



**A STUDY OF STRUCTURE, CONDUCT AND PERFORMANCE OF
RICE MARKETING IN YOBE STATE, NIGERIA**

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ABSTRACT

The study explored the structure, conduct and performance of rice marketing in Yobe State, Nigeria. A multistage sampling technique was used to select 90 respondents among which include 37 rice wholesalers and 53 rice retailers. Data were collected through structured questionnaires and analyzed using descriptive statistics, Gini coefficient and net market margin analysis. The Gini coefficient analysis revealed that significant income inequality, especially among rice retailers. In the performance segment, retailers outperform wholesalers in profitability. Retailers earn ₦15260 per bag and return on investment of 0.11, which is higher compared to wholesalers who earn ₦4260 per bag with a return on investment of 0.3. The marketing efficiency of both retailers and whole sellers indicates excess profit with 111% and 103% respectively. The major constraints to milled rice marketing in the study area were price volatility (100%), low capital investment (93.33%), seasonality of supply (93.33%), insecurity (90%) and poor road network (60%). The study concludes that a degree of inequality exist among rice markers, the performance of rice marketing is good as indicated by the market efficiency of above 100% indicating excess profit while the market conduct indicates that price setting is driven by demand and supply forces. These findings underscore the urgent need for targeted interventions to enhance the efficiency, equity, and sustainability of the rice marketing in study area. Addressing these challenges can significantly boost the livelihoods of all stakeholders involved in the marketing activities.

Keyword: Structure, Conduct, Performance, Rice and Marketing

INTRODUCTION

In Nigeria, rice is the second most crucial staple food, contributing to approximately 10.5 percent of the average caloric intake, (FAO, 2022). Additionally, rice constitutes around 6 percent of household expenditures (Alabi *et al.*, 2023). According to Feng & Liu, (2024), it is within the marketing system that price allocation of resources, income distribution, and capital formation are determined. This is to say that prices are key signals in the resource allocation process that take place through markets. A guaranteed market for farmers' produce is a ready invitation to produce more. The marketing arrangement in a community must ensure that what is produced is sold or stored. Saitone *et al.*, (2015) suggested that a product should not even be produced at all unless it has a market. Marketing therefore begins with production on the farm. Rice marketing is the performance of all business activities in the flow of paddy and milled rice, from the point of initial rice production until they are in the hands of the ultimate consumers at the right time, in the right place, and as convenient as possible, at a profit margin to keep the farmer in his farming operations (Githumbi, 2017). The marketing of local rice in Nigeria involves four stages with a change of product ownership occurring between each pair of stages (Apind, 2015). The first stage is production through harvesting. Stage two concerns movement from the farms to processing centers while stage three involves moving the milled rice from the processing area to urban consumption centers. The fourth stage encompasses wholesaling and retailing in the urban centers (Wilson & Lewis, 2015). The marketing of any commodity is a specialized technique and demands proper organization. In the case of agriculture and particularly rice products, the marketing aspect is even more important and demands a proper organization considering the increasing demand for the product (Naghi Ganji *et al.*, 2018). An efficient



marketing system creates and activates new demand by improving and transforming production and by seeking and stimulating customer links. It guides farmers to production opportunities and encourages innovation and improvement in response to demand and price (Reij & Waters-Bayer, 2014).

The broad objectives of this study is to determine the structure, conduct and performance of rice marketing in the study area. The specific objectives are to

- i. determine the rice marketing structure in the study area;
- ii. determine the rice marketing conduct in the study area;
- iii. determine the performance of rice marketing in the study area; and
- iv. determine the constraints faced by rice marketers in the study area.

METHODOLOGY

The Study Area

Yobe State, which was created from the former Borno State, spans an estimated land area of 45,502 square kilometers and is made up of 17 local government areas. Geographically, the state lies between latitudes 10°27'N and 13°23'N, and longitudes 9°40'E and 12°30'E. Positioned in Nigeria's semi-arid zone, Yobe is known for its sparse vegetation, elevated temperatures, and low levels of annual rainfall. It shares boundaries with Borno State to the east, Gombe State to the south, Bauchi and Jigawa States to the west, and the Republic of Niger to the north. The state's economy is largely based on agriculture, with rice cultivation being a significant activity. According to the 2006 national census, Yobe had a population of about 2.32 million, which was projected to grow to approximately 4.31 million by 2024, based on an annual growth rate of 3.5% (YBSG, 2022).

Sampling Technique and Sample Size

A multistage sampling technique was employed to select respondents for the study. The first stage was the purposive selection of the three LGAs (Bade, Fika and Potiskum). The second stage was the purposive selection of one major market from each LGA selected. The markets selected were Gashua main market in Bade LGA, Ngalda market in Fika LGA and Potiskum main market in Potiskum LGA. The third stage was the random selection of marketers by balloting from the list of registered marketers provided by the marketers' association of the respective markets.

Table 1: Sampling Frame and Sample Size

LGAs	Selected Markets	Rice Marketers Sampling Frame		Rice Marketers Sample Size	
		Retailers	Wholesalers	Retailers	Wholesalers
Bade	Gashua Main Market	19	12	16	11
Fika	Ngalda Market	13	9	11	08
Potiskum	Potiskum Main Market	30	19	26	18
Total		62	40	53	37

Source: Field Survey 2024

Data Collection and Analysis

Data were collected through the administration of questionnaire to the respondents randomly drawn from the study area. The data collected were analyzed using descriptive statistics, Gini Coefficient, Net marketing margin analysis, Descriptive statistics, including frequencies, percentages, means, and standard deviations, was utilized to achieve objectives 2 and 4. Gini coefficient Analysis was used to obtain objective 1, while marketing margin and return per investment were used to obtain objective 3.

Model Specification

Descriptive statistics involve the use of scientific techniques to organize, summarize, and interpret data in a meaningful way. They help in drawing valid conclusions and making informed decisions



based on the analyzed information. Common tools used in this process include measures such as the mean, percentages, and frequency distributions.

Mean; this is the sum of values in the data group divided by the number of values. It is the most useful and fundamental measure of location
$$X = \sum \frac{fx}{f} \dots\dots\dots (1)$$

Percentage; this is the proportion obtained by dividing the number of observations in each class by the total number of observations multiplied by a hundred

$$\text{Percentage} = (\text{actual change}) / (\text{original amount}) \times 100 \dots\dots\dots (2)$$

Frequency Distribution; this is an organized display of a data set which falls into each mutually exclusive class. Therefore, for easy comprehension of findings of this research and its contribution to knowledge, field data was grouped into frequency distribution tables, bar charts, pie charts and percentage tables.

Gini Coefficient

The Gini coefficient (Gini index or Gini ratio) was used to achieve objective (2). In practice, the actual value of the Gini-Co-efficient lies between zero and one. The closer the value is to unity, the greater is the degree of inequality and vice versa, (Paskov & Dewilde, 2012).

$$G.C = 1 - \sum XY \dots\dots\dots (3)$$

- Where G.C =Gini Co-efficient
- X = Percentage of markets per period of study
- Y = Cumulative percentage of markets sales

Marketing Margin Analysis

The marketing margin analysis was used to determine the costs and returns of rice marketers (whole sellers and retailers) in the in the study area (objective i). Mathematically expressed as:

$$MM = TR - TVC. \dots\dots\dots (4)$$

- Where; MM = Marketing Margin (₦/bag)
- TR = Total Revenue (₦/bag)
- TVC = Total Variable Cost (₦/bag)

Marketing Efficiency

The marketing efficiency model is stated from shepherd’s formula, which states that market efficiency of 100% is perfect efficiency. While above 100% is excess profit. The shepherd formula is given as

$$\text{Marketing Efficiency } E = V/C \times 100 \dots\dots\dots (7)$$

- where;
- E = Market efficiency
- V = Value of marketed rice (product) (₦)
- C = Total marketing cost (₦)

Return on Investment

The return on investment analysis is used to determine the profit made on any Naira invested in a business, it helps to evaluate the performance of an investment and compare different investment opportunities. It is calculated as:

$$ROI = \frac{\text{Income on investment} - \text{Cost of investment}}{\text{Cost of Investment}} \times 100$$

RESULTS AND DISCUSSION

The Structure-Conduct-Performance of Rice Markets

Market structure consists of the relatively stable features of the environment that influence the behaviour and rivalry among the buyers and sellers operating in a market. Structure describes the rice market actors, their roles and linkages in the channels of rice marketing and it is the reflection of the market concentration.



Measure of Market Structure Ratio using Gini Coefficient for Milled Rice Retailers

The analysis of the Gini coefficient for retailers of milled rice is summarized table 3 below, which illustrates the distribution of sales volume, number of marketers, and income among different sales categories. This gives a Gini coefficient of 0.528, implying a moderate amount of income inequality amongst retailers. A Gini coefficient over 0.5 usually signifies high inequality. The results show that there is a moderate level of income inequality experienced by milled rice retailers with a Gini coefficient of 0.528. This indicates that compared with most retailers, who endure lower sales volumes and incomes, a smaller segment of those in the industry makes considerably higher profits. To ameliorate such disparities might entail introducing policies that seek to promote equity within the milled rice retail market.



Table 2: Summary Estimate of Gini Coefficient for Milled Rice Retailers.

Volume (Kg) of milled rice sales/market	Number of marketers	Cumm. Freq. of marketers	Prop. of marketers (X)	Cumm. Prop. of marketers	Total income from sales N	Prop of income from sale	Cumm. Prop. of income from sales (Y)	XY
100-200	20	20	0.37	37	3124000	0.145	0.145	0.054
201-300	4	24	0.08	0.45	1368000	0.064	0.209	0.017
301-400	3	27	0.05	0.5	1232000	0.057	0.266	0.013
401-500	11	38	0.22	0.72	5905000	0.275	0.541	0.119
Above 500	15	53	0.27	0.99	9855000	0.458	0.999	0.269
Total	53		1		21484000	1		0.472

Source: Field Survey, 2025

Gini Coefficient = $1 - \sum XY = 1 - 0.472 = 0.528$



Measure of Market Structure Ratio using Gini Coefficient for Milled Rice Wholesalers

The analysis of the Gini coefficient for wholesalers of milled rice is summarized in table 4 below, which captures the distribution of sales volume, number of marketers, and income across different sales categories. A Gini coefficient of 0.45 was obtained, which indicates a moderate level of income inequality among wholesalers. Higher values up to 1 is more severe inequality with less than 0.5 indicating less severe inequality. The Gini coefficient of 0.45 confirmed moderate income inequality among milled rice wholesalers (Gini 0 = perfect equality; Gini 1 = perfect inequality). This indicates that, while many wholesalers sell less and earn less, a smaller subset sells more and earn significantly more.



Table 3: Summary Estimates of Gini Coefficient for Milled Rice Wholesalers

Number of bags of milled rice sales/market	Number of marketers	Cumm. Freq. of marketers	Prop. of marketers (X)	Cumm. Prop. of marketers	Total income from sales N	Prop of income from sales	Cumm. Prop. of income from sales (Y)	XY
10-20	13	13	0.35	0.35	16280000	0.21	0.21	0.07
21-30	15	28	0.41	0.76	31890000	0.42	0.63	0.26
31-40	2	30	0.06	0.82	4992000	0.07	0.7	0.04
41-50	7	37	0.18	1	22850000	0.30	1	0.18
Total	37		1		76012000	1		0.55

Source: Field Survey, 2025

Gini Coefficient = $1 - \sum XY = 1 - 0.55 = 0.45$



The Conduct of Rice Marketing

The marketing conduct of rice in the study area reflects the strategies and practices employed by both retailers and wholesalers. This analysis focuses on promotional strategies, sources of supply, and price-setting mechanisms, highlighting the differences in approaches between the two market participants. The promotional strategies utilized by retailers and wholesalers show distinct preferences, the sales of quality rice revealed that most common strategy among retailers (53.33%) and is also significant for wholesalers (46.67%), indicating a strong emphasis on product quality.

For the Friendship Attitude towards Customers, retailers adopt a friendly approach more frequently (33.33%) compared to wholesalers (26.67%), suggesting a focus on customer relationships. This strategy is less common, with 6.66% of retailers and 11.11% of wholesalers offering credit to customers. This suggests a focus on customer loyalty and service quality. Such relationship-building can enhance customer retention and encourage repeat business, as satisfied customers are more likely to endorse retailers and wholesalers to others can help ensure stable demand (Kibbeling *et al*, 2013).

A small percentage of retailers (6.66%) and wholesalers (15.56%) utilized price incentives as a promotional strategy. The sources from which rice is supplied reveal contrasting practices between retailers and wholesalers, a significant majority of wholesalers (82.22%) source their rice from other wholesalers, while rural assemblers also play a crucial role (51.11%). Retailers primarily source rice from rural assemblers (6.66%) and rural markets (4.44%), with only a small portion sourcing directly from farmers (6.66%). Wholesalers depend heavily on rural assemblers, possibly to facilitate bulk purchases and logistics. This may expose them to risks associated with assembler reliability and pricing volatility. More diversified sourcing strategies could mitigate these risks.

Price setting practices are critical for determining market dynamics, most prevalent method for both retailers (60.00%) and wholesalers (42.22%) is setting prices based on demand and supply conditions. For Comparing Prices, retailers often compare prices to set theirs (24.44%), while a smaller percentage of wholesalers engage in this practice (20.00%). Retailers also consider market prices (15.56%), whereas wholesalers rely on market officials for pricing decisions (8.88%). The low percentage indicates that many retailers are not flexible in adjusting prices according to market conditions. Establishing a regular practice of price benchmarking can enhance competitiveness (Barinua & Walls, 2022). The marketing conduct of rice in the study area reveals that both retailers and wholesalers prioritize quality in their promotional strategies, although their approaches to customer relationships differ significantly. Wholesalers predominantly source their rice from other wholesalers, while retailers have a more diverse sourcing strategy but rely less on direct farmer relationships. Price-setting mechanisms are largely influenced by demand and supply for both groups, indicating a competitive market environment where pricing strategies are critical for success. This understanding can help stakeholders optimize their marketing practices to enhance efficiency and profitability within the rice market.



Table 4: Distribution of Respondents Based on Conduct of Rice Marketing

Market conduct Variables	Retailers		Wholesalers	
	Frequency	Percent	Frequency	Percent
Promotional strategies adopted in marketing rice				
Credit on sales	3	6.66	5	11.11
Friendship attitude towards customers	15	33.33	12	26.67
Price inceptive	3	6.66	7	15.56
Sales of quality rice	24	53.33	21	46.67
Source of rice supplied				
Farmers	3	6.66	-	-
Rural assemblers	3	6.66	23	51.11
Rural markets	2	4.44	13	28.89
Retailers	8	20.00	-	-
Wholesalers	37	82.22	9	20.00
Price Setting				
Market price	7	15.56	6	13.33
Market officials	-	-	4	8.88
Comparing price	11	24.44	9	20.00
Demand and supply	27	60.00	19	42.22
Total	45	100.00	45	100.00

Source: Field Survey, 2025

The Cost and Return Analysis for Milled Rice Marketing

The analysis of costs and returns associated with milled rice marketing in the study area provides insights into the financial dynamics faced by retailers and wholesalers. The following table summarizes the average costs, revenues, and profitability metrics for both groups. The analysis of findings for cost structure shows that retailers incur higher total costs compared to wholesalers, with a total cost of production at N136750/bag versus ₦130350/bag for wholesalers. This discrepancy suggests that retailers incur more operational overhead compared to wholesalers, who may benefit from bulk purchasing and economies of scale which agrees with the findings of Ishfaq & Raja, (2018). It also revealed that retailers have a market margin of ₦15260, which is higher than that of wholesalers at ₦4260, suggesting that while wholesalers operate at larger scales, their profit margins are significantly lower relative to their costs. The Return on Investment (ROI) for retailers is 0.11 which is higher than that of the wholesalers 0.03 indicating that retailers may be more efficient in generating returns on their investments despite their lower sales volume. These findings also concur with the findings of Jing, *et al*, (2012) in their studies on Chinese enterprise management mode and marketing channel reform under the network economy circumstance. Which reports that retailers have better return per naira spent on investment compared to wholesalers, as a result, wholesalers may require to evaluate their capital allocation to realize a greater return. Marketing Efficiency Indices indicate better revenue conversion of resources for retailers than wholesalers.

Table 5: Cost and Return Analysis for Milled Rice Marketing

Variables	Retailers Average Cost (₦/bag)		Wholesalers Average Cost (₦/bag)	
Cost of milled rice	135000	98.7	128000	98.62
Handling	-	-	200	0.09
Packaging	500	0.36	-	0.07
On/off load	200	0.15	300	0.12
Transportation	200	0.15	1000	0.47
Storage	500	0.36	200	0.09
Revenue	100	0.07	200	0.06
Total variable cost	136500		129900	
Fixed inputs depreciation				
Tarpaulin	-	-	-	0.15
Iron mud	240	0.17	-	0.02
Scale	-	-	450	0.01
Total fixed cost	240		450	
Total cost of production.	136740	100.00	130350	100.00
Returns				
Average price ₦/tier	3800	-	-	
Average price per bag	-	-	130350	
Total number of tier/bag	40		-	
Gross Margin	152000	-	135000	
Marketing Margin	15260	-	4650	
Net Marketing Margin	10%		3.4%	
Return per naira invested	11%		3%	
Marketing efficiency	111%		103%	

Source: Field Survey, 2025

Constraints to Milled Rice Marketing

The constraints of rice marketing in the study area are presented in fig.1 which gives more vital information regarding the problems faced by the marketers. All identified constraints were ranked on the basis of frequency and percentage demonstrating their prominence. From the result presented, high price volatility (100%) is the most pressing constraints against the rice marketers. This means, there is uncertainty in revenue and profitability due to variations in rice prices. Price volatility can also discourage investment in the marketing and production of rice, causing supply shortfalls and perhaps triggering withdrawals from the market by smaller participants. Implementing price stabilization mechanisms or government intervention could address this issue and possibly increase confidence in the market while encouraging sustainable practices (IMF & UNCTAD, 2013). The second prominent constraint is low Capital Investment with a frequency of 28 (93.33%), which corresponds with the findings of Nkamnebe (2023) that states that, lack of funds makes it hard for marketers to scale up their marketing activities and also reach more consumers. This obstacle can be mitigated if there is increasing access to financial resources through means such as microloans or subsidies that empower marketers.

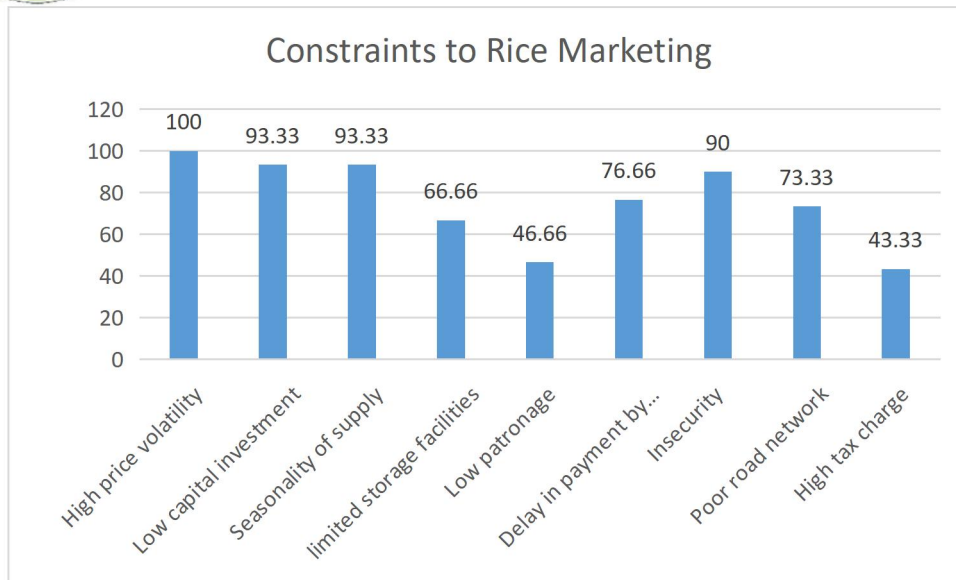


Figure 1: Constraints to Rice Marketing
 Source: Field Survey, 2025

CONCLUSION AND RECOMMENDATION

The study concludes that a degree of inequality among rice marketers, the performance of rice marketing is good as indicated by the market efficiency of above 100% indicating excess profit while the market conduct indicates that price setting is driven by demand and supply forces. The major constraints faced by rice marketers include price volatility, low capital investment, seasonality of supply, insecurity and bad road networks. In view of the constraints highlighted the study made the following recommendations:

- i. Government and private organization should enhance awareness campaign on agricultural credit scheme and should make it easily accessible by rice marketers.
- ii. Rice marketers should organize themselves to form cooperatives to enable easy access to governments' agricultural credits and loans.
- iii. Feeders roads linking to rice producing areas should be rehabilitated by Government to enhance accessibility and reduce cost of transportation.

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