Original Research Article

Rice Marketing as a Means of Poverty Alleviation in Niger State, Nigeria

Eniola Oluwatoyin Olorunsanya^{1*}, Josephine Utsunu Ugbong²

¹Department of Agricultural Economics and Extension Services, ²Department of Economics, Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria

Abstract

This study examined rice marketing as a means of poverty alleviation in Niger State, North Central Nigeria. Ninety-eight representative rice marketers' households were used for the study. Descriptive statistics, Foster, Greer and Thorbecke poverty measures as well as logistic regression model were used as the analytical tools for the study. The result of the descriptive statistics shows that forty-nine percent of the rice marketers have no western education and majority of the rice marketers' households used open spaces for defecation. The result of the poverty profile shows that all the representative households were poor using 1.25 dollar a day poverty benchmark and only 32 percent were poor using the estimated relative poverty benchmark of ₦ 1,894.2 per capita. The result of the logistic regression model shows the following factors influenced the poverty status of the rice marketers' households in the study area. These are age and gender of the rice marketers, household size, other sources of income, marital status of the rice marketers and their educational status. The study recommends manageable household size as well as improved level of education for members of the rice marketers' households for poverty reduction in the study area.

Keywords: Foster, Greer and Thorbecke poverty measure; logistic regression model; Niger State; Nigeria; rice marketing.

INTRODUCTION

Rice is presently a strategic food security crop in Nigeria with an average per capita consumption of 24.8 kg per year representing 9% of annual calorie intake of Nigerians (Bamidele et al., 2010). Nigeria's estimated annual rice demand was put at 5 million metric tonnes while annual production on the average was about 2.21 million tonnes of milled rice with a deficit of 2.79 million tonnes bridged annually by importation (NRDS, 2009). Some of the factors responsible for Nigerians' preference for rice include rapid rate of urbanisation and the relative ease of its preparation. The high demand for rice in the face of inadequate supply has led to massive importation to meet the shortfall which has made Nigeria to become the largest importer of rice in Africa (Daramola, 2005). Though the country is the largest producer of rice in Africa, she is also the largest consumer. The desire by successive regimes to reverse this trend has led to the implementation of various policies such as imposition of tariffs on rice importation and provision of subsidies for local producers. Some agricultural programmes were also put in place to stem the trend; these include among others, the Abakaliki Rice Project (ARP) and the Presidential Initiative on Rice (PIR). Despite these laudable government policies and programmes the supply-demand gap for rice widens in Nigeria (Bamidele et al., 2010).

Rice, the seed of the monocot plants *Oryza sativa* (Asian rice) or *Oryza glaberrima* (African rice) is a cereal grain that is widely consumed by a large chunk of the world population,

especially in Asia. It has the second-highest worldwide production after maize among grains (FAOSTAT 2010) and the third most frequently consumed crop in Nigeria. The three types of rice that are mainly cultivated in Nigeria are: African rice - *Oryza glaberrima*, Asian rice- *Oryza sativa* and recently WARDA's hybrid rice- NERICA available only to farmers under WARDA's PVS programme. *Oryza sativa* has the widest cultivation of all the three rice types in Nigeria. Although rice is cultivated in virtually all the ecological zones in Nigeria, the Northern parts, however, have the major share of its production (KNARDA, 2007). Problems associated with rice production and marketing in Nigeria are problems inherent in Nigeria agriculture which includes among others: low yield per hectare, low farm income, poor infrastructure for production and marketing and low level of capacity to satisfy the food and fibre needs of Nigerians. Agricultural production and marketing as drivers of economic growth and reduction of poverty in Nigeria are currently being advocated by the present administration. Marketing entails all activities that proceed from the farm gate to the final consumers. Inefficiency in processing and marketing of locally produced rice has however increased the preference of consumers in Nigeria for the imported ones. The foregoing therefore necessitates examining the efficiency of rice marketing in Niger State as a means of poverty reduction in the state. The specific objectives of the study are: to examine the socio-economic characteristics of the rice marketers in the state; examine the efficiency of rice marketing in the study area; profile the poverty status of the rice marketers' households and examine the factors influencing their poverty status.

MATERIALS AND METHODS

The study was carried out in Niger State, North Central Nigeria. Niger State lies on latitude 3.20 East and longitude 11.3 North and covers about 8.6 million hectares, which is 9.3% of the total land area of Nigeria. Niger state is predominantly agrarian with an estimated 80% of the population in the rural areas. Niger state is stratified into 25 Local Government Areas (LGAs) namely: Agaie, Agwara, Bida, Borgu, Bosso, Chanchaga, Edati, Gbako, Gurara, Katcha, Kontagora, Lapai, Lavun, Magama, Mariga, Mashegu, Mokwa, Munye, Paikoro, Rafi, Rijau, Shiroro, Tafa, and Wushishi. Three stage sampling techniques were used for the study. The first stage entails a random selection of five Local Government Areas for the study which are: Wushishi, Gbako, Lavun, Katcha, and Paikoro. The second stage comprises of the random selection of ten (10) villages from the five selected Local Government Areas. The final stage involves the random selection of ten (10) rice marketers' households from each of the selected ten villages to give 100 representative households altogether. Ninety eight (98) questionnaires were, however, found useful for the study. Both descriptive and inferential statistics were used to analyse the data generated from the survey. These techniques are further deliberated upon:

(i) Gross Marketing Margin

Gross Marketing Margin = Selling Price - Purchasing Price (SP-PP)

Where: SP= Selling price of milled rice

PP= Purchasing price of milled rice

(ii) Net Marketing Margin

This is the difference between the Gross marketing margin and the total marketing cost that is, Net Marketing Margin = Gross Marketing Margin – Total Marketing Cost. This represents the value of the marketing margin received by each marketer as a return for services or functions performed.

In percentage Net Marketing Margin = Net Marketing Margin $\times$ 100 / Market Price

(iii) Marketing Efficiency

It measures the efficiency with which the various functions performed by the marketers were carried out. It is calculated using Shepherd Index (SI) (Shepherd, 1993) as follows:

Marketing Efficiency Index = (V/ I) - 1

Where V = Value of goods sold in naira per bag

I = Total marketing Cost in Naira

The higher the ratio the higher the efficiency

(d) Poverty Profile

The poverty line z used for the study was two-third of the Mean Per-Capita Household Expenditure (MPCHE) following National Bureau of Statistics (NBS), (2010).

The Foster, Greer and Thorbecke class of weighted poverty measure (Foster et al., 1984) was used to profile the rice marketers' households into poor and non-poor categories. The formula is given in equation (1) as follows:

$$P_{\alpha} = 1/n \sum (z-y_i/z)^{\alpha} \quad (1)$$

Where P_{α} is the weighted poverty index; n is the number of households; y_i is the expenditure per capita of i th household; z is the poverty line; q is the number of the sampled household population below the poverty line; α is the aversion to poverty (a coefficient reflecting different degrees of importance accorded to the depth of poverty and it ranges from 0 to 2 (IFAD, 1993). Where P_0 is the proportion of the poor in the population with α equals zero; P_1 (Poverty Gap Index) measures the depth of poverty of the population and is obtained when α equals one and the P_2 (Poverty Severity Index) measures the severity of poverty of the population and is obtained when α equals 2.

Logistic Regression

Logistic Regression model was used to determine the factors influencing the poverty status of the rice marketers' households in the study area. The model is stated in equation (2) as follows:

$$\ln P_i/1-P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \beta_n X_n \quad (2)$$

Where:

$\ln$ = Natural logarithm

α_0 = Intercept

β_i = Estimated parameters

X_i = Explanatory variables

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, e_i)$

Where,

Y = A dichotomous dependent variable and is equal to 1 if the household is poor and 0 if otherwise.

The hypothesised explanatory variables for the study are specified as follows:

X_1 = Age of the rice marketers

X_2 = Highest educational attainment of the rice marketers

$X_2 = 1$ if educated and 0 if otherwise

X_3 = Access to formal credit $X_3 = 1$ if yes and 0 if otherwise

X_4 = Marital status of the marketers; $X_4 = 1$ if married and 0 if otherwise

X_5 = Gender; $X_5 = 1$ if the rice marketer is a male and 0 if otherwise

X_6 = Household size

X_7 = other occupation

e = Stochastic error term

RESULTS AND DISCUSSION

The socio-economic characteristics of the sampled rice marketers are presented in Table 1. Rice marketing is carried

out by males and females in the study area; 51 percent of the rice marketers were females. The rice marketers in the study area were also relatively young; sixty-nine percent were between 20-40 years of age and over forty-nine percent had no western education. This explains the traditional method of marketing adopted in the study area. The average household size of the marketers in the study area was between 6-10 members per household, 62 percent of the rice marketers' households fall within this class. The marketers also combine rice marketing with some other forms of livelihoods.

Table 1. Social-Economic Characteristics of Rice Marketers' Households in Niger State

Characteristics	Frequency
Gender of the Marketer	
Male	48
Female	50
Age of the Marketer	
20-40	68
41-60	28
>60	2
Highest Educational Qualification of the Marketer	
No formal Education	6
Quranic Education	43
Primary	25
Secondary	16
Tertiary	1
Marital Status	
Married	81
Not Married	18
Major Occupation	
Marketing only	78
Marketing with other occupation	20
Marketing Experience	
1-5	11
6-10	25
11-24	62
Household Size	
1-5	15
6-10	61
11-15	12
>15	10
Membership of Cooperative Society	
Yes	86
No	12
Access to Formal Credit	
Yes	66
No	32

Source: Field survey, 2013.

Welfare indicators of rice marketers' households in Niger State

Eighty-two (82) percent of the households of the rice marketers did not have access to potable water supply;

forty-nine percent used open spaces for faeces disposal. This is an indication of low level of well-being as found by Olorunsanya et al. (2013). NBS (2010) and Rahman et al. (2005) reported similar findings of absence of modern toilet facilities in rural areas in Kwara State, Nigeria and Bangladesh, respectively (Table 2). This study also reveals that most of the rice marketers have poor housing facilities. Rahman et al. (2005) corroborated this finding for rice marketers in Bangladesh.

Table 2. Welfare Indicators of Rice Marketers' Households in Niger State

Characteristics	Frequency
Access to Potable Water	
Yes	18
No	80
Access to Electricity	
Yes	67
No	31
Types of Toilet	
Water Closet	25
Pit latrine	25
Open Space	48

Source: Field Survey, 2013.

Expenditure pattern of rice marketers' households in Niger State

Over fifty-one percent of the rice marketers' households' expenditure was on food while the remaining was on transportation, health care, accommodation, clothing and education (Table 3). The main food components consumed in the study area were the major Nigerian staples.

Table 3. Distribution of Rice Marketers' Households Expenditure on Basic Needs

Item	Monthly Expenditure (Naira)
Food	18,076.67 (57.4)
Non-Food	13,425.67 (42.6)
Total Expenditure	31,502.34

Source: Field Survey, 2013. The figures in parentheses are percentages of total

Poverty status of the marketing households

The World Bank \$1.25 a day poverty benchmark shows that all the sampled rice marketers' households were poor while the relative poverty benchmarks of ₦1,894.2 and ₦947 obtained from the mean per capita household expenditure of ₦2841.3 and using the Foster, Greer and Thorbecke (1984) weighted poverty measure stated in equation (1) in the methodology section, 32 and 10 per cent of the sampled rice marketers' households were moderate and core poor,

respectively (Table 4). This shows the arbitrariness of the estimated relative poverty measure which only measures the poverty status of the households in relation to themselves not in relation to the larger society of which they are a subset.

Table 4. Poverty Incidence of Rice Marketers' Households in Niger State

Item	Incidence of poverty (Relative measure)
Moderate poor	32
Core Poor	10
Non-poor	58

Source: Field Survey, 2013

Determinants of poverty among rice marketers' households in Niger State

The determinants of poverty for the sampled rice marketers' households were identified using Logistic regression model stated in equation (2) in the methodology. The fitted variables for the model were age and gender of the rice marketers, household size, presence of other sources of income, access to credit facility, marital status of the rice marketers and highest educational qualification of the rice marketers. The significant variables that explained the variation in poverty status of the rice marketers' households in the study area were age of the rice marketers, household size and the highest educational qualification of the rice marketers (Table 5).

Table 5. Result of Logistic Regression Analysis of Rice Marketing in Niger State

Variable	Coefficients	t-values
Age	-0.627	-2.03*
Gender of the Head	0.450	0.72
Household Size	0.098	2.39*
Other Sources of Income	-0.873	-1.82
Access to Credit	0.673	1.200
Marital Status	-0.592	0.222
Highest Educational Qualification	-1.189	-1.99**
Constant	2.708	2.00

Source: Field Survey, 2013. *, ** denote Significance at 1 and 5%, respectively

Determination of marketing margin for wholesaler Rice marketers in Niger State

Marketing Margin (MM) = Selling Price (SP) – Purchasing Price (PP) = SP - PP

Average cost of purchase per 100kg bag (Farm gate price) = ₦ 9,793.4

Average Selling Price per 100kg bag (Wholesale price) = ₦ 15,422.40

Consumer Retail Price per 100kg bag = ₦16,000.00

Average Marketing Cost per 100Kg bag = ₦350

Marketing Margin per bag = ₦15,422.40 - ₦9,793.4 = ₦5,629 .00

Net Marketing Margin = Marketing Margin – Marketing Cost

= ₦5,629 .0 - ₦350 = ₦ 5,279

Marketing Efficiency Index = (V/ I) – 1 = (16000 / 350) – 1 = 45.7-1= 44.7

V= Value of Goods Sold in Naira per bag

I= Total Marketing Cost in Naira per bag

Wholesaler marketing margin of ₦5,629 .00 was recorded in the study area with a net marketing margin of ₦5,279 and a marketing efficiency index of 44.7 which suggests that the marketing functions were performed efficiently, a low figure indicates inefficiency (Changela et al., 2013).

Table 6. Marketing Cost Per Bag for Milled Rice in Niger State

Item	Cost / Bag
Transportation of Rice	125
Storage Cost	40
Loading	50
Off Loading	50
Cost of Bags	60
Sewing	10
Association Fees	10
Sanitation Rate	5
Total Marketing Cost	350

Source: Field Survey, 2013

CONCLUSION

Using the \$1.25 dollar a day poverty threshold, all the rice marketers' households were poor while 32% and 10% were moderate and core poor respectively using the estimated poverty benchmark obtained from the survey. The livelihood and capability measures also reveal that the rice marketers' households were poor with over 80% using open spaces for defecation. The study concludes that poverty exist in the households of the rice marketers using relative, capability and livelihood measures. The study recommends improved level of education and a manageable household size as panaceas for poverty reduction in the study area. Improved techniques of rice marketing could be adopted for poverty reduction in the study area.

REFERENCES

- Bamidele F. S, Abayomi O. O, Esther O.A. (2010): Economic Analysis of Rice Consumption Patterns in Nigeria Journal of Agricultural Science and Technology 12: 1-11.

- Changela J., Nandala V., Korabandi S. (2013): Marketing Efficiency of Agri-Food Along the Agri-Food Supply Chain in Tanzania. *International Researcher* 2(1): 126-132
- Daramola B. (2005): Government Policies and Competitiveness of Nigerian Rice Economy, Paper Presented at the Workshop on Rice Policy and Food Security in Sub-Saharan Africa organised by WARDA in Cotonou, Republic of Benin, November 7th to 9th 2005.
- Food and Agricultural Organization of the United Nations Statistical Year Book (FAOSTAT) (2010). Food and Agricultural Commodities Production in the World, FAO, faostat.fao.org/
- Foster J., Greer J., Thorbecke E. (1984): A Class of Decomposable Poverty Measures. *Econometrica* 52: 761-765.
- International Fund for Agricultural Development (IFAD) (1993): The State of World Rural Poverty: A Profile of Latin America and the Caribbean. Pp. 1-92.
- Kano State Agricultural and Rural Development Authority (KNARDA) (2007): The Planning in Upgrading of Rice Production in Kano State. A Package Prepared by Marditech Malaysia for KNARDA, pp. 1-44.
- National Bureau of Statistics, NBS (2010): Poverty Profile Report for Nigeria. Federal Government of Nigeria, Abuja.
- National Rice Development Strategy (NRDS) (2009): A Working Document Prepared for the Coalition for African Rice Development, May 2009.
- Olorunsanya E.O., Odukale I.O., Babatunde R.O., Adenuga H. A., Babatunde B. O. (2013): Poverty among Nomadic Fulani Households in Kwara State, Nigeria. *Development Journal of Science and Technology Research (DJOSTER)* 2 (1): 46-52.
- Rahman S. M., Takade J., Shratake Y. (2005): The Role of Marketing in Standard of Living: A Case Study of Rice Farmers in Bangladesh. *Journal of Applied Science* 5: 195-201.
- Shepherd A. W. (1993): A Guide to Marketing Costs and How to Calculate Them. Marketing and Rural Finance Service Agricultural service Division, Food and Agriculture Organization (FAO), Rome.

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Corresponding author:

Eniola O. Olorunsanya

Ibrahim Badamasi Babangida University,

Lapai, Niger State, Nigeria

Phone: +234 8033 845931

E-mail: eniolaolorunsanya@gmail.com