

Full-Length Research Paper

Market Performance and Market Integration in Taraba State, Nigeria: A Case Study of Rice Market

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ABSTRACT: The purpose of this study was to evaluate the market performance and integration of the rice market in Taraba State, Nigeria. This study's population included all of Taraba State's rice marketers. The 179 respondents were chosen using a multi-stage stratified random sampling technique. Data were collected using a structured questionnaire; analytical tools included simple descriptive statistics like mean and percentages, as well as inferential statistics like ANOVA and correlation analysis. The results revealed that the mean gross margin/bag of rice for retailers was ₦ 422.05; for wholesalers, it was ₦ 577.71; and for contact sellers, it was ₦ 752.77. Contact sellers, on the other hand, were the category of marketers with the highest mean gross margin/bag, implying that this group outperforms wholesalers and retailers. The correlation analysis revealed that the purchasing prize (0.78) was significantly related to the prize spread, whereas the transportation cost (-0.66) and storage cost (0.58) had a significant inverse relationship. According to the study, policymakers should develop a strategy that focuses on efficiency and market margin in measuring performance, and emphasis should be placed on alternative non-price government policies such as investment in and storage facilities to stimulate agricultural marketing.

Keywords: Price relation, gross margin, correlation, marketers

INTRODUCTION

Rice (*Oryza sativa* L), the world's second largest cereal (after wheat), influences the lives of millions of people. Rice, maize, and wheat account for roughly 60% of total energy consumption (FAO, 2015). Rice has been a good human partner. Its adaptations to ecological, economic, and technological changes in the rice environment facilitated this partnership between man and rice (Braun, 2006). Previous policies did not assist local rice production in gaining a significant market share, and imports have increased since the lifting of the rice import ban. Despite successive increases in import tariffs from 50% to 100%, imported rice now accounts for more than 20% of agricultural imports and half of total rice consumption. Over a five-year period from 1998 to 2002, Nigeria surpassed Indonesia as the world's second largest rice importer (Foreign Agricultural Service FAS,

2003). Because of population growth and urbanization, local rice demand is rapidly increasing. Nigeria's estimated annual rice demand is 5 million metric tonnes, while annual milled product production averaged 2.21 million metric tonnes, leaving a deficit of 2.27 million metric tonnes that is bridged by importation (National Rice Development Strategies NRDS, 2009). Domestic rice demand is expected to reach 7.5 million metric tonnes by 2013, assuming a 10% annual growth rate and demand for local rice growing at half the rate of imported rice (NRDS, 2009). The rise in demand is due to rice's transformation from an elitist to a common staple food for many Nigerians. Because rice is relatively easy to store and prepare, it is used in many local dishes. In terms of local production, rice is now one of the most important cereals grown by Nigerian farmers, and it is grown in

virtually all of the country's agro-ecological zones. Depending on the variety, it can cover both upland and swamp areas (Taraba State Agricultural Development Program TADP, 2007). The global value concept as pointed out by global value chain initiatives (GVCI, 2007), is an arrangement that describes the linkage of participants and their value creating activities that enhanced the movement of goods and services from production, processing to the end user (consumer). The number and conduct of the participant along the chain determines its efficiency, pricing and return accruing to each participant at every stage (GVCI, 2007). According to Daniel et al. (2006) the value chain is analysis that allows a product from its production to the final consumer.

The study tends to answer the following research questions:

- (a) How is the performance in terms of their gross margin?
- (b) Is rice market integrated?

METHODOLOGY

This research was carried out in Taraba State. Administratively, the state is divided into 16 Local Government Areas, with Jalingo serving as the capital. Taraba State is located in the north-eastern part of Nigeria, between latitudes 6°02'5"N and 9°03'0"N and longitudes 9°03'0"E and 11°04'5"E. The state shares borders with five other states: Plateau, Nassarawa, and Benue State on the west, Adamawa and the Republic of Cameroon on the east, and Gombe State on the north (TADP, 2007). The state has a population of 2,294,800 million people (National population census NPC, 2006) and a land area of 54,428km² spread across different ecological zones; its strategic location in the transitional belt between the forest area of the south and grass land of the south provides it with tremendous agricultural potential. Agriculture is the most common occupation in Taraba State, employing more than 70% of the total population.

Population and sampling procedure

The study's population included all of Taraba State's rice marketers. The respondents in this study, who were rice marketers in the study area, were chosen using a multistage sampling technique. The first stage entails selecting one local government from each senatorial zone on purpose. The selection was made based on the area's intensity of rice production. The second stage entails using a simple random sampling technique to select two markets from each of the three local

government areas. The final stage involves a proportional sample of 15% of rice marketers from the selected markets, for a total sample size of 182 respondents. However, only 179 questionnaires were correctly completed.

Nature and sources of data

Primary sources were used to collect data for this study. The primary data was collected directly from rice marketers in selected markets in Taraba State's Wukari, Gassol, and Jalingo Local Government Areas. The respondents' information was gathered through the use of questionnaires and personal interviews. The data collected included pertinent information about the socioeconomic characteristics of rice marketers, as well as critical information about transportation costs, storage costs, purchasing prices, selling prices, total sales, gross margin, and the value of inputs and output in naira.

Data analysis techniques

The data collected for this study were analyzed using both descriptive and inferential statistics. The gross margin analysis employed to assess the performance of market participants given below:

$$GM = GI - TVC$$

Where GM = Gross margin of the rice marketer in ₦, GI = Gross income in Naira and total variable cost in Naira. In testing market integration, correlation method was used to estimate prices relationship between pairs of markets. The higher the correlation coefficient between pairs of market, the more integrated is the pair of market, while low values would mean price move independently of each other. The mathematical definition of correlation coefficient (r) is

$$r_{xy} = \frac{n \sum X_t Y_t - (\sum X_t)(\sum Y_t)}{\sqrt{n \sum X_t^2 - (\sum X_t)^2} \sqrt{n \sum Y_t^2 - (\sum Y_t)^2}}$$

Where: X_t = Price of commodity in market x

y_t = price of commodity in market y

n = the no of observation

Table 1: Descriptive statistics of gross margin of rice marketers in Taraba.

Statistics	Cost of Transport(₦)	Cost of Storage(₦)	Cost of Paddy(₦)	TVC(₦)	G.I(₦)	GM(₦)	GM/Bag(₦)
Retailers							
Mean	20255.78	17593.35	821727.27	860121.73	942796.45	82674.72	442.05
S.t.d	15277.18	18571.81	1115788.99	125794.95	1273418.88	147623.93	255.37
Minimum	0	0	66600.00	80500	80700	200	3.70
Maximum	6400	12000	7020000.00	7079000	8060000	981000.00	1477.78
Wholesaler							
Mean	21569.41	24574.26	2483726.47	2529870.14	2827775.72	297905.58	577.71
S.t.d	21276.07	23162.59	2899624.29	2899617.180	3303181.24	403564.06	300.03
Minimum	0	0	15300.00	15600.00	18000	2400.00	38.71
Maximum	96000	95000	18090000.00	18129000	18383600	254600.00	2307.50
Contact seller							
Mean	17083.33	18125.0	4101533.33	4136741.66	4635766.66	499025.00	620.95
S.t.d	8292.473	10679.473	3694569.85	3702209.86	4151536.11	449326.25	102.75
Minimum	0	9000	258300.00	270300.00	293700	23400.00	417.65
Maximum	32000	42500	13120000.00	13172500.00	14730000	1557500.0	752.17

Table 2: The result of ANOVA showing price relationship in sampled markets.

Markets	Group	Sum of Square	df	Mean square	F	Sig
Quantity of Rice Sold	Between groups	2616651.244	2	3123256.122	19.36	0.000***
	Within groups	17713315.421	176	17713315.421		
	Total		178			
Gross Margin	Between groups	3395987.665	2	1538543668475.756	17.7	0.000***
	Within groups	3077087336951.513	176			
	Total		178			
Gross Margin Per bag	Between groups	152841744028.110	2	86752367863.79	18345504080979.620	0.002***
	Within groups	913071.836	176	456535.918		
	Total		178			

Value *** sig at 1%

Table 3: Correlation between price spread, transportation cost and storage cost.

Variable	Correlation Coefficient	Sig (2-tailed)
Buying price (₦)	0.78	0.004
Transportation cost (₦)	-0.66	0.002
Storage cost (₦)	-0.58	0.001

***correlation is significant $p \leq 0.01$ level (2-tailed)

Dependent variable: price spread

The correlation coefficient (r) is a measure of the co-variation between two variables. It takes on values that vary between -1.0 and 1.0.

RESULTS AND DISCUSSION

Gross margin analysis of rice traders in Taraba State

The result indicates that the mean cost of transporting paddy rice to sales and processing locations were ₦ 20,255.78, ₦ 21,569.41, and ₦ 17,083.26 for retail, wholesale, and contact sellers, respectively, with standard deviations of 15277.18, 21276.00, and 8292.47. Additionally, the result revealed that the mean cost of storage for wholesale is ₦ 24,574, the highest cost incurred by the group of marketers, as wholesalers store a greater quantity of rice than retailers and contact sales, which have mean costs of ₦ 17593.23 and ₦ 18125.00, respectively. Additionally, the result indicated that the

mean cost of paddy for retailers, wholesalers, and contact sellers was ₦ 821727.27 for retailers, ₦ 2483726.47 for wholesalers, and ₦ 4101533.33 for contact sellers, with respective standard deviations of 152770.18, 2899624.30, and 3694569.85 for contact sellers. The mean gross margins of retailers were ₦ 82,674.72 and gross margins per bag of rice were ₦ 422.05, while wholesalers earned ₦ 8297,905.58 and ₦ 577.71 and contact sellers earned ₦ 1,557,500 and ₦ 752.77. However, contact sellers had the highest mean gross margin, implying that they perform better than wholesalers and retailers, as they do not engage in direct marketing to customers in markets (Table 1).

Price relationship between rice markets in Taraba

The ANOVA result indicates that there was a significant difference in the price spread across the markets surveyed in the state's three zones ($F=19.835 \leq 0.001$) in

the markets surveyed. This implied that the difference between the purchase price of rice and the cost of transportation was significantly greater than zero in each of these markets. This is consistent with the findings of (Abu et al., 2009), who discovered that Guinea corn markets are integrated to the tune of 1%. This chart illustrates the price distribution of agricultural products across the study area's various markets. The findings in corroborated this conclusion (Tables 2 and 3). Correlation analysis revealed that while the purchasing price (0.78) was significantly related to the price spread, transportation and storage costs had a significant inverse relationship with the price spread (-0.66 and -0.58, respectively). This result indicates that the spread between prices increases with the purchase price but decreases with transportation and storage costs.

Conclusion

This study was conducted to ascertain the market performance and integration of Taraba State's rice market. The result indicated that the mean gross margin/bag of rice for retailers was ₦ 422.05; for wholesalers, it was ₦ 577.71; and for contact sellers, it was ₦ 752.77. However, contact sellers were the category of marketers with the highest mean gross margin/bag, implying that this group outperforms wholesalers and retailers due to their lack of direct marketing to customers in markets. Correlation analysis revealed that purchasing price (0.78) was significantly related to prize spread, whereas transportation and storage costs (-0.66) and (0.58) had a significant inverse relationship. This implied that the difference between the purchase price of rice and the cost of transportation was significantly greater than zero in each of these markets.

Recommendations

Based on the results obtained and the conclusion afore made, the following have been recommended.

Strategy such as out-growers programme should be set up by government to enhance Rice marketers' profit. Efforts should now be expanded to empirically determine the extent of spatial market integration for rice and other agricultural commodities.

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