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Economic Analysis of Paddy Rice Marketing in Kebbi State Nigeria

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A B S T R A C T
The study analysed the economics of paddy rice marketing in Kebbi State Nigeria. A multi stage sampling technique was used. Data were collected using structured questionnaires administered to 320 paddy rice marketers. Data was analysed using Descriptive statistics, Gross margin and multiple regression analysis. Majority 79.1% had attained one form of education while 56.3% were members of cooperative with an average membership of 7 years and had an average income of about ₦70,000. Result on costs and returns of paddy rice marketing had a net return of ₦10,330 per metric tonne, the return on naira spent was 7.3% which implied that for every ₦1 spent in marketing of paddy rice, a profit of 73kobo was realised as return to investment. The factors that affect price of paddy rice shows about 62% in the total variation in price of paddy rice was greatly influenced by cooperative membership, duration of storage, marketing experience and Distance to market at 5% level of significance. The determinants of profit earned by paddy marketers shows that the variables for storage cost and transportation cost were significant at 1% while licensing was significant at 5% level of probability.

INTRODUCTION

In Nigeria, rice is a basic food that is widely consumed by people from various socioeconomic backgrounds and geopolitical zones (International Institute of Tropical Agriculture (IITA), 2020). Nigerians are consuming more rice than ever before due to a shift in consumer preferences, growing urbanization, rising income levels, and population growth (Kamai et al., 2020). Typically, it is boiled and served with vegetable soup or stew. Additionally, it is utilized in the cooking of a variety of regional delicacies that are served in every family, particularly during celebrations and rituals. The nation is primarily dependent on the importation of over 3 million tons of rice yearly, which equates to about US$480 million in precious foreign exchange, as the country's output of the grain does not keep up with demand (United States Agency for International Development (USAID), 2020). About 5.7 million tonnes (Mt) of rice are used annually in Nigeria; 1.6 Mt of that amount are imported at an estimated cost of $1.6 billion. Furthermore, local rice is sold at a substantial discount because it cannot compete with international brands in terms of quality. 2018's Africa Rice Centre (ARC). To close the gap between domestic demand and supply, a significant amount of milled rice is imported to make up for the production shortage (Chidiebere-Mark, 2017). Therefore, increasing rice production might benefit the country's foreign exchange profits as well as internal food security. Since the 1970s, Nigeria's domestic rice production has also grown dramatically, averaging about 10% year (World Agricultural Supply and Demand Estimates (WASDE), 2020).

Nigeria's agricultural landscape is evolving as a result of more government initiatives to encourage private sector participation and raise domestic output (IITA, 2020). Nigeria's rice production increased from 3.7 million metric tonnes in 2017 to 4.0 million metric tonnes in 2018, indicating that the initiatives are beginning to bear fruit (USAID, 2020).

The majority of rice farmers in Nigeria's key rice-producing states—Kebbi, Borno, Kano, Ebonyi, and Kaduna, among others—employ traditional methods with little to no utilization of better input technologies (Kamai et al., 2020). In contrast to yields of 6–8 t/ha recorded on research plots, the nation's average rice yields per unit area are low, ranging between 2.0 and 3.0 t/ha (IITA, 2020). Farmers, paddy traders, millers, rice traders, and retailers are the primary participants in Nigeria's rice value chain. Production, harvesting, storing, and paddy aggregation at the trader level, as well as parboiling, milling, wholesaling, and retailing, are the primary value-adding activities (Food and Agricultural Organization (FAO), 2013). To boost rice output and productivity in Nigeria's many states, farmers must use better varieties and possess a solid understanding of rice agronomy. By preserving the vital foreign cash required for the purchase of rice from Asia and other regions of the world, the commercial production of rice will help Nigeria's economy grow (Madu and Aniobi, 2018). The current policy of restricting rice imports gave rise to a renewed emphasis on the promotion of improved rice producing technologies (Kamai et al., 2020).

Nigeria's production of paddy rice has not been able to keep up with the rising demand throughout time. To completely change the Nigerian paddy rice market, marketing should offer all that is needed, including land availability, suitable farm inputs, and market information on agricultural best practices and pricing needs. The ineffective paddy rice marketing system contributes to Nigeria's incapacity to produce enough paddy rice for its own needs. Nigeria's paddy rice marketing system is typified by a lack of industrial drive, insufficient transportation, weak postharvest handling, processing, and marketing knowledge, and harvesting abilities. Others include inadequate finance facilities, poor market information, excessive production costs, and bad government policy (Dauna et al., 2018). In the Nigerian paddy rice business, these factors, along with bad market conduct and structure, result in subpar market performance (Ajala and Gana, 2015).

Agricultural marketing influences and directs the production and distribution of agricultural products, and it has the potential to be the primary engine of economic growth. However, one of the biggest obstacles to Nigeria's agricultural sector is marketing, and some issues with the system have made it extremely ineffective. The market players including retailers, wholesalers and processors, tend to push the price lower so as to purchase rice paddy at cheaper price, because of the higher supply during the harvest period or by lowering the buying price and withdrawing from the market for some time thereby forcing farmers into panic disposal of their products at ridiculously lower prices causing variation in price. This in turn affects the farmers, thus contemplating to withdraw from production with dire consequences to the nation’s economy.

Agricultural marketing serves as a bridge between production and consumption. Kebbi State is one of the production hub for paddy rice in Nigeria, yet the commodity is only available to the consumers at a ridiculous price. Despite the fact that Kebbi State is one of the paddy rice producing States in Nigeria with a high prospect for increase in production over the years, information on paddy rice marketing in the study area are often very scanty. If paddy rice marketing is assessed and empirical information on profitability, prices, and determinants of profit along with the constraints involved in paddy rice marketing are examined and made available, it is hoped that there is likely to be an improvement on the performance of paddy rice marketing in the State and the country at large. Analyzing the paddy rice market's behavior could be useful in helping to create agricultural price policies that are appropriate. These would support the development and direction of successful and economical public market interventions, such as policies for food distribution, price stabilization, and the enhancement of the rice value chain. Consequent upon this study, it is hoped that investors and prospective investors in the entire rice value chain are likely to benefit from the outcome of such study.

METHODOLOGY

The study was carried out in Kebbi State, Nigeria**.** The State has a population of 3,351,831 (NPC, 2006) according 2006 census. Projecting this population to the year 2022 at 3% growth rate reveals the population as 4,351,067. Over two-third of the population are engaged in agricultural production, mainly arable crop alongside cash crops with livestock production. A multi-stage sampling procedure was adopted in the selection of paddy traders. These categories of actors were purposively sampled for this study. Data obtained were from primary source with the aid of structured questionnaire administered with the help of trained enumerators that understand the local language of the marketers. The structured questionnaire was pre-tested before being administered to the sampled marketers for the study. Data collection was centered on the following; socioeconomic characteristics such as age, gender, educational level, experience, time of sale, how paddy rice is sold, to whom is sold, size of purchase, quality of rice, marketing charges, handling charges, involvement of marketing association, marketing strategies, marketing costs such as ttransportation, storage e.t.c, volume of sales and input-output data on marketing constitute the bulk of the data collected.

RESEARCH RESULT AND DISCUSSION

Average Costs and Returns of Paddy Rice Marketing in the Study Area

The analysis of the costs and returns of traders showed that the traders had a net return of ₦10,330 per metric tonne of rice traded as shown in Table 2. The result showed that the Total Revenue (TR) is ₦160,158/tonne while the Total Variable Cost (TVC) is ₦149,828/tonne respectively while the Gross Margin (GM) is ₦13,130/tonne. A significant difference exists between the Total Revenue (TR) and the Total Variable Cost (TVC). The Return on Naira spent was 7.3%. This implies that in every ₦1 spent in marketing paddy rice in the study area, a profit of 69kobo was realised as return to investment. The result is in agreement with earlier findings by Chidiebere-Mark, (2017), who opined that rice farming in Ebonyi State is profitable.

Table 1. Average cost and returns of paddy rice marketing in the Kebbi State

Cost item	Average Unit Price ₦/metric tonne	Amount (₦)
Revenue	160158	160,158
A. Total Revenue		160,158
Variable Cost		
Purchase price	142150	142,150
Transportation		2,300
Labour		2,000
Packaging		78
B. Total Variable Cost		146,528
Fixed cost		
Rent		2,500

Tax		300
C. Total Fixed Cost		2,800
D. Total cost (B+C)		149,328
E. Gross Margin = (A-B)		13,630
F. Profit/ Net Return= (A-D)		10,830
G. Return on Naira spent= (F/D)		0.073

Source: Field survey, 2021

Based on the results in Table 2, the return on naira spent was 7.3%. This suggests that in every ₦1 spent in marketing paddy rice in the study area, a profit of 73 kobo was realised as return to investment. Thus, revealing that paddy rice marketing is in the study area is profitable.

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Factors Influencing the Price of Paddy Rice

The results of the factors that influence price of paddy rice was shown in Table 3. The coefficient of determination R^2 was 0.62, indicating that 62% of the total variation in price of paddy is influenced by marketing experience, cooperative membership, distance, storage and marketing cost. The estimated parameter for farming experience was positive (0.0175) and significant at 5% level of probability. This implies that increase in marketing experience would lead to increase in price. More experienced traders tend to possess greater ability to predict market outcomes and identify great opportunity. The coefficient of cooperative membership was negative and significant at 1% level of probability. Thus, this implies that cooperative membership would lead to increase in price of paddy. This is because of the collective buying and selling or bargaining power of a cooperative organization. Distance to the market had a positive coefficient and was significant at 5% level of probability. This implies that the higher the distance to market the higher the price of paddy.

From the results, coefficient of duration of storage is positive and highly significant at 1% level of probability. This implies that the longer the storage duration the higher the price of paddy rice. Marketing cost had a positive coefficient and was significant at 5% level of probability. This implies that an increase in marketing cost will increase the price of paddy.

Table 2. Factors influencing the Price of paddy rice in the study area

Variable	**Coefficient**	**Std. Error**	**t-ratio**
(Constant)	16660.864	200.710	83.01***
Marketing Experience	0.018	0.006	2.68**
Cooperative Membership	-239.312	52.397	-4.57***

Distance	1.305	0.539	2.42**
Duration of storage	-99.915	22.296	-4.48***
Marketing cost	0.000	0.000	2.67**
Grain quality	10.481	48.537	0.216ns
R^2=0.388			
Adjusted R^2=0.360			
F-Value=13.69			

Source: Field survey, 2021

N.B: ** and *** indicates significance at 5% and 1% probability level respectively; ns= not significant

Factors influencing the profit earned by paddy rice marketers

The results of the factors influencing the price of paddy rice in the study area is presented in Table 4. This was achieved through the use of multiple regression analysis. From the results, the overall F-statistics (176.02) is significant at 5% level of probability implying that the fitted variables significantly influence the price of paddy rice. The coefficient of determination R^2 is 0.88 an implication that the fitted variables accounted for 88% variation in the profit earned by paddy rice marketers in the study area.

From the analysis, three variables namely storage cost, transportation cost and licensing were the important variables that significantly influenced the profit earned by paddy rice marketers as these are significant at 1%, 1% and 5% levels of probability, respectively.

Results show that the coefficient of storage of paddy rice is positive and highly significant at 1% level of probability implying that the larger the storage capacity and quality, the higher the profit earned. In the study area, paddy rice marketers with standard storage facility tend to store up their paddy for a longer period of time until markets show an increase in demand. The marketer sells at a profitable price and earn more income.

From the result in Table 4, the coefficient of transportation cost is positive and highly significant at 1% level of probability implying that the higher the transportation cost the higher the profit earned by paddy rice marketers and vice versa. This finding agrees with that of Ogah *et al. (2019)* They found out that transportation costs have a welfare effect in that high costs are translated into high prices for consumers and low farm gate prices for producers.

Also, the coefficient of licensing is positive and significant at 5% level of probability implying that if a trade has license, the more profit he earns. Traders who are closer to processing plants are most likely to be licensed and earn more profit than their unlicensed counterpart.

Table 3. Factors influencing profit earned by paddy rice marketers

Variable	Coefficients	Std. Error	t-ratio
(Constant)	24837.296	9010.878	2.76**
Storage	2.387	0.142	16.86***
Transportation	1.413	0.436	3.24***
Packaging	-1427.482	2376.039	- 0.60ns
Licensing	315.397	99.585	3.17**
Labour	-0.037	0.095	- 0.390ns
R^2=0.789	24837.296	9010.878	2.76**
Adjusted R^2 0.785			
F-value 176.02			

Source: Field survey, 2021

N.B: ** and *** indicate significance at 5% and 1% probability level respectively; ns= not significant

Constraints Involved in Paddy Rice Marketing in the Study Area

The results in Table 5 show the constraints associated with paddy rice marketing in the study area. The major constraints identified by the respondents were inadequate capital and non favorable Government policy were both at (86.86%), marketers identified bureaucratic process to access credit (81.09%), Lack of market information (73.08%), lack of milling plant in the study area (65.71%), Inadequate storage facilities were identified by 58.33% of respondents. Poor road network was reported by 54.81% of respondents. Other problems encountered were high cost of transportation (39.42%), Taxation and other fees (34.62%) and License procedure (27.88%) among others.

Table 4. Constraints involved in paddy rice marketing in Kebbi State

Constrains of paddy rice marketing	Frequency	Percentage (%)	Rank
Inadequate capital	271	86.86	1.5
Non- favorable government policy	271	86.86	1.5
Bureaucratic process to access credit	253	81.09	3
Lack of market information	228	73.08	4
Lack of milling plant	205	65.71	5
Inadequate storage facilities	182	58.33	6
Poor road network	171	54.81	7

High cost of transportation	123	39.42	8
Taxation and other fees	108	34.62	9
License procedure	87	27.88	10

Source: Field survey, 2021

**Multiple responses were recorded*

CONCLUSIONS

Results from the study revealed that Paddy rice marketing is profitable suggesting that it is a worthwhile investment as evident in the net marketing income of ₦160,158 per metric tonne. The result also show that the factors influencing the price of paddy rice marketing include; cooperative membership, duration of storage, marketing experience and distance to the market while the determinants of profit of paddy rice marketing include storage cost, transportation cost and licensing. The major constraints affecting paddy rice marketing include; inadequate capital (86.86%), non- favorable Government policy (86.86%), bureaucratic process to access credit (81.09%), lack of market information (73.08%), among others. These constraints associated with paddy rice marketing in the study area must be addressed in order to maximize profitable of paddy rice marketing.

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