

EFFECT OF GOVERNMENT SUBSIDIES ON RICE PRODUCTION IN IVO L.G.A OF EBONYI STATE NIGERIA

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ABSTRACT

The study investigated the effect of Government subsidies on rice production in IVO L.G.A. of Ebonyi state. Data for the study were collected using structured questionnaire administered to 100 respondents who were randomly selected. Data collected were analyzed using descriptive statistics, Cross margin analysis and multiple regression analysis. Results showed that both married men and women were involved in rice production in the study area, even though males dominated Most (98%) of them were still in their productive age range of 21-60 years; and also have one form of education or the other. Furthermore, (90%) of the respondents had long years of experience in rice production; while (94%) of them had farm sizes of between 1-3 hectares. Majority (26%) received their Government subsidies in fertilizers. The coefficients for fertilizer, herbicides, farm implements and grants were all positive and highly significant at 1% level of probability. The costs and returns analysis revealed that rice production is a very rewarding and profitable enterprise in the area, if well managed. The major problems and challenges confronting them and which have been identified include; Poor access to credit/funds, Poor infrastructural facilities, inadequate processing facilities, Poor and inadequate storage facilities, lack of improved rice varieties, shortage and high cost of labor; among others. It is therefore, recommended that all these constraints limiting the respondents from achieving their vision and mission in rice production be addressed by the Government in power so as to encourage them to increase their rice production potentials and capabilities.

Key words: Government subsidies; Rice production; IVO L.G.A; Ebonyi State; Nigeria.

INTRODUCTION:

Rice (*Oryza Sativa*) is the most important staple food for about half of the human race (Lancon and Erenstein 2003; National Cereal research Institute, (NCRI,2004). Rice is one of the major crops cultivated globally, alongside with wheat and corn (RIFAN, 2017), and provides over 19% of global human per capita energy (Tijani and Bakari; 2014). It is grown in more than a hundred countries with estimated total harvested area of 158 million hectares in 2018 growing season with more than 700 million tonnes of milled rice produced annually from wide ranging ecologies (USAD,2019).

FAO(2019) and Hesse (2020) reported that 78% of global rice production is for human consumption, while the balance serves other uses; such as animal feed. According to Food and Agricultural Policy Research (FAPR), the global rice demand is expected rise up to 496 million tonnes in 2022, and up to 555 million tonnes in 2035; hence the need to boost production by all and sundries; thereby help in promoting the growth of all important world staple food (Udemezue,2019).

The demand for rice in Sub-saharan Africa is growing much faster than any other grain, with both rich and the poor relying on it as their major source of calories(Kormawa and Akande, 2011). It has witnessed considerable growing demand, as more

consumers move away from local carbohydrate diets such as yam and garri to making rice the staple food.

Rice has become a staple food in Nigeria such that every household; both the rich and poor consume a great quantity (Godwin, 2012). Its significance as a subsistence and cash crop is growing rapidly, both regionally and nationally. In fact, it is one of the most popular cereal crop of high nutritive value grown and consumed in all the ecological zones of the country (Ohaka, Adiaha and Amanze, 2013; Omotosho, Adewumi and Fadimula, 2010; Ohajiana and Onyenweaku, 2003). Yuguda (2003) and Ohaka et al, (2013) were of the view that before the advent of crude oil, Nigeria produced almost enough rice for local consumption. However with the discovery of petroleum in the 70's, its production declined steadily over the years in relation to consumption with the result that takes away huge sums of money from the country's hard earned foreign exchange as a result of importation. Ume et al, (2017): reported that Nigeria is the highest producer of rice in Africa, with estimated output of 3.7 million tonnes in 2017 rice growing season. Similarly, International Rice Research Institute (IRRI, 2010) postulated that Nigeria is the largest rice producer in West Africa and its production made remarkable gains from 1980 to 1989. In the same vein, the area under cultivation grew

from about 409,000 hectares in 1980 to about 700,000 hectares in 1989 (WARDA, 2013).

Globally, Nigeria is the 11th largest consumer of rice and has the lowest annual consumer per capita of the top 11 consuming countries with a value of 35kg/year (FMARD/NBS,2010). It however, has one of the highest domestic prices for a kilogram of rice for both locally produced and imported variants in the market. The high domestic prices for rice in Nigeria could be associated to high inflation cost of importation (high tariffs and excise duties) and cost of production(for the locally produced variety) (Ingabire, Bizosa and Mutware, 2013). For decades in Nigeria, the problem of nation's rice consumption exceeding the local production, and the surpluses being balanced through imports are well documented (Tijiani and Bakari; 2014). Rice has changed from being a luxury to a necessity whose consumption will continue to increase with per capita GDP growth; thus which implies that its importance in Nigerian diet as a major food item for food security will increase as economic growth continues (Ojogho and Alufohai 2010). Rice is the third-most consumed staple food in Nigeria (after maize and cassava) and has attained height of a food security crop due to its increased significances in the country (Ume et al 2017). For instance, rice is an essential cash crops for small-scale farmers who commonly sell 80% of total production and consume only 20% (RIFAN, 2017).

Despite the relative importance of rice as Nigerian major food crop and industrial raw material, the domestic supply is still considered insufficient to match the consumption demand. According to Ekeleme et al(2008) and USAID (2013), Nigeria consumes 5.4 million metric tonnes of rice annually, of this value, annual domestic output of rice still hovers around 3.2 million metric tonnes; thereby leaving a huge gap of about 2.2 million metric tonnes to importation. This inability to meet rice consumption need through local production makes the country import dependent (Okereke, 2012 and FMARD, 2011). It is to be noted however; that relying on the import of expensive food in global market, not only stimulates inflation, but also hurts Nigerian farmers by displacing local production and fueling rising unemployment (FMARD, 2012). In 2016, the price of rice doubled over that of 2015 prices, owing largely to foreign exchange rates and fluctuations in government policy on rice production. Live Rice Index (LRI, 2016) had reported that annual rice importation alone in Nigeria is around \$2.2 billion, which is to the detriment of the scarce foreign exchange reserve. This is an unfortunate scenario for a country that is presumed to be depending on imports from countries like Thailand, India and USA.

Rice is cultivated in virtually all the agro-ecological zones of the country as it constitutes one major cereal crop produced by the Nigerian farmers. It covers both upland and the swamps, depending on the variety (KNARDA, 2007). Given the crucial role

of rice in the food security of urban and rural households alike development of rice growing has long been considered a priority in Nigeria. Thus, the country had adopted a range of instruments designed to protect and increase local production. The Nigerian National Rice Devolvement Strategy (NNRDS) set up in 2009 aims to make the country self-sufficient in rice by raising production of paddy rice from 3.4 million tonnes in 2007 to 12.8 million tonnes in 2018.

Nigeria is ecologically endowed to attain self-sufficiency in paddy rice production with the potential land area for rice production of between 4.6 million and 4.9 million hectares (Ezedinma, 2005, FMARD, 2012). However, inspite of the untapped potential of rice production in Nigeria, only 1.8 million hectares of Nigeria's total land mass suitable for rice production is cropped in rice (Coalition for African Rice development (CARD, 2009). The small number of hectares under cultivation is an indication that food sufficiency through rice production has not yet been realized as rice production is left in the hand of rice farmers whose output is inadequate and paddy processing is sub-standard. (Longtau, 2003a). The domestic production is also constrained by low-input and crop management techniques by rice farmers, as well as lack of water control techniques (Daneji, 2011).

Notwithstanding the fact that Nigeria has favourable ecologies for rice production, production of paddy rice remains low. Oyinbo, Damisa and Rekwot (2013) reported that less than 10% of the potential 3.4 million hectares are currently irrigated. Previous and current government in the country made desperate efforts to increase rice production and hence, reverse the impartation trend. The various programmes and policies, although well intentioned, but were dogged with implementation flaws and instability. Another major drawback to the policies was the poor attention given to the famers level of resources use and return to scale. This is pertinent considering the fact that majority of the rice farmers in the state are small scale operators adopting traditional production methods and also grappling with poor return to scale (Yuguda, 2003).

It is a known fact that rice production in Nigeria is characterized by small scale farmers scattered all over the country who carry out their operations with rudimentary tools (Oyeyinka and Bolarinwa, 2009). Furthermore, lack of capital and poor yield per hectare are the challenges they have to contend with (Kolawale and Ojo, 2007). Being a staple food crops consumed by many households, it may become a scarce commodity due to the fact that production is relatively low considering the large population of the country.

The current production capacity of the farmers is quiet inadequate to meet the consumption demand of the nation (Bamidele et al, 2010). This inadequacy of the rice harvest to meet consumption demand provide an income enhancing opportunity for

the farmers; as well as the unemployed youths to strive for the promotion and cultivation of the crop.

However, it is imperative to state that Nigeria has hinged profoundly on imported rice to meet her consumption needs, and therefore has become one of the world's importers of rice (WARDA, 2016). A case in point, USIAD, (2019) revealed that between 2007-2018, (see table 1), the Nigeria's rice consumption exceeded domestic production with a yearly average production deficit of about 2.4 million tonnes. In the same vein, total demand between 2007 and 2018. Increased at a rate of 5.3%, while imports increased at rate of 5.24% in the same periods under consideration. In order to encounter the deficit in the year 2018 alone, Nigeria imported an estimated 3 million tonnes of rice (Udemezue, 2019). In addition, statistics on rice consumption in Nigeria between the years 2011 and 2017 as released by the Central Bank of Nigeria (CBN, 2018), showed that Nigeria had steadily rising consumption of about 5.6 and 6.9 metric tonnes respectively compared to her local production of 2.906 and 3.780 million metric tonnes respectively. The deficits as reported by CBN, were met with imports that worth more than \$4 billion.

This production predicament is more pathetic; especially when the nation's rice potentials are critically examined. RIFAN, (2017) opined that Nigeria has relative resource benefits in terms of dependable climate, edaphic and ecological conditions for efficient rice production. Tijian and Bakari (2014) reported that Nigeria has assorted improved and high yielding rice varieties and the associated technologies, numerous and productive rice ecologies and lots of programmes and policies by government and non-governmental organizations armed at advancing rice production.

Presently, Nigerian rice sub-sector is dominated by weak and inefficient producer-market linkages due to poor infrastructure, including lack of improved processing facilities, low rice productivity, poor post-harvest handling and storage, expensive and poor access to inputs (such as high quality seeds, fertilizer and crop protection products), expensive and poor access to information, lack of transparency among players, low capacity to meet quality standards, and limited efficiency in distribution networks. All these have declined rice productivity and income for rice farmers in Nigeria, especially in Ebonyi State. It has also resulted to massive loss of manpower through the abandonment of farms and the migration of rural youths to the cities in search of white collar jobs. Therefore, delivering high quality rice farm production in Ebonyi State, and IVO Local Government Area in particular requires government subsidies such as substantial agricultural infrastructure in the form of farm credit, training, transportation, storage and access to inputs. It is with this knowledge in mind that the study attempts to evaluate the effects of government subsidies on rice production in IVO

L.G.A of Ebonyi State, Nigeria. Specifically the study:-

- i. described the socio-economic characteristics of rice farmers.
- ii. identify the type of subsidies given to rice farmers by the government
- iii. estimate the costs and returns of rice production as a result of the subsidies.
- iv. determine the effects of government subsidies on the output of rice; and
- v. identify the constraints to obtaining these subsidies on rice production in the study area.

METHODOLOGY:

Study Area:

The study was conducted in IVO Local Government Area of Ebonyi State. The L.G.A lies between latitudes $5^{\circ}56'$ and $6^{\circ}59'$ North of the Equator and longitudes $7^{\circ}33'$ and $7^{\circ}24'$ East of the Greenwich Meridian. It covers an area of 35060km² and an estimated population of 220,919 people (NPC, 2006). It has rainfall range of 1,500-2,500mm and moderate relative humidity of 65%. The Local Government Area is mainly agrarian and prominent in the production of rice, okra, yam, cassava, sweet potatoes, cocoyam and vegetables. The animals reared are pigs, poultry, goats and sheep. The major economic activities of the people, apart from agriculture include stone quarrying, mining, carpentry, brick laying, pottery and artisan fishing.

Sampling Procedure:

Multi-stage random sampling technique was used in selecting the respondents for the study. Stage (1) involves purposive selection of five (5) communities out of the six (6) communities that make up the study area, based on the preponderance of rice farmers in the communities. These communities include; -Ishiagu, Ihie, Okue, Umoihe and Akaeze. Stage (ii) involves random selection of four (4) villages from each of five (5) communities already selected in stage 1. Stage (iii) involves random selection of five (5) rice farmers from each village; thereby giving a total sample size of one hundred (100) respondents. Data were collected with the aid of structured questionnaire.

Analytical Techniques:

Data collected were analyzed using descriptive statistics, gross margin analysis and multiple regression analysis. Descriptive statistics such as frequencies, means and percentage were used to achieve objective (1), (ii) and (v). Gross margin analysis was used to achieve objective (iii); while objective (iv) was achieved using multiple regression analysis.

Model Specification:

Gross Margin Analysis using budgetary technique.

This was employed to estimate the profitability of rice production. 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 negligible of the farm enterprises, and especially in the case of small scale subsistence agriculture (olukosi and Erhabor, (2005). The model is expressed as thus:

$$\pi = TVP = TVC - TFC \dots \dots \text{equation -(i)}$$

$$\pi = \sum_{j=1}^m P_j Q_j - \sum_{i=1}^n P_i X_i - \sum_{k=1}^r P_k C_k \dots \text{equation (2)}$$

Where:

- π = Net Farm profit
- TVP = Total Value of production (gross output)
- TVC = Total Variable cost
- TFC = Total fixed cost
- Q = Quantity of i^{th} output
- P = Unit price of i^{th} variable inputs
- X_i = Quantity of i^{th} variable inputs ($i=1,2, 3 \dots \dots n$)
- P_i = Unit price of i^{th} variable inputs
- n = Number of inputs used in production
- m = Number of enterprises
- PK = Unit price of kth fixed inputs ($k= 1,2,3 \dots \dots n$)
- CK = Quantity of kth fixed inputs
- r = Number of fixed inputs
- \sum = Summation.

Multiple Regression Model:

This was used to determine the effects of government subsidies on the output of rice. Linear, semi-log, double-log and exponential functional forms were employed, fitted and tried, and the basis of economic theory, statistical and econometric criteria, double-log functional form was chosen as the lead equation. The explicit form of the model is presented below:-

$$\ln y = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + \dots + b_n \ln x_n + e_i \dots \dots \dots \text{equation (3)}$$

Where:

- Y = Output of rice (kg/ha)
- X_1 = Fertilizer (kg)
- X_2 = Improved seed varieties (kg)
- X_3 = Farm implements (NO)
- X_4 = Government grants (₦)
- X_5 = Herbicides (litre)
- B_0 = Constant term
- B_1 - B_5 = Coefficient to be estimated
- e_i = Error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the Respondents:-

Table 2 revealed that majority (98%) of the respondents were within the age- bracket of 21-60 years. This means that most of them are still in their

active economic years, which portend bumper harvest for the rice farmers. This is in line with the findings of **Adewum and Omotosho, (2012)**. Who opined that productivity and output of the farmer is affected by his age. Similarly, **Nwaru((2007)** reported that young farmers are more likely to take risks by adopting better agricultural practices than the old farmers who are more conservative to modern agricultural practices.

The same table disclosed that both men and women were involved in rice production, but with men having 52% participation and the women having 48% participation. This result implies that rice farming in the study area is male dominated; and this is consonance with the **Chukwu and Umeh, (2015)** who stated that males dominated in rice production in Ebonyi State.

The table equally displayed that 88% of the married couples were involved in rice production in the area. This indicated that most of the rice farmers in the study area were faced with many responsibilities, which can push them into off-farm activities to earn extra income for the family. This result is in line with the findings of **Ajala and Gana (2015)** who reported that instability of income and its consequences were felt more by married farmers than the single farmers in such area like provision of food, shelter and clothing for the family. Unlike the single farmers who have fewer responsibilities.

The same table 2 revealed that most (82%) of the rice farmers sampled had one form of formal education or the other. **Amaechina and Eboh (2017)** reported on the ease of educated farmers in having access to information, which could assist in enhancing their innovativeness and in making the good use of the improved technologies packages.

The same of table 2 depicted that 94% of the respondents had farm sizes of between 1-3 hectares, which portrayed their small-scale nature. This is in line with the popular axiom that farmers in many developing countries of the world operate in a small-scale (**Adeoti, 2006**).

The table equally showed that greater number (90%) of the respondents in the area had long years of experience in rice production for about 5-20 years. This implies that most of the rice farmers in the study area are well experienced in rice production enterprise.

Furthermore, rice farmers in the area have household sizes of between 4-16 members, but with a mean of 10 members. Nevertheless, under the peasant agriculture, much reliance is often placed on the strength of the household to supply the much needed farm labour in absence of mechanized equipment. Thus, the larger the household size, the greater the supply of family labour. This is in line with the findings of **Ezeh and Nwachukwu (2010)**, who reported that family size has major implications on the provisions of labour for farm work.

Cooperative membership lends credence to the a priori expectations, because membership of

farmers groups has many advantages in terms of reduction of risks and uncertainties and to have cheaper source of credit and other important inputs needed in the production process as record by Babatundee, al, (2008). Hence, cooperative membership creates access to networks and opportunities to diversity income through boosting of output which will eventually lead to the profitability of the farm business.

Labour is very critical in all agricultural activities, especially among the peasant farmers in developing countries. Nwaru (2006) postulated that married couples who have children in their homes, invariably use them as a sources of family labour in their farm operations; thereby reducing the costs of production to the barest minimum. Hence, the use of family labour is a cash saving device which would add to both the output and profitability of rice production in the study area.

The table also revealed that the respondents have different sums accrued to them for rice production.

However, the capital intensive nature of rice production could be responsible for the low financial returns as shown in the table 2: FAO (2018) reported that credit helps farmers in payment of labour and procurement of farm inputs in order to boost their productivity. It could be deduced from the result that the farmers did not earn enough, possibly for the fact that they engaged in small-scale rice production.

Type of subsidies given to the rice farmers in the area:

Table 3 showed that 26% of the respondents received fertilizer as part of subsidy gifts; 20% of them received herbicides, 19% received improved seed varieties, 18% received grants, while 17% received farm implements as their own subsidy. In which case those who received fertilizer as their subsidies.

Gross Margin Analysis:

The viability of an enterprise is indicated by the amount of profit realized per period of time. Profit is the difference between the monetary value of goods produced and the cost of the resources used in their production. The amount of revenue realized and the operating cost of a business venture determines how much gain or loss the enterprise can achieve within a certain period. Table 4 X-rays the costs and returns of rice production per hectare of land in the study area. The result showed that an average of ninety (90) bags of milled rice grains were realized per farmer per hectare of land; or a total revenue of ₦1,800,000.00; with a total cost of production amounting to ₦476,014.00; thereby giving a net revenue (or net returns) of ₦1,323,986 and a benefit-cost-ratio of 3.8 or Returns on investment per naira of 2.78. This implies that for every one naira invested on rice production in the study area; brings a profit of ₦2.78; which indicates that rice production enterprise is a very rewarding and lucrative venture in the area. This

conforms with the findings of Chukwuand Umeh (2015) who stated that rice production is a profitable enterprise in not just for the study area, but also in the state as a whole.

Results of the Multiple Regression Analysis:

The multiple regression analysis results are presented in Table 5, and it shows that the double –log functional form emerged as the lead equation based on the economic, statistical and econometric criteria. The coefficients for fertilizer, farm implements, Grants, and herbicides were all positive and highly significant at 1% level of probability. This implies that they all have direct relationship with the output of rice and this is in line with a priori expectations.

As expected, the coefficient of fertilizer was positive and statistically significant at 1% risk level. This confirmed to the findings of Onyenweaku et al, (2010) who asserted that fertilizer is an important input factor that greatly influences farmer's outputs. Furthermore, the positive relation between fertilizer usage and yield could be due to the fact that continued application of fertilizer will replenish the lost soil nutrients and thereby provide the needed nutrients for crop growth and development. Hence, judging from the fact that an increase in the application of fertilizer will help to supply the needed nutrients to maximize yield, the positive effect of it is thereby justified.

The coefficient of herbicides equally had direct relationship with the dependent variable at 99% confidence interval. Numerous studies () attested to this assertion. Weedicides are needed to control weeds in order to prevent competition among crops and weeds for nutrients. Thus, an increase in the use of weedicides suggests frequent weed control on the field, which is essential in ensuring efficient crop growth, development and yield. Hence, the positive effect of weedicide is thereby justified.

Constraints to accessing government subsidies on rice production in Ivo Local Government Area, Ebonyi state.

The constraints to rice production in this context imply the problems and the challenges prohibiting rice producers from accessing Government subsidies on rice. Table 6 showed the main constraints highlighted by the rice producers in the study area. The average percentages of each constraint across the rice area were computed and ranked in the Table. Those factor as showed in Table 6 with average constraints above 50% were the major challenges that needed to be addressed in order to make the enterprise more attractive and conducive for the rice farmers. The remaining problems that score less than 50% were regarded as minor or as non-effective challenges to accessing Government subsidies in the study area.

Poor access to credit/fund whose score is 100 is a major constraint to rice production as farmers are poor, they suffer from limited access to credit facilities; thereby hindering higher productivity and output (Izeakor and Olumese, 2010), Hence, lack of adequate provision for agricultural loans from the

financial institutions to producers has constrained sustainability of rice cultivation of Nigeria.

Shortage and high cost of labour whose score is 86% is also a major challenge to rice production in the area. Okoye et al, 2010; FAO, 2014; Kadiri et al, 2015; and Ume et al, 2018 reported that the shortage and high cost of labour in most countries insub-saharan Africa. However, Nigerian situation could be linked to among other things; economic recession as labourers charge exorbitantly to survive and as well as rural-urban migration of able-bodied youths in search of greener pastures; thereby leaving farming to the feeble and the aged parents and their little children.

CONCLUSION

Rice is a staple food for over 50% of the human population; as well as provides over 19% of the global per capita energy. However, analysis of the socio-economic variables revealed that greater proportion (98%) of them were within their active productive ages (21-60 years)

The result also showed that both married men and women were involved in accessing government subsidies for rice in the study area; even though the males predominated the females. Most of them (90%) had long years of experience in accessing government subsidies on rice and also have one form of formal education or the other. Five categories of subsidies were given to the rice farmers by the government; and these include; fertilizers, herbicides, improved seed varieties, grants and farm implements.

The results of gross margin analysis showed that rice production in the area is a very rewarding and lucrative enterprise, as every naira invested in rice production in the area brings a profit of ₦2.78. The coefficients for grants, improved rice varieties, fertilizers, farm implements and herbicides were all positive and highly significant at 1% probability level. This made them to have direct relationship with the output of rice, which is in accordance with a priori expectations.

Of the thirteen (13) constraints identified in the study; eleven (11) were found to have debilitating challenges on rice production in the study area. It is therefore recommended that these major constraints limiting the respondents from attaining their goals in rice production be addressed by the government in power as a means of encouraging them to increase their rice production potentials and capabilities.

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Table1: Nigeria rice production, consumption and imports from the year 2007-2019

Year	Production (000 metric tonnes)	Growth rate (%)	Consumption (000 metric tonnes)	Growth rate (%)	Import (000 metric tonnes)	Growth (%)
2007	2,008	-21.13	4,100	1.49	1,800	20.00
2008	2,632	31.08	4,220	2.93	1,750	-2.78
2009	2,234	-15.12	4,350	3.08	1750	-4.00
2010	2,818	26.14	4,800	2.85	2,400	37.14
2011	2,906	3.12	5,600	6.67	3,200	33.33
2012	3,423	17.79	5,700	1.79	2,800	12.50
2013	3038	-11.25	8,800	1.75	2,800	-7.44
2014	3,782	24.49	6,120	5.17	2,800	-7.14
2015	3,941	4.20	6,400	4.92	2,100	-19.23
2016	3,780	-4.29	6,700	4.69	2,500	19.05
2017	3,780	0.00	6,900	2.99	2,000	-20.00
2018	3,780	0.00	7,000	1.45	1,900	-5.00
2019	4,900	2.34	7,000	0.00	1,800	-5.26

Source: United State Department of Agriculture (2019) & Udemezue,2019

Table2: Socio-economic characteristics of the Respondents

Age (years)	Frequency	Percentage (%)
1-20	2	2.00
21-30	14	14.00
31-40	45	45.00
41-50	26	26.00
51-60	13	13.00
Total	100	100.00
Gender		
Mail	52	52.00
Female	48	48.00
Total	100	100.00
Marital Status:		
Single	12	12.00
Married	71	71.00
Widow(widower)	9	9.00
Divorced(Separated)	8	8.00
Total	100	100.00
Education:		
No formal education	18	18.00
Primary education	42	42.00
Secondary education	25	25.00
Tertiary education	15	15.00
Total	100	100.00
Household size(No)		
1-4	20	20.00
5-8	45	45.00
9-12	25	25.00
13-16	10	10.00
Total	100	100.00
Farming experience (years)		
1-5	10	10.00
6-10	42	42.00
11-15	28	28.00
16-20	20	20.00
Total	100	100.00
Farm size(ha)		
0.5-1.0	23	23.00
1.1-1.5	35	35.00
1.6-2.0	20	20.00

2.1-2.5	16	16.00
2.6-3.0	6	6.00
Total	100	100.00
Membership of cooperative		
Member	45	45.00
Non-member	55	55.00
Total	100	100.00
Source of Labour		
Family Labour	28	28.00
HIREN Labour	64	64.00
Communal Labour	8	8.00
Total	100	100.00
Annual farm Income(₦)		
50,000-100,000	30	30.00
150, 00-200,000	56	56.00
250,000-300,000	10	10.00
350,000-400,000	4	4.00
Total	100	100.00

Source: Computed from field survey data, 2021.

Table 3: Type of Subsidies Given to the Rice Farmers in the study Area

Type of Subsidies	Frequency	Percentage(%)
Improved seed Varieties	19	19.00
Fertilizers	26	26.00
Farm implements	17	17.00
Grants	18	18.00
Herbicides	20	20.00
Total	100	100.00

Source: Computed from the field survey data, 2021

Table 4: Costs and Returns for Rice Production in the study Area Budget items

	Unit	Quantity	Price/Unit(₦)	Total Value (₦)
Rice Output	Bag	90	20,000	1,800,000.00
(A) Total Revenue				1,800,000.00
Variable Costs:				
(a) Operating input:				
Rice seeds	Bag	20	8,000	160,000.00
Selective herbicide	litre	2	1,600	3,200.00
Non-Selective herbicide	litre	2	1,600	3,200.00
Insecticide	litre	2	2,500	5,000.00
Fertilizer	Bag	6	6,500	39,000.00
Empty jute bags	No	30	150	4,500.00
Twine	Roll	2	250	500.00
Total Cost of Operating Inputs:				215,400.00
(b) Labour inputs (M/days):				
Land Preparation (including nursery)	MD	25	2,000	50,000.00
Planting (including)				
Transplanting	MD	15	1,000	15,000.00
Herbicide application	MD	2	1,500	3,000.00
Insecticide application	MD	2	1,500	3,000.00
Fertilizer application	MD	10	1,500	15,000.00
Bird scaring	MD	2	1,000	2,000.00
Harvesting (including)				
Conveyance	MD	20	1,000	20,000.00
Processing(including)				
Parboiling, threshing,				
Winnowing and-bagging	MD	10	1,000	10,000.00
Total Labour Costs:				118,000.00

Opportunity cost of variable capital at 21% interest rate = $\frac{21}{100} \times \frac{333,400}{7} = ₦70,014$

(B) Total Variable Costs (TVC)=(a+b)=333,400+70,014 → ₦403,414.00
 Gross Margin (GM)=(A-B)=₦1,800,000-403,414.00 → ₦1,396,586.00

Fixed Cost:

Rent on Land 50,000.00
 Depreciation of fixed Assets (excluding land) 10,000.00
 Opportunity cost of fixed capital at 21% interest rate =21/100 x 60,000/1 = ₦12,600

(C) Total fixed costs = 60,000 +12,600 = ₦72,600.00

(D) Total costs = (B+C) = ₦403,44+72,600.00 → ₦476,014.00

(E) Net Returns (NR) = (A-D) = ₦1,323,986.00

❖ Benefit-Cost-Ratio (BCR) = $\left(\frac{A}{D}\right)$ = 3.78

Return on Investment/Naira $\left(\frac{E}{D}\right)$ = 2.78

Source: Computed from the field survey data, 2021.

Table 1: Nigeria rice production, Consumption and Imports from the year 2007-2019.

Year	M Production (000 metric tonnes)	Growth (%)	Consumption (00 metric tonnes)	Growth Rate (%)	Import (000 metric tonnes)	Growth Rate (%)
2007	2,008	-12.13	4,100	1.49	1,800	20.00
2008	2,632	31.08	4,220	2.93		

Table5: Results Of Multiple Regression Analysis On The Effects Of Government Subsidies On The Output Of Rice In IVO L.G.A. Of Ebonyi State, Nigeria.

Variables	Linear	Semi-log	Double-log	Exponential
Constant	199.5493 (4.70)***	198.1719 (3.95)***	7.5471 (8.66)***	120et33 (0.08)
Fertilizers	16.30174 (2.98)***	54.12120 (3.52)***	0.61877 (8.29)***	-1.17et30 (-0.08)
Improved seed Varieties	-6.764396 (-2.000)**	-25.58691 (-1.73)*	0.2133 (0.61)	-310et29 (-0.35)
Farm implements	28.14563 (6.35)***	-86.97651 (-7.46)***	1.54440 (6.00)***	-2.92et30 (-0.36)
Grants	-6.30817 (-1.54)	14.94094 (1.26)	0.70088 (2.78)***	1.59et30 (0.24)
Herbicides	0.7651 (1.9812)*	1.0092 (1.0076)*	1.0843 (3.042)***	-1.83et27 (-0.000)
R ²	0.4818	0.5111	0.6470	0.0048
F-ratio	1.0086*	20.07***	35.20***	0.05

Source: Computed from the field survey data, 2021

Note: ***,**,* implies significant at 1%, 5% and 10% levels of probability respectively. The figures in parenthesis are t-values.

Table 6: Constraints to Accessing Government Subsidies on Rice Production in the study Area

Constraints	Frequency	Percentage(%)	Ranking
Lack of improved Rice varieties	90	90	5 th
Shortage and high Cost of labour	86	86	6 th
Poor access to Credit/funds	86	86	6 th
Pests and diseases Infestation	100	100	1 st
	43	43	12 th

Poor and inadequate Storage facilities	92	92	4 th
Poor market information	76	76	8 th
Inadequate processing Facilities	94	94	3 rd
High interest rate on credit	68	68	10 th
High cost of land and land Tenure problem	80	80	7 th
Poor access to extension Services	65	65	11 th
Poor access to market	32	32	13 th
Poor access to improved Inputs	72	72	9 th
Poor infrastructural Facilities	95	95	2 nd

Source: Computed from the field survey data, 2021.
Multiple responses.