European Journal of Academic Essays 3(3): 137-140, 2016
ISSN (online): 2183-1904
ISSN (print): 2183-3818
www.euroessays.org

Profitability Investigation of Rice Production in Fufore Local Government Area Of Adamawa State, Nigeria

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Abstract: The study analysed the profitability analysis of rice production in Fufore local government area of Adamawa state, Nigeria. Primary data which were obtained through the use of scheduled interview using structured questionnaire was used for the study. Frequency, percentages and budgetary technique were used to analyse the data. The results showed that 65% of the respondents had no formal education and financed their rice production through personal savings. About 82% of the respondents had more than 10 years' experience in rice farming, 70% have household size of more than 5 people and 91% of the respondents had no extension visits. Equally worth mentioning from the result is that an average total cost of N270,864 was incurred per annum by the rice farmers while gross revenue of N740,000 was realized with gross margin of N494.940 and a profit of N469,136 and returned to Naira on investment of N0.37 were recorded. The study concluded that rice production in the study area is economically rewarding, profitable and sustainable with high propensity to achieving self-sufficiency in food security and poverty reduction. The study recommends adequate more extension visits to the respondents. The resource structure also revealed that majority of the farmers practiced small scale farming and had little access to financial support. In this regards, government and relevant stakeholders should actively participate in rice production in order to improve and boost the quantity and quality of rice availability for domestic consumption and export. 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. The farmers should be organized into cooperative and where it exist, they should be strengthen and become a formidable force to be reckoned with especially in decision and policy making on issues affecting their interest.

Keywords: Profitability, Investigation, Production, Rice, Adamawa State
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1. Introduction

The primary goal of any investment is to ensure successful production that will guarantee the existence of the business not only by yielding positive returns but to maximize the gain arising from the production process. This gain is referred to as profit. Therefore, the prime objective of any production process is transformation of inputs into output which is expected to yield maximum profit on one hand and minimizes cost on the other. The net difference between price of the products and cost of inputs is the profit while cost refers to the monetary value of inputs used in production and profit refers to a reward received from the investment which may be positive, negative, small or large depending on the performance of the economy at a given time. It is obtained by subtracting cost from revenue.

Rice as a food crop ranks the third after wheat and maize in terms of world-wide production, and it is the most important staple food for about half of the human race [1]. Nigeria has suitable ecologies that are suitable for different rice varieties which can be harnessed to boost production to meet domestic demand and for export [2]. In spite of the presence of suitable environment and with increasing population over the years, the demand for the commodity has gone up to the position of prominence among all the staple food crops. Therefore the domestic production has not been able to meet the demand due to poor production resulting from inadequate access to production resources such as

capital, inputs, fertile land and low level of farmers' knowledge of rice production [3].

According to [4], rice is a staple food of most people in many countries of the world and its importance as food cannot be overestimated. It is one of the oldest foods of man which is taken as part of the three meals in certain areas of the world where it has shifted from being a ceremonial food to form part of the normal daily diet and indeed an economic and political commodity. [3], reported that rice is the growing and widely consumed staple cereal in Nigeria with consumption cutting along all socio-economic classes. The crop is cultivated in virtually all the agro-ecological zones of the country. Despite this, the country is the second largest importer of rice in the world after Philippines. In 2014 alone, Nigeria spends over N365 billion on yearly importation of rice, which translate to about N1 billion is used per day and this has made the country a net importer of rice. This has become a source of serious concern by both citizens and government. [6] reported that the Federal Government of Nigeria spent USD2.41 billion on rice importation between January 2012 and May 2015.

Rice is one of the most important cereal crop grown in Adamawa state, Nigeria and is consumed in a variety of ways [7]. However, the cultivation and production of this highly accepted and well-priced and very important food crop is dwindling. [8] reported that, one way by which the small scale farmers who contribute over 90% of agricultural output within the limit of their existing resource base will be the application of the scarce resource in a most effective and efficient way. Thus, the main objective of this paper is to determine the profitability of rice production in the study area with a view to assisting in the enhancement of the resource productivity and profitability of the farmers as well as encouraging them to increase the current level of production so as to bridge the current shortfalls in rice production thereby free surplus funds that will help in improving the social and economic status of the farmers.

2. Methodology

The study was conducted in Fufore Local Government Area, Adamawa State, Nigeria. It is one of the twenty one LGA of the state. It lies between latitude 9^o N and 15^o N of the equator and longitude 12^o 30'E and 13^o 40' E of the Greenwich meridian. The study area has a total land mass of about 4,162.5km^2 with an estimated population of 209,460 people [9].The study area is one of the twenty one LGA of the state and it is bothered by Ganye and Mayo-Belwa LGAs in the South, Yola in the West, Song in the North and the Republic of Cameroun in the East. The LGA is made up of seven districts namely; Daware, Gurin, Malabu, Mayo-Ine, Verre, Ribadu and Nyibango. In some cases, the maximum temperature reaches as high as 40^OC especially in March and April with a minimum temperatures as low as 18^OC between December and January. The relative humidity between January and March ranges from 20 – 30 % and reach a peak of up to 80% in August and September [10]. The mean annual rainfall of the study area is around 1000mm with major crops grown includes; rice groundnut, guinea corn, cowpeas, vegetables of different kinds. Fishing and livestock farming are also part of the occupation of the farmer [11].The main instrument employed in collecting the primary data was structured questionnaire. Information were collected on inputs and output in rice production and socio-economic characteristics of rice farmers through personal interviews. A total sample of 120 rice farmers was selected randomly. Data analysis was done using the descriptive statistics and budgetary technique.

Under the descriptive technique, involving mean and percentages while budgetary technique involves the cost and return analysis which was used in the determination of profitability of rice production in the study area. The model is mathematically presented as follows;

$\Pi = TR - TC$ .....…… 1
$TR = PQ$ …….. 2
Where;
Π = Total profit (N)
TR = Total revenue (N)
TC = Total cost (N)
P = Unit price of output (N)
Q = Total quantity of output (Kg)

3. Results and Discussion

Socio-economic Characteristics of the Respondents

Results on the Table 1 show that majority (64.17%) fall into the economically active group of between 20 and 40 years. This indicates that youths formed the bulk of the rice farmers. Therefore, their youthful strength can be effectively utilized in their production this result corroborates the findings of [2] in a study he conducted on socio-economic factors affecting rice production in Lake Gerio, Yola-North Local Government Area of Adamawa State, Nigeria. Large proportion (65%) of the respondents had no formal education while 35% had one form of education or the other (Table 1). This means that much needs to be done in order to raise their knowledge to a certain level if appreciable level of participation and productivity is to be achieved. In the present day business activity of any form, working knowledge of available technology and new innovations need to be known and practice if productivity is to be attained. The result of the marital status shows that majority (65%) of the rice farmers were married with unmarried respondents accounted for 30% while divorced and widows represented 3.33% and 1.67% accordingly. Farming experience normally deals with the number of years an individual or farmer has being practicing or participating in a particular activity. In this regard, the study reveals that majority (40%) of respondents had 21 – 30 years of farming experience, followed by 22.5% of the respondents with experience of over 30 years. Similarly, those with experience of between 11 and 20 years and those with below 10 years accounted for 20% and 17.5% respectively. The results contradict the finding of [2] who reported 62% of his respondents had less than 10 years' experience. The distribution of farmers according to their land holding depicts that 70.83% of the farmers had farms of various sizes ranging from 0.5 to 6.5 hectares (70.83% had farm size of less than 2 hectares, 23.33% between 2 – 5 hectares and 5.83% more than 5 hectares). The mean farm size of the respondents was about 2 hectares which confirms that the rice farmers in the study area are small scale farmers. This

result is in line with the findings of [12] in a study they conducted on Profitability and Technical Efficiency among the Beneficiary Crop Farmers of National Fadama II Project in Adamawa State, Nigeria. The distribution of the household size of the respondents indicates that the household size ranged from 1 to 15 with majority falling within 6 – 10 and represented 35%, followed by those with household size of 1 – 5 people accounted for 30% while those with over 10 people represented 25.8%.

Table1:Age, Educational background, Experience, Farm size, Household size and Marital status of the Respondents

Variable	Frequency	Percentage
Age (Years)		
20-30	23	19.17
31-40	54	45.00
41-50	32	26.67
>50	11	9.17
Educational Background		
No formal education	78	65.00
Primary	24	20.00
Secondary	11	9.17
Tertiary	7	5.83
Experience		
<10	21	17.50
11-20	24	20.00
21- 30	48	40.00
> 30	27	22.50
Farm Size (Ha)		
≤ 2	85	70.83
2 - 5	28	23.33
> 5	7	5.83
Household Size		
1 - 5	36	.30.00
6 - 10	42	35.00
>10	31	25.83
No response	11	9.17
Marital Status		
Single	36	30.00
Married	78	65.00
Divorced	4	3.33
Widow	2	1.67

Source: Field survey, 2014

Table 2 presents results on Gender, mode of farming, contacts with extension agents, and training on rice farming, land ownership and sources of finance. The result shows that male respondents constituted 89% as compared to female farmers that represent 11%.This indicates the dominance of men in rice production in the study area. It is also clear that most of the respondents which accounted for 81.67% were full time rice farmers while the remaining 18.33% carry out rice farming on part time basis possibly to supplement their income from other sources and this makes farming to be their secondary occupation. The study also revealed poor extension visits and services to the rice farmers who mostly operated on full time basis. The inadequate extension contacts as expressed by majority of the respondents who accounted for 90.83% reported no any contacts with extension agents. This may lead poor participation and possibly poor yield and absence of new ideas on production. Also 90.67% had no formal training on improved rice production technology and this could be corroborated by the almost non-existence of contact with extension agents. The most common method of land ownership in the study area is through inheritance as revealed by 59.17% of the respondents. This followed by renting 30.83% of the respondents, while those that reported ownership through purchase accounted for only 10%. The result also revealed that 77.5% of the respondents financed the rice production activities through personal savings either obtained from the sales of their disposable resources such as livestock, stored grains, gift from others etc. This followed by the support received from relatives which accounted for 14.17%. Facilities from Friends, cooperatives and Bank loans accounted for only 4.17%, 2.50% and 1.67% respectively

Table2:Gender, Mode of farming, Contacts with extension agents, Training on rice farming, Mode of farm ownership and Source of finance of the Respondent

Variable	Frequency	Percentage
Gender		
Male	107	89.17
Female	13	10.83
Mode of Farming		
Part time	22	18.33
Full time	98	81.67
Contacts with Extension Agents		
None	109	90.83
Once	7	5.83
Twice	3	2.50
More than twice	1	0.83
Training on Rice Farming		
Formal training	110	90.67
No formal training	10	8.33
Mode of Farm Ownership		.
Inheritance	71	59.17
Purchase	12	10.00
Rented	37	30.83
Source of Finance		
Personal savings	93	77.50
Friends	5	4.17
Relatives	17	14.17
Cooperatives	3	2.50
Bank loan	2	1.67

Source: Computed from field survey data, 2014

Costs and Returned Analysis

In order to determine the profit level, cost and return were estimated the from rice farming. The quantity of inputs applied and the output obtained as well as their associated cost were all used in undertaking the cost and return analysis for assessing the profitability in rice production in the study area. In executing the analysis, certain assumptions were made. Average price per bag of 100kg paddy rice at N6, 000, 2 cycles of paddy rice production per season excluding rain fed rice production, average yield per hectare of 3 tons (60 bags).

The cost and return is presented in Table 3. The result reveals that the cost of labour accounted for the largest proportion (28.58%) of the total cost of rice production. This is followed by the cost of irrigation (18.46%). The costs of fertilizer and seeds accounted for 14.77% and 11.21% of the total cost respectively while, transportation cost accounted for 9.39% with the least cost by agro-chemicals which attracted 8.07%. This clearly shows that large amount of money is spent by rice farmers in the study area on hired labour and expenditure on irrigation. The fixed cost of production consist of fixed cost assets such as land, storage facilities, sprayers, hoes, axe and cutlasses which accounted for 9.53% of total cost of production. It is equally evident from the result of the analysis which reveals an average total cost of production of N135, 432 incurred in the production process for the 2 cycles per annum from the dry season rice production by the respondents. This comprised of variable cost of N122, 530 (90.47%) and fixed cost of N12, 902 (9.53%). The analysis equally revealed gross revenue from the sales of the paddy rice and rice shaft of N740, 000 as realized. The gross margin realized which was calculated as a difference of gross revenue and total variable cost is N494, 940.00. The net farm income which is equally the profit and was obtained by subtracting the total fixed cost from the generated gross margin. This translates to N469, 136.00 per hectare. The rate of return on investment of 0.37 was realized and this implies that for every one naira invested in rice production by farmers, a return of N1.37 and a profit of N0.37 were achieved. The implication of this result is that there is a considerable level of return in rice farming in the area of study and this result is similar to the findings of [13] in their research on Resource Use Efficiency and Rice Production in Guma Local Government Area of Benue State, Nigeria. Equally evident from the outcome of the study is that the rate of return per capital invested (RORCI) is obtained as a ratio of profit realized to total cost of production, It is generally regarded as the earnings received by any given investment as reported by [5].This indicates that the rate of return on capital invested of 1.73 (173%) is by far greater than the general lending rate of about 30% been charged indicating further that dry season rice production in the study area is not only profitable but sustainable if farmers are supported through the provision of the required technologies and education on modern production and techniques that will help in taking them along the rice value chain that will stimulate higher return per hectare through effective and efficient utilization of the available production inputs. Assuming that an investor obtained facility to finance his/her production activities, he/she will N1.43 kobo better off on every one naira spent after the facility repayment at the prevailing bank charges. This result is in line with the study conducted by [14] on Analysis of profitability of fish farming in Ogun State, Nigeria.

Table 2: Average Cost and Returns of Rice Production per Hectare

Item(Annual)	Amount(₦)	% of Total Cost
Variable cost		
Labour	38,700	28.58
Agro chemicals	10,930	8.07
Transportation	12,720	9.39
Fertilizer	20,000	14.77
Seeds	15,180	11.21
Irrigation	25,000	18.46
Total Variable Cost (TVC) …. A	**122,530**	**90.47**
Fixed Cost		
Rent on land	5,472	4.04
Payment for storage	4,000	2.95
Fixed inputs (hoes, Sprayers, Axes, Cutlass)	3,430	2.53
Total Fixed Cost (TFC) …. B	**12,902**	**9.53**
Total Cost Of Production (TC = TFC + TVC)	**135,432**	
Returns		
i). 60 bags (3 tons) of 100kg paddy rice x 2 cycles x N6,000	720,000.00	
ii).Variable cost of production for a cycle = N122,530 x 2	245,060.00	
iii).Fixed cost of production for one cycle = N12,902 x 2	25,804.00	
Gross Farm Income (GFI = P_y . Y)		
i). Revenue from sales of output	720,000.00	
ii). Sales of rice shaft	20,000.00	
iii).Total cost for 2 cycles (in a year) = 135,432	270,864.00	
Total Revenue (TR or GR)	740,000.00	
Gross margin (GM = GI - TVC) 740,000 – 245,060	494,940.00	
Net Farm Income (NFI = GM – TFC) 494,940 – 25,804	469,136.00	
ROI	0.37	
ROIC	1.73	

Source: Computed from Field Survey data, 2014

4. Conclusion

Based on the various revelations of the research, it was concluded that dry season rice production in the study area is economically rewarding, profitable and sustainable with high propensity to achieving self-sufficiency in food security and poverty reduction. The outcomes if well disseminated will attract high participation, employment creation, income generation and thereby improving the social and economic wellbeing of the farmers and the nation at large. Therefore, in line with the results, the following recommendations are drawn; Adequate capacity building through training on rice value chain should be organize and conducted for the farmers in the state with an objective of disseminating new and sustainable technologies to bridge the identified gaps created by inadequate contacts with change agents. The resource structure also revealed that majority of the farmers practiced small scale farming and had little access to financial support. In this regards, government and relevant stakeholders should actively participate in rice production in order to improve and boost the quantity and quality of rice availability for domestic consumption and export. 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. The farmers should be organized into cooperative and where it exist, they should be strengthen and become a formidable force to be reckoned with

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