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PROFITABILITY OF RICE PRODUCTION IN KUJE AREA COUNCIL, FCT. ABUJA

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Abstract: **The study analyzed the Profitability of Rice Production in Kuje Local Government Area of Abuja. Primary data was used for the study. Multistage sampling technique was used to obtain 50 small-scale rice farmers used in the study. The dataset was analyzed with both descriptive and inferential statistics. Descriptive statistics, gross margin analysis and multiple regression analysis were used to analyze the data. Results from the study show that Majority (76%) of the Rice farmers were male, Majority (86%) were married. 50% of the Rice farmers in the study were educated. The mean age was calculated to be about 44 years. The mean Household size was calculated to be about 6 persons and majority of the respondent had about 10 years of experience in rice farming. Gross margin analysis per hectare of rice production revealed that total revenue was ₦172,949.88, the total cost was ₦138, 009.58. The net farm income was calculated to be ₦34, 940.296. The benefit cost ratio was calculated to be 1.25 which implies for every ₦1 spent the farmer will expect a benefit of ₦1.25. Total labor cost was calculated to be 61.08% of the total costs. The linear regression result shows that coefficient of multiple determination (R^2) was 71.8 percent, The F-stat was 22.423 and significant at one percent. Farm experience, sex, household size and marital status were statistically significant at one percent while education was statistically significant at five percent. The study recommends that adequate capacity building through training on rice value chain should be organize and conducted for the farmers in the study area since education had positive relationship with profitability of rice production. Also, policy that will motivated and encouraged women to participate in rice production should be implemented as a possible means of complementing their income and hence ensure sustained livelihood. Also, consistent policy support by government to transform the rice farmers' mindset from seeing rice as only a food to a cash crop through the provision of farmer education on rice cultivation systems, extension service delivery, credit facilities available and the minimization of risk associated with high level of price fluctuation especially during bumper harvests.**

Keywords: **Profit, Profitability Ratio, Small Scale Rice Farmers.**

1. INTRODUCTION

Rice (*Oryzea spp*) is one of the major staple food of the world, ranking third after wheat and maize on global production level and second in terms of area under cultivation (Adeoye, 2003). In Nigeria, rice cultivation is an age long enterprise providing employment opportunity and source of food to vast and diverse population of the country. It is ranked the fourth major cereal crop in Nigeria after Sorghum, millet and maize in terms of cultivated area and output (Babafada, 2003).

The short fall in production to according to Ugwu (2013), is usually filled through importation with figures oscillating between 1.7 to 3.2 million tonnes. The massive rice importation representing 25 percent of agricultural imports and over 40 percent of domestic consumption (Federal Ministry of Agriculture and Rural Development [FMARD] 2004).

Previous governments in the country made desperate efforts to increase rice production and reverse the importation trend. The various programmes and policies, though well intentioned, were dogged with implementation flaws and instability. Another major drawback to these policies was the de-emphasis or poor attention given to the farmers' level of resource use and profitability. This is pertinent considering the fact that majority of rice farmers in the country are small scale

farmers adopting traditional production methods and struggling with poor profitability. The situation is further aggravated by the fact that most of the farmers hardly estimate their enterprise profitability or otherwise. Policy implementation is bedeviled with problem of rent seeking behaviors, lack of commitment to the implementation of policy, weak institutional framework, among others. Also, there seems to exist a gap in knowledge on the socio-economic factors influencing profitability of rice production in Kuje area council of Abuja. This study intends to ascertain the Economics of rice farming among small scale farmers in Kuje area council, Abuja.

1.1 Objectives of the Study

The broad objective of this study is to analyze the economics of rice production among small-scale rice farmers in Kuje local government area of Abuja while the specific objectives were to:

1. determine the socio-economic characteristics of the small-scale rice farmers in the study area
2. evaluate the profitability of rice production in the study area
3. analyze the socio-economic factors influencing the profitability of rice production in the study area;

2. METHODOLOGY

2.1The Study Area

The study was conducted in Kuje Area Council Municipality of Federal Capital Territory (F.C.T), Kuje Area Council is among the five area councils created in November, 1987. It is located within longitude 70 15E and Latitude 80 S of the equator. Kuje covers an area of 3,13054km. It has an area of 1,644 km² and a population of 97,367 at the 2006 census (NPC, 2006). A typical year consists of wet (March to October), and dry (November to February) seasons. Monthly maximum and minimum temperatures are around 44 and 16°C, respectively. The major crops grown in the area include maize (*Zea mays*) and sorghum (*Sorghum vulgare*), rice (*oryza* spp) among others.

2.2 Method of Data Collection

Primary data was used for the study. The data was obtained with the aid of a well semi-structured questionnaire using interview method.

2.3 Sampling Technique and Sampling Size

Multi-stage and purposive sampling techniques were used to select the respondents for the study. Abuja was purposively selected for the study. Stage 1: The first stage was randomly sampling of one (1) local government areas from the list of six local government area of Abuja. Stage II:At the second stage involved a random sampling of 50 rice farmers form a list of rice farmers obtained from agricultural development project kuje local government area.

2.4 Method of Data Analysis

Descriptive statistics, farm budgetary technique was used to examine the cost-return, while the multiple regression was employed to analyze the factors affecting rice production in the study area. These are further explained below:

Farm Budgeting Techniques: Costs and return analysis in rice production was calculated using farm budgeting techniques (Gross and net-farm income analysis). The net farm income model is specified as

NFI = GR – (TFC +TVC) …… (1)

Where;

NFI = Net farm income (₦)

GR = Gross revenue (₦)

TFC = Total fixed costs (₦)

TVC = Total variable costs (₦)

GR = Total Revenue from rice production

TC = TFC + TVC

TR = P.Q

Where: -P = Price of rice produced in Naira per kilogram, Q = Output of rice produced in kilogram.

Benefit - cost ratio was used to determine the profitability of rice production in the study area. Benefit - cost ratio (BCR) can be estimated following Ben-Chendo, (2015) as

$$\text{Benefit cost Ratio} = \frac{\text{Total Benefit}}{\text{Total Cost}}$$

Ordinary Least Square Regression Analysis

To ascertain the Factors affecting the rice production, the model specified followed Peter *et al*., (2014) with some variation in variables. The implicit form of the multiple regression models is stated thus;

$$Pi = f(X_1, X_2, X_3, X_4, X_5) \text{ ----------2}$$

The explicit form is specified as follows:

$$Pi = a_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + \mu i \text{ ----------3}$$

Where;

Pi = profitability ratio

a_0 = Constant term

X_1 = Farm experience (years)

X_2 = Educational level (years)

X_3 = Sex (1 = male, 0 = Female)

X_4 = Household size (Number)

X_5 = Marital status (1 = yes, 0= otherwise)

X_6 = Agrochemicals (₦)

u_i = Error Term

3. RESULTS AND DISCUSSION

3.1Socioeconomic Characteristics of Rice Farmersin the Study Area

Table 3.1 shows the distribution of Rice farmers by sex. Majority (76%) of the Rice farmers in the study were male. From the study out of every 3 Rice farmers there is one female in the study area. This result is not unconnected with the cultural and religious believes that males should provide for their household hence they tend to be more involved in rice farming. This is in line with Ben-chendo *et al*., (2015) who revealed that 97% of the total paddy rice farmer's populations were male while only 3% were females.

Majority (86%) of the Rice farmers in the study were married. From the study there were more couples than singles. This might help them in rice production as they tend to have extra labour force from their children.

50% of the Rice farmers in the study were educated. Educational level of respondents is an additional factor which is thought to influence the rice output because the more enlightened the farmers the easier it is for them to accept improved technology. This finding is contrary to that of Girei *et al*., (2016) who revealed that majority of rice farmers where uneducated.

The mean age was calculated to be about 44 years and Majority (52.0%) of the Rice farmers in the study were between the ages of 41-50. It implies that the respondents were in their middle age. This implies that the respondents are in their active work life and can engage in diverse income generating opportunities.

The mean Household size was calculated to be about 6 persons and (50%) of the Rice farmers in the study had between the ages of 6-10 persons in their Household.

From the table majority of the respondent had between below 10 years of experience in rice farming. The mean farming experience was 11.755 that means the rice farmers in the study area had a mean farming experience of about 12 years this result is disagree with Ben-chendo *et al*., (2015) who revealed an average of 9 years farming experience in his study.

Table 3.1: Socioeconomic Characteristics of Rice Farmers in the Study Area Itemise

	Frequency	Percentage (%)
Sex		
Male	38	24
Female	12	76
Marital status		
Single	7	14
Married	43	86
Level of education		
Primary	9	18
Secondary	1	2
Tertiary	15	30
No formal education	25	50
Age (years)		
<30	2	4
31-40	16	32
41-50	26	52
50 and above	6	12
Household size		
1-5	24	48
6-10	25	50
11-15	1	2
Farm experience		
<10	24	48
11-20	21	42
21-30	5	10
Total	**50**	**100**

Source: Field Survey (2018)

3.2 Cost and Return Analysis of Small-Scale Rice Farmers in the Study Area

Table 3.2 shows the gross margin analysis per hectare of rice production in Kuje Area Council of FCT Abuja. From the result the total revenue was calculated to be ₦172,949.88, the total cost was ₦138, 009.58 which is a sum of the total variable cost and total fixed cost. The total variable cost is a sum of all the labour cost, cost of seed, fertilizer and Agrochemicals, which are ₦84, 292.75, ₦25, 320.29,₦ 13,195.60 and ₦ 5,777.60 respectively. The total fixed cost was ₦ 1,051.344. The net farm income was calculated to be ₦34, 940.296 which means that on average a rice farmer in the study area will earn a profit of ₦34, 940.296. The benefit cost ratio was calculated to be 1.25 which implies for every ₦1 in costs the farmer can expect a benefit of ₦1.25. This indicates that rice production in the study area is profitable in the study area. This is in line with Ben-chendo *et al*., (2015) who had a benefit cost ratio of ₦1.77 and inferred that rice production was profitable in Chikun Local Government Area of Kaduna State. The total variable cost was calculated to be 99.23% of total cost. Total labor cost was calculated to be 61.08% of the total costs. Most of the cost incurred was on labour this result is in line with Okam *et al*., (2016) who revealed that labour is the most used variable among the respondents in rice production, this situation is expected, since most of the rice farm operations including land clearing, levelling, planting, weeding, and fertilizer application, spraying and harvesting involved the use of one form of manual labour or the other.

Table 3.2: Average Costs and Return of Rice Production per Hectare

Items (Annual)	Amounts (₦)	%of Total Cost
Total Revenue..... (A)	**172,949.88**	
Variable Costs		
Seeds	25,320.29	
Fertilizer	13,195.60	
Agrochemicals	5,777.60	
Labor Cost		
Land preparation	18,639	
Planting	17,511	
Fertilizer application	7,880.19	
Weeding	24,870.42	
Harvesting	9,638.14	
Cost of threshing	5,754	
Total Labor Cost	**84,292.75**	**61.08**
Transportation	5,276	
Empty jute sacks	3,096	
Total Variable Costs..... (B)	**136,958.24**	**99.23**
Fixed Cost		
Rent on land	1,051.344	
Total Fixed Cost..... (C)	**1,051.344**	**0.76**
Total Cost (B + C)	**138,009.58**	
GM (A-B)	**35,991.64**	
NFI (GM-C)	**34,940.296**	
B/C RATIO	**1.25**	

Source: Computed from Field Survey 2018.

3.3 Multiple Regression Analysis on Factors Affecting Profitability of Rice Production in the Study Area

The linear regression result on table 3.3 shows that coefficient of multiple determination (R^2) was 71.8 percent which depicts that 71.8 percent of the variation in the dependent variable is explained by the independent variables captured in the model while the 28.2 percent was as a result of variables not captured in the model. From the estimated equation it was observed that most of the independent variables of the main equation conformed to the apriori expectations except farm experience which had a contrary sign. The F-stat was 22.423 and significant at one percent, this implies that the relationship between the dependent and independent variables was well specified. Farm experience, sex, household size and marital status were statistically significant at one percent while education was statistically significant at five percent.

Education, sex, household size and marital status were positive and significant in explaining the profitability of rice production. The positive coefficient on Education, sex, household size and marital status suggests that there is a direct relationship between the variables and the profitability of rice production. This implies that a unit increase in Education, sex, household size and marital status will lead to about 0.037, 1.0, 0.264 and 0.837 unit increase in profitability of rice production in the study area.

This further implies that educated rice farmers tends to be more profitable this is expected because they will be able to adopt improve technologies on time. This result is contrary to the finding of Nwike *et al*., (2015) who revealed that education had a negative relationship with profitability of rice production.Furthermore, from the result an increase in the level of male counterpart involved in rice farming it will consequently lead to an increase in rice profitability in the study area. This may be because the male counterpart had the requisite energy needed to carry out rice production. The result of household size is in line with Ben-chendo *et al*., (2015) who revealed that an increase in the number of households will increase the profitability of rice production.

Also, the negative coefficient on farm experience suggest and indirect relationship between farm experience and profitability of rice production in the study area. Which means a unit increase in farm experience will lead to about 0.079 decrease in profitability of rice production in the study area. This is contrary to the expectation and may be as poor utilization of the limited resource at the disposal of rice farmers. It may also be that the farmers had experience in other crops that give them more yield since they were small scale rice farmers. It may also be that the farmers didn't have access to improved inputs. However, the result is not in line with the finding of Ben-chendo *et al*., (2015) who revealed that an increase in farming experience increases the profitability.

Table 3.3: Multiple Regression of Factors Influencing Rice Production

Variables	B	Std. Error	T-Value
Constant (a_0)	-.841	0.376	-2.235
Farm experience (X_1)	-0.079	0.013	-6.085
Educational level (X_2)	0.037	0.016	2.318
Sex (X_3)	1.00	0.169	6.106
Household size (X_4)	0.264	0.049	5.410
Marital status (X_5)	0.837	0.227	3.690

R^2 = .718, F= 22.423

Source: Field Survey, 2018

4. CONCLUSION AND RECOMMENDATIONS

Rice production is one of the sources of livelihood for farmers in kuje area council of Abuja not only providing them with basic food requirement but also generating income for farmers through the sales of paddy rice. Rice production was found to be profitable in the study area as significant profit was recorded per hectare of land cultivated.

The study hereby recommends that adequate capacity building through training on rice value chain should be organized and conducted for the farmers in the study area since education had positive relationship with profitability of rice production.

Rice farming in the study area is dominated by male farmers. Female gender need to be motivated and encouraged to participate as a possible means of complementing their income that will ensure sustained livelihood.

Also, consistent policy support by government to transform the rice farmers' mindset from seeing rice as only a food to a cash crop through the provision of farmer education on rice cultivation systems, extension service delivery, credit facilities available and the minimization of risk associated with high level of price fluctuation especially during bumper harvests.

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