratio is directly related to the farm variable input usage. The lower the ratio the higher the profitability of the farm business.

$$OR = \frac{TOC}{GI}$$

Where OR = Operating Ratio, TOC = Total Operating Cost and GI = Gross Income

4. Rate of return on Investment

$$\mathbf{RRI = \frac{NFI}{TC}}$$

The greater the RRI the better the investment. NFI (Total revenue) must be greater than cost of production for investment to be worthwhile.

5. Profitability Index

$$PI = \frac{NFI}{GI}$$

PI (profitability index) indicates the level of return per naira gross income or gross margin. For a farm to be profitable based on this measure, the PI should be greater than zero (PI>0). If PI=0, then farm has breakeven and negative PI implies that the farm is operating at loss.

RESULTS AND DISCUSSION

Results of the socio- economic characteristics of the respondents in Table 1 revealed that majority of the Ofada rice producers in the study area are male (73.33%). In terms of age, about 63.33% of the respondents were within the age range of 41 – 50 years while 10% of the respondents fell within the age range of 31 – 40 years and this showed that majority of the respondents are young and within their active, productive lives.

In terms of education, about 71.67% of the respondents had at least primary school education while only 3.33% of the respondents had no formal education. This result show that majority of the respondents had one form of education or the other. Farming experience plays a significant role in agricultural production. It is expected that the higher the farmers' experience in farming, the better will be the production capacity of the farmers. Farming experience also determines farmers' ability to make effective farm management decisions with respect to input combination or resource allocation. Farming experience is indeed an important factor determining both the productivity and the production level in farming activities (Ajani, 2000; Ayodele, 2010). In this study, about 60% of the respondents had within 9 – 16 years of experience in Ofada rice farming and a mean farming experience of 12.65 years.

Table 1: Socio- Economic Characteristics of Respondents in the study area

Characteristics	Category	Frequency	Percentage	Mean
Gender	Male	88	73.33	
	Female	32	26.67	
Age (years)	31 – 40	12	10.00	47.16
	41– 50	76	63.33	
	51 – 60	24	20.00	
	More than 60	8	6.67	
Marital Status	Single	18	15.00	
	Married	82	68.33	
	Divorced	12	10.00	
	Widowed	8	6.76	
Household size	1 – 2	16	13.33	
	3 – 4	38	31.67	4.70
	5 – 6	66	55.00	
Educational status	No Education	04	03.33	
	Primary Education	86	71.67	
	Secondary Education	24	20.00	
	Tertiary Education	06	5.00	
Farming Experience	1 -8	25	20.83	
	9 -16	72	60.00	12.65
	17 -24	14	11.67	
	More than 25	09	7.50	
Access to extension services	Yes	98	81.67	
	No	22	18.33	
Farm size (hectares)	1.01 – 2.50	30	25.00	
	2.51 – 4.00	65	54.17	3.62
	4.01 – 5.50	15	12.50	
	More than 5.50	10	8.33	
Source of fund for farm operations	Personal savings	06	5.00	
	Relatives and friends	05	4.17	
	Cooperatives	103	85.83	
	Commercial Bank	06	5.00	
Total no of respondents		120	100.00	

Source: Field Survey, 2017

The significance of household size in agriculture hinges on the fact that the availability of labour for farm production, the total area cultivated to different crop enterprises, the amount of farm produce retained for domestic consumption, and the marketable surplus are all determined by the size of the farm household (Amaza *et al.,* 2006). However, Okoruwa and Ogundele (2006) reported that higher family size does not necessarily translate to higher use of family labour because some of these young able-bodied men prefer other jobs than farming. The advantage of small household size is that it may reduce household consumption expenditure and make more resources available for production. Large household size, on the other hand is associated with increased household consumption expenditure which reduces the money that could be used for production purposes (Ahmed, 2011). In this study, about 55% of the respondents had a household size of between 5 to 6 members and majority of the respondents (68.33%) are married and are with a mean household size of 5 persons. This result is also similar to what was obtained by Ayodele, (2010) where the average household size was 5 members implying a reasonably high number of family labour for the accomplishment of farm activities. Majority of the respondents (81.67%) reported that they had access to extension services.

Table 2: Distribution of Respondents by income obtained from Sales of Ofada Rice per hectare in the Study Area

Income (₦)	Frequency	Percentage	Mean
< 200,000	27	22.50	
201,000 - 400,000	73	60.83	220,000.00
401,000 - 600,000	17	14.17	
601,000 - 800,000	03	02.50	
Total	**120**	**100.00**	

Source; Field survey, 2017

Table 2 shows the distribution of respondents by annual income per hectare from sales of Ofada rice in the study area. The result reveals that a majority of the respondents (60.83%) obtained an income of between ₦201,000 and ₦ 400,000 per hectare from the sale of Ofada rice. However, 14.17% of the respondents obtained an annual income between ₦401,000 and ₦600,000 while 22.50% obtained an income of less than 200,000.00 per hectare. The mean income from Ofada rice production in the study area is ₦220,000.00

Table 3: Average Cost and Return Structure for Ofada Rice production per hectare

Variables	Unit Price	Unit per ha	Values per ha	% of Total Cost
Total Revenue (tonnes)	160,000.00	2.5 tonnes	400,000.00	
Variable Cost items				
Cost of land rent (lease)	15,000.00	1 hectare	15,000.00	
Cost of paddy seeds (kg)	400.00	70kg	28,000.00	
N.P.K Fertilizer (bags)	7,500.00	4bags	30,000.00	
Urea (bags)	9,000.00	2 bags	18,000.00	
Herbicide	1,700.00	4 litres	6,800.00	
Weeding Twice (man days)	2,000.00	12 mandays	24,000.00	
Pesticide	2,000.00	5 litres	10,000.00	
Cost of fertilizer application	5,000.00	2 mandays	10,000.00	
Cost of herbicide application	5,000.00	2 mandays	10,000.00	
Cost of Pesticide application	5,000.00	2 mandays	10,000.00	
Contingencies			16,180.00	
Total variable Cost			177,980.00	**84.52**
Fixed Cost Items				
Cutlasses 5 cutlasses	2,000.00	5	10,000.00	
Hoes 5 hoes	2,500.00	5	12,500.00	
Knapsack sprayer	7,500.00	1	7,500.00	
Shovels	1,300.00	2	2,600.00	
Total Fixed Cost			32,600.00	**15.48**
Total Cost			210,580.00	
Gross Margin			222,020.00	
Profitability ratios				
Gross ratio			**0.95**	
Operating ratio			**0.80**	
Returns per naira invested			**1.90**	
Profitability index			**1.80**	

Source: Field Survey, 2017

Table 3 shows average cost and return structure for Ofada Rice production per hectare in the study area. The result reveals average revenue of four hundred thousand naira per hectare (₦400,000.00), a total cost of two hundred and ten thousand, five hundred and eighty naira (₦210,580.00) and a gross margin of two hundred and twenty two thousand and twenty naira (₦222,020.00) for the production season. The gross ratio which measures the overall success of the average farm in the study area was estimated to be 0.95. This low ratio indicates success since the lower the ratio the higher the return per naira invested on the farms.

The operating ratio was estimated to be 0.80

and since the operating ratio relates to the farm variable input usage and the lower the ratio the higher the profitability of the farm business. The average farm can be said to be profitable.

The return per naira invested was calculated to be 1.90 and this shows that for every ₦1 naira invested in Ofada rice production in the study area about ₦1.90 was returned and this shows that the average farm is profitable. To cap it all, a profitability index was computed to be 1.80 and since the value is greater than 1 it shows that average farm breaks even and is profitable.

CONSTRAINTS FACING OFADA RICE PRODUCERS IN THE STUDY AREA

Despite the profitable prospects of Ofada rice production in the study area, farmers face many constraints leading to low yield during production. Some of the identified constraints facing Ofada rice producers in the study area are as follows;

Table 4: Constraints to Ofada rice production in the study area

Constraints	Frequency	Percentage	Rank
1. Lack of Capital	31	25.83	1st
2. Bad farm roads	20	16.67	3rd
3. Lack of processing and storage facilities	14	11.67	5th
4. Lack of tractor	13	10.83	6th
5. Bird Problem	24	20.00	2nd
6. Lack of adequate labour	18	15.00	4th
Total	120	100.00	

Source: Field Survey, 2017.

Lack of capital to produce

Many of the respondents noted that they lack adequate capital to do farm business. They complained that this is one of the major hindrances preventing them from expanding their farm business. This challenge ranked 1st among the constraints facing Ofada rice farmers in the study area.

No good farm roads and high cost of transportation

In many of the locations visited, the farm roads are very bad. This problem of farm roads eventually lead to high cost of transportation of farm produce and this is discouraging to farmers and would be farmers. The farm roads are very bad in road networks leading to Imewuro community, Eggua community, Mokoloki and Araromi imobi. Lack of good farm roads ranked 3rd in the study area.

Lack of processing and storage facilities

How to process Ofada paddy rice is one major challenge faced by farmers. More than half of the respondents indicated that they

carry their paddy rice to major towns for processing at high cost because they lack processing facilities. Only the farmer's group in Imewuro community in Ijebu North East local government area indicated that they have only one processing facility operated at the farmer's group cooperative society level and the capacity is grossly inadequate. Storage facility for Ofada rice in the study area is also a major challenge.

Lack of tractor for land preparation

Another major complain was lack of tractor for land preparation on the farms. The farmers do not have access to tractors to help clear thick bushes which is a characteristic typical of farmlands in south-western Nigeria due to its location in the humid forest zone. The farmers do land clearing and stumping manually and this is very tedious and limits the number of hectares that can be cultivated for production.

Bird Problem

Quiela bird problem is also a major challenge in the study area. Farmers do not have access to bird scaring equipments and due to this fact resort to traditional methods of bird scaring which is sometimes not effective. Invasion of birds on rice farms in the study area has resulted into major losses of Ofada farm produce. This problem ranked 2nd in the study area.

Lack of adequate labour for farm work

There is also lack of adequate labour to do farm work. This is due to the tedious and laborious nature of rice production in the study area.

CONCLUSION AND RECOMMENDATION

It can be concluded from this study that Ofada rice production was profitable in the study area although average yield was low at 2.5 metric tonnes per hectare. This situation can be improved given adequate incentives to combat the constraints limiting production. There is a future for rice production in Nigeria to bring about food security. However farmers need access to adequate capital, farm inputs and mechanised farming to increase production. It is however recommended that farmers form more cooperative farmers groups or solicit for capital aid from the government to be able to achieve this.

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