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DETERMINANTS OF RICE FARMERS' REVENUE IN NORTH – CENTRAL, NIGERIA

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ABSTRACT

Rice feeds a lot of people, supports so many agrarians and crucial to our global environment. This study contributes to providing insights into the determinants of rice farmers' revenue in North – Central, Nigeria, Nigeria. A multi-stage sampling procedure was used in the selection of 995 rice farmers. Primary data were obtained on respondents' characteristics through the use of a structured questionnaire. Descriptive statistics and regression analysis were used for data analysis. Results showed that the majority of the respondents formal education (81.4%). The mean household labour size was 11 persons, household head age was 46.3 years, rice farming was 19.5 years, rice farmland size was 2.6 hectare while the average number of times of extension agents visits was once, credit amount accessed was 0.16 million Naira and the revenue gotten from rice production/hectare was 0.52 million Naira respectively in a planting season. Linear Regression showed that at $p < 0.05$, household labour size ($\beta = 0.04$), household head age ($\beta = 0.05$, rice farming years of experience ($\beta = 0.04$), number of times of extension agents visits ($\beta = -0.43$), number of times of credit access ($\beta = -0.48$), credit amount accessed ($\beta = 0.26$) and the rice farmland size ($\beta = 0.11$) significantly determines rice farmers' revenue generated from rice production in the area. The study concluded that the characteristics of the rice farmers are an important contributors in determining the rice farmers' revenue generated from rice production in the area. It was recommended that there should be more consistent visits of the extension agents to the rice farmers and regular credit access to funds for rice production as this will increase their revenue generated from rice production.

Keywords: rice, land, labour, credit, farmers, revenue

INTRODUCTION

One of the most lucrative cereal crops grown and consumed globally is rice. It is a common dish in many African nations, including Nigeria, and regularly makes up a sizable component of the diet (Raheem et al., 2021). In Nigeria, rice is grown on a local scale in almost all agro-ecological zones (Fadairo et al., 2022). According to Sanusi et al., (2022), Nigeria is the world's largest importer of rice, the largest consumer of rice on the continent, and one of Africa's major producers of the grain. Since small-scale farmers

typically sell 80% of their crop and consume only 20%, rice is a crucial commodity for food security and a crucial income crop (Danmaigoro & Gona, 2022).

The low productivity of staple crops in developing countries like Nigeria is a result of the use of inefficient traditional farming techniques, inadequate irrigation infrastructure, land fragmentation, the effects of climate change, improper application of modern agricultural technology, and a lack of credit (Aworh, 2022). Rice has become one of Nigeria's most important crops among the staples. For over half of humanity, rice is the most important staple food (Onyedum et al., 2020). Nigeria consumed roughly 5 million MT of rice annually, whereas 2.7 million MT of it was supplied. This left a 2.3 million MT demand-supply gap, which is being filled by imports (Zakari et el., 2020). A number of studies in Nigeria have been drawn to the significant production of rice (Adetimehin et al., 2018; Ojo et al., 2019; Onyeneke, 2021).

The majority of rice farmers in Nigeria work on a small scale, which prevents them from increasing production in order to get the commensurate returns (Akinbile, et al., 2018). Small-scale farmers must contend with a lack of resources, including money, labor, and farmland (Mizik, 2021). Additionally, erosion, floods, droughts, insect and disease infestations and little crop harvests (Nwahia, 2020). Nigerian farmers are discouraged from attempting to grow rice since small-scale producers are not profitable (Okpukpara et al., 2021). As a result, this research tends to examine the determinants of rice farmers' revenue in North – Central, Nigeria, Nigeria.

METHODOLOGY

The study was carried out in Benue, Nasarawa and Niger States which were selected from the Guinea Savannah Area of Nigeria. A multistage sample technique was used to select the sample size of the beneficiaries and non-beneficiaries in the study area. The first stage involved purposive selection of three states namely Benue, Nassarawa and Niger State because of their relative economic advantage in rice production. The major agricultural zones producing rice was considered in each state which include Benue North East (Benue State), Southern zone (Nassarawa State) and Niger South (Niger State). In stage two, 40% of the Local Government Areas in each zone were randomly selected namely Kwande, Katisna-Ala and Ukum (Benue State), Lavun, Katcha and Gbako (Niger State), Lafia and Doma (Nassarawa State). This gave a total of eight Local Government Areas that were used for the study. In stage three, 30% of the districts in each Local Government Area were selected making a total of 10 districts. The fourth stage involved selection of 40% of the villages from each district, giving a total of 51 villages. In stage five, a list of farmers (sampling frame) under the Growth Enhancement Support Scheme (GESS) in each state was obtained from the state ministry of Agriculture, which is the ministry mandated to oversee and supervise the implementation of the scheme in the state and Rice Farmers Association of Nigeria (RIFAN). From the list of the population, simple random sampling was used to select 10% of the rice farmers in the selected villages to give a total sample size of 995 rice farmers.

Primary data was used for this study. A well-structured open and closed ended questionnaire and oral interview was used in collecting primary data from the beneficiaries and non-beneficiaries rice farmers. Data collected were analysed using descriptive statistics and Regression analysis.

The linear regression equation is as represented as:
$Y = \alpha+\beta iXi+\mu$
Where:
Y = Revenue from rice production/hectare (per N 100,000)
X1 = Household labour size (Persons)
X2 = House hold head age (Years)
X3 = Educational status
X4 = Rice farming years (Years)
X5 = Number of times of extension agents visits
X6 = Number of times of credit access
X7 = Credit amount accessed (per N 100,000)
X8 = Rice farmland size (Hectare)
α = Constant
βi = Regression coefficient (i = 1, 2. ……, 8)
μ = Error term

RESULTS AND DISCUSSION

Characteristics of rice farmers

The results revealed that the mean age of the rice farmers was 46.3 years implying that majority of the rice farmers were in the economically active age range, which is in line with the findings of Rondhi et al., (2019) and Adebayo et al (2021). Household labour size is recognized as a major source of labour supply in rice production in most African countries like Nigeria (Ojo et al., 2020). This comprises the labour of all males, females and children in a household, who participate in rice production. The average household labour size was about 11 persons per household. This result agrees with the findings of Etim & Ndaeyo, (2020) who reported the adoption of climate smart agricultural practices by rice farmers in Akwa Ibom State, Nigeria having specified that larger family members indicated the availability of labour for participation in rice farming. Majority (81.4%) of the respondents had one form of formal education. This result agrees with the findings of Afodu, et al., (2019) who opined that majority of the rice farmers are educated. The respondents' mean years of experience in rice farming was 19.5 years implying that majority of the respondents had a much years of experience in rice farming (Adesiji, et al., 2022). Thus, the mean period to fully access credit was thrice and the mean credit amount accessed was 162,223.33Naira. The average number of times of extension agents visits was once. This is similar to the report of Okpara et al., (2022). However, the respondents' average rice farm size was 2.6 hectares (Alagbo & Akinyemiju, 2018; Adetimehin et al., 2018; Ayanda, 2019) while and average of 515,501.61 Naira was the

revenue realised per hectare by the rice farmers. This is similar to Yusuf (2018) who stated that gross income from the sale of paddy rice of farmers was N523,667 per hectare.

Table 1. Characteristics of rice farmers (n = 995)

Characteristics	Description
Household labour size (Persons)	Mean = 11
House hold head age (Years)	Mean = 46.3
Educational status	Formal education (81.4%)
Rice farming years (Years)	Mean = 19.5
Number of times of Extension agents visits	Mean = 1
Number of times of credit access	Mean = 3.1
Credit amount accessed (per ₦ 100,000)	Mean = 1.6
Rice farmland size (Hectare)	Mean = 2.6
Revenue from rice production/hectare (per ₦ 100,000)	Mean = 5.2

Table 2 showed the results of the multiple regression analysis of the relationship between rice farmers' revenue generated from rice production and the characteristics of the rice farmers. The independent variables were significantly related to revenue generated from rice production among the farmers.

The F value of 45.85 at $p \leq 0.05$ showed that there was a strong relationship between the rice farmers' revenue generated from rice production and the characteristics of the rice farmers. The significant factors influencing the rice farmers' revenue generated from rice production include their household labour size ($\beta = 0.04$; $p \leq 0.05$), household head age ($\beta = 0.05$; $p \leq 0.01$), rice farming years of experience ($\beta = 0.04$; $p \leq 0.05$), number of times of extension agents visits ($\beta = -0.43$; ≤ 0.05), number of times of credit access ($\beta = -0.48$; $p \leq 0.01$), credit amount accessed ($\beta = 0.26$; $p \leq 0.01$) and the rice farmland size ($\beta = 0.11$; $p \leq 0.01$).

This finding revealed that rice farmers' household labour size, household head age, rice farming years of experience, number of times of extension agents visits, number of times of credit access, credit amount accessed and the rice farmland size are the major determinants to rice farmers' revenue generated from rice production. It therefore implied that rice farmers' will generate more revenue from rice production as their household labour size, household head age, rice farming years of experience, credit amount accessed and the rice farmland size increases (Awotide, et al., 2016 and Ebers et al., 2017). On the contrary, there will be reduction in rice farmers' revenue generated from rice production if the number of times of extension agents visits and to credit access reduces, thus these are needed to be increased for a better revenue from rice

production (Ali et al., 2021 and Bello et al., 2021). The R value is 0.83 while the R square value is 0.68 which implied that the independent variables predict 68% of the change observed in the dependent variable.

Table 2. Determinants of rice farmers' revenue

Variables	β	t	Sig.
(Constant)	1.36	1.30	0.20
Household labour size (Persons)	0.04	2.00	0.05
House hold head age (Years)	0.05	2.74	0.01
Educational status	-0.04	-0.81	0.42
Rice farming years (Years)	0.04	1.39	0.05
Number of times of Extension agents visits	-0.43	0.21	0.03
Number of times of credit access	-0.48	-3.78	0.00
Credit amount accessed (per ₦100,000)	0.26	2.91	0.00
Rice farmland size (Hectare)	0.11	4.25	0.00
F	45.85		0.00
R value	0.83		
R Square	0.68		
Adjusted R Square	0.67		
Dependent Variable: Revenue generated from rice production/hectare (per ₦ 100,000)			

CONCLUSION

From the results of the study, it is understood that the characteristics of the rice farmers such as their household labour size, household head age, rice farming years of experience, number of times of extension agents visits, number of times of credit access, credit amount accessed and the rice farmland size are the momentous determinants to revenue generated from rice production among the farmers.

It therefore becomes imperative for efforts to be geared towards enhancing the characteristics of the rice farmers through more consistent visits of the extension agents to the rice farmers and regular credit access to funds for rice production as this will increase their revenue generated from rice production.

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