

## Rice Farming and Income Distribution Along the Value Chain in Kaduna State, Nigeria

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### Abstract

Before the discovery of oil in Nigeria, agriculture was the main stay of the economy and many poor households were lifted above the poverty line. Rice is considered a very special food which is consumed by virtually all persons/households who can afford it in Africa. Kaduna state is the third largest state in Nigeria pooling a population of about 6.1 million people base on the 2006 population census figures. The people are predominantly farmers (particularly rice farming), yet poverty remain endemic in the state. Value chain and income distribution has remained one of problems which result to poor performance of Nigeria in rice production. This paper seeks to examine rice value chain, challenges and poverty reduction in the state. Primary data was collected along selected value chain actors in the three senatorial districts of the state (kaduna south, central and north) through interviews and structured questionnaires. A total sample of 150 farmers, 6 millers and 18 traders were purposefully selected for the study. Profit margin analysis was used to analyze the data. It is observed that there is a significant disparity in the income distribution along the value chain in the state with farmers currently receiving the lowest while traders received the highest margin. This makes the farmers' income level lower and poorer compared to other value chain actors. More so, farm inputs are not affordable to most farmers and the marketing channels are not accessible to them. It is recommended that farm inputs should highly subsidized and marketing boards should put in place in order to bridge the gap along the value chain actors.

**Keywords:** *Rice farming, Value chain actors, Income distribution, Kaduna State, Nigeria*

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### **Background to the Study**

The story of Nigeria cannot be complete without making reference to agriculture. According to World Bank, 2015, Nigeria, a country with an estimated population of over 177 million people, is the largest black nation on earth. It constitutes about one fifth of the total population of Sub-Saharan Africa. The country is richly endowed with vast human, physical, and natural resources. In the past, Nigeria has achieved huge success in agriculture. Prior to the discovery of oil in Nigeria, agriculture was the major industry of the economy where many poor households gained employment and improved their standard of living (Ilu, 2015). Rice is considered a very special food which is consumed by virtually all persons/households who can afford it in Africa. In order to revamp the agricultural sector in Nigeria, the federal government through the central bank of Nigeria launched the Anchor Borrowers Programme (ABP) in 2015. The main objective of the ABP is to make available farm inputs in kind and cash to small holders farmers to boost production of these commodities, stabilize inputs supply to agro processors and address the country's negative balance of payments (BOP) on food (Central Bank of Nigeria, 2016 cited in Ilu, 2015). The ABP is ongoing and rice is one of the major crops that it has earmarked. State governments are actively involved in the ABP.

Kaduna state is one of the states in the North/Western region of Nigeria pooling a population of about 6.1 million people, the third largest in the country after Kano and Lagos states (National Bureau of Statistics, 2010). In order to align itself with the ABP, rice farming, processing and distribution are widely practiced across the state. Most of the farming in the state is done in small scale by the poor peasant farmers.

More so, the border closure by the federal government of Nigeria in 2019 is an attempt to protect the economy and boost the local content. Prior to the boarder closure, few rice mills were in operation in Kaduna state. With the boarder closure, more have taken off and others underway. According to the Federal Ministry of Agriculture and rural Development (FMARD, 2011), by the year 2011, the import bill for Wheat, Rice, Sugar and Fish put together reached N1.31trillion.

Rice is an essential crop in Nigeria, though grown everywhere, it is one of the imported crops. Nigeria's rice consumption has increased significantly over the last decade (6.5 % per annum) and is now estimated at 6 million metric tonnes annually and the total retail market value for rice in Nigeria was estimated at \$3.6bn (FMARD, 2012). Furthermore, FMARD (2012) noted that rice has become an essential food of choice in both urban and rural areas accounting for more than 20% of all meals consumed per week by a typical household. Nigeria's growing demand for rice is forecasted to reach 36 million tons by 2050 (FMARD, 2012) is a potential source of income and employment generation in Nigeria given that rice can be grown in all ecologies of Nigeria.

The value chain as both a concept and tool has been used since long back ago to understand and analyze industries (Renjun 2011, cited in Jonas, Oliver and Genreuse, 2017). It can be defined as a full range of activities which are required to bring a product or service from

conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use (Kaplinsky & Morris, 2001). A value chain starts with the production of a primary commodity, ends with the consumption of the final product and it includes all the economic activities undertaken between these phases such as: processing, delivery, wholesaling, and retailing. Value addition is one of the major challenges in Nigeria, particularly Kaduna state. Millers get more profit than other actors (Takele, 2010). There are significant disparities in gain distribution along the rice value chain with farmers currently receiving the highest margin (Jonas, Oliver & Genereuse, 2017). This is the same position with (Ilu, 2015). A contrary finding by Pavithra, Singh, Ahmad, Sinha & Mishra (2018) found that farmers are the first actors in the value chain but they did not receive fair price. Most of goods used in export are being exchanged in their crude form with little or no value addition. This has adversely affected the local content initiative of Nigeria and its ability to compete favourably at the foreign exchange market. There is the need to examine the value chain of rice in Nigeria.

### **Statement of the Problem**

Nigeria is blessed with human and natural resources, yet poverty is endemic. There are a lot of potentials in the aspect of rice farming and value addition which has not being fully harnessed in order to alleviate poverty. Discrepancies exist in the literature. Jonas, Oliver & Genereuse, (2017) found that farmers received the highest gain, whereas Pavithra, Singh, Ahmad, Sinha & Mishra (2018). Against these backdrops, the following research questions are raised;

- i. What is the nature of rice farming, income distribution, and poverty reduction along the value chain in Kaduna State?
- ii. What are the problems confronting the various actors across the rice farming value chain in Kaduna state?

### **Objectives of the Study**

The following objectives are set for this study;

- i. To empirically examine the nature of rice farming, income distribution, and poverty reduction along the value chain in Kaduna State.
- ii. To identify the constraints confronting the various actors across the rice farming value chain in Kaduna state.

### **Literature Review**

#### **Rice Farming in Nigeria**

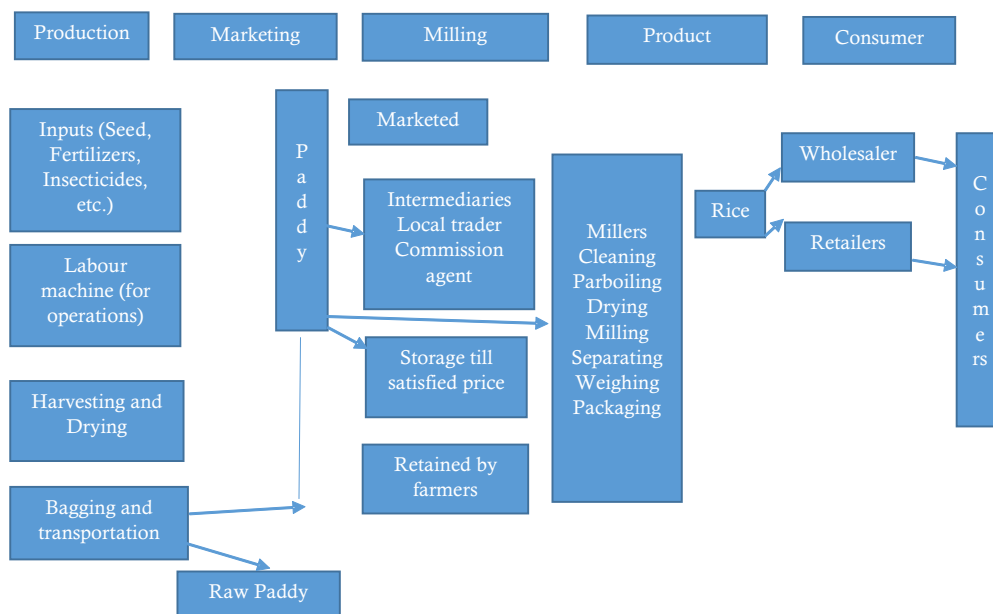
Rice is the fourth largest cereal crop grown in the country behind sorghum, millet and maize in Nigeria. It is the second crop behind wheat, with the highest investment opportunity for import substitution. It was reported that Nigeria expends over USD\$11 billion in the importation of wheat, rice, sugar and fish every year. Rice contributes about USD\$3.56 billion to the amount (Akinwumi, 2012 cited in Ilu, 2015). Although Nigeria is Africa's leading producer of rice, it is also not only the leading consumer but is the second largest rice importer in the world. Rice has over the last three decades, witnessed steady increase in demand, estimated at 7 percent per annum. FMARD (2012) estimated that total demand would reach 9 million metric tonnes by the year 2016. The increase in demand is attributed to Nigeria's rapid

urbanization, increase in population and income. Rice is primarily a cash crop to farmers and it generates more income for them than any other cash crop in the country (USAID, 2009).

The total rice industry, imports and domestic production, is valued at about \$5 billion, with nearly \$4 billion accruing inside Nigeria. About 2.5-3 million metric tons of rice is imported. Nigeria accounts for roughly 6 percent of the global rice trade. There is therefore a significant rice market in Nigeria, as rice is rapidly becoming the preferred staple food in the urban areas, due to its ease and short time of preparation. These rice attributes appealed to the ever increasing working women that are drawn into cities by rapid urbanization. As a result of which the annual per capita rice consumption exceeds 47 kg/capita (USAID, 2009).

The value chain for domestically produced rice is currently dominated by a largely fragmented production and milling industry, with limited new investment in either production or processing. While the returns are quite high at each stage of the traditional value chain channel, there are so many participants in the channel that the benefits are spread very thin. With very high prices, a protected market and ever-increasing imports, the potential is high to promote a strong supply response under the right conditions. Some new investments in heavier milling capacity in new channels (i.e., Olam and Veetee private-sector mills) offer good private-sector driven models that can compete with imports for the high-end urban market, offer lower prices to consumers, yield high profit margins to both the producers and the millers and contribute to a more efficient value chain overall that improves food security in Nigeria (USAID, 2009).

**Figure 1: Conceptual Diagram of Rice Value Chain**



**Source:** Adapted from Pavithra, Singh, Ahmad, Sinha and Mishra, 2018

Figure 1 describes typical value chain actors and the activities carried out by each. It can be defined as a full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use (Kaplinsky et al., 2000 cited in Takele, 2010).

The term value chain refers both to a set of interdependent economic activities and to a group of vertically linked economic agents, depending on the scope of the study the focus of the analysis can be on the activities or on the agents. A value chain starts with the production of a primary commodity, ends with the consumption of the final product and it includes all the economic activities undertaken between these phases such as: processing, delivery, wholesaling, and retailing.

In this regards, the production process is considered as a set of parameters defined by Humphrey and Schmitz (2000) and which correspond to the following questions: what is to be produced? How it is to be produced? When it is to be produced and how much it is produced? What is the price?

## Methodology

### Population of the Study

Kaduna state has three senatorial districts. They are; Kaduna North, Kaduna Central and Kaduna South. Rice is being cultivated and processed across the three senatorial districts. Majority of the farmers are small scale farmers. There is a total of 597 registered members of the Rice Farmers' Association of Nigeria (RIFAN) cut across the three senatorial districts of the state. More so, there are 13 major millers across the three senatorial districts. There are also 34 major registered traders across the three senatorial districts.

### Sample Size

For the purpose of this study, fifty farmers RIFAN farmers were purposefully selected from each of the three districts. This gives a total of one hundred and fifty farmers altogether. More so, a total of six millers, two each from the three districts were randomly selected. While a total of eighteen, six each from the three districts were randomly selected. This is summarized in the table 1.

**Table 1:** Sample Size

Description	District			Total
	Kaduna North	Kaduna Central	Kaduna South	
Farmers	50	50	50	150
Millers	2	2	2	6
Traders	6	6	6	18

**Source:** Field survey, 2019

Moreover, three different sets questionnaires were administered to each value chain actor: rice farmers, millers and traders. The questionnaire was used to elicit firsthand information from

the respondents. Questions such as costs incurred for their activities, constraints or challenges encountered and available opportunities in their respective activities, etc. were asked.

## Data Presentation and Analysis of Results

**Table 2:** Farmers' Income

Cost of Activities (₦)		Cost of inputs and materials (₦)	
Activities	Cost/Ha	Items	Cost/Ha
Land preparation	10,000	Fertilizer (NPK)	24,000
Applic. of herbicide	4,600	Fertilizer (UREA)	24,000
First ploughing	12,000	Herbicides (non-selective)	12,000
Second ploughing	12,000	Herbicides (selective)	10,000
Planting of seeds	15,000	Seeds	25,000
First applic. of selective herbicide	5,000	Empty sags	4,000
Fertilizer applic. (NPK)	24,000	<b>Sub total</b>	<b>99,000</b>
Second application of selective herbicide	3,000		
Fertilizer applic. (UREA)	18,000	Margin per Kg of paddy	
Pesticide application	1,800	Cost of Materials	99,000
Clearing of water channels	2,500	Cost of activities	168,300
Second pesticide application	1,800	<b>Total cost</b>	<b>267,300</b>
Harvesting	15,000	Average yield per Ha	45
Meals for workers	5,000	Production cost per bag	5,940
Threshing	10,000	Selling price per bag	7,000
Meals for workers	5,000	Profit	1,060
Winnowing	8,000	<b>Margin</b>	<b>18%</b>
Bagging/sowing	2,800		
Loading	2,000		
Transportation	2,000		
Off loading	2,000		
<b>Sub-total</b>	<b>168,300</b>		

**Source:** Field Survey, 2019

From table 2, it is observed that the average cost of production of paddy is ₦5,900. Considering the length of activities of the farmer vis a vis cost of inputs/activities, the profit margin is just 18%.

One thing to note is that the profit depends mainly on market price and the production cost, one way to increase rice farmers' gain would consist of not only increasing the yields but also reducing inputs cost and cost of labour. Some of the major challenges identified by the respondents' ranges from cost of inputs, poor accessibility to inputs, weather, pests control, diseases, poor soil fertility, cost of labour, lack of market, unstable price of paddy among others.

## Millers Activities

**Table 3:** Millers Gain

Activities	Cost Per Kg (₦)
Paddy purchasing	7,000
Loading	2,000
Transportation	10,000
Off loading	2,000
Electricity	10,000
Cost of diesel	12,000
Administrative cost	110,000
Depreciation	9,000
Insurance	12,000
VAT	11,000
Total output	20 bags (₦13,000)
<b>Total cost</b>	<b>185,000</b>
<b>Production cost per bag</b>	<b>9,250</b>
Selling price	260,000
Selling price per bag	13,000
Profit	3,750
<b>Margin</b>	<b>41%</b>

**Source:** Field Survey, 2019

Table 3 captures the activities of millers in the rice value chain. Millers play a crucial role in the trading of rice. It is observed that the profit margin of millers is 41% which is 23% higher than that of the farmers. The millers identified insufficient rice, poor quality rice, and high cost of diesel, high operating cost, and poor infrastructures such as road.

## Traders Activities

**Table 4:** Traders' Income

Activities	Cost Per Kg (₦)
Purchase of processed rice	13,000
Transportation	300
Loading/offloading	100
Insurance	1,000
VAT	100
Total Costs	14,500
Selling price	19,000
Profit	4,500
<b>Margin</b>	<b>31%</b>

**Source:** Field Survey, 2019

Table 4 shows the traders' activities in the rice value chain. Traders contribute the least in the value chain but attract the highest profit margin of 31%. The trader equally earns more than the farmers. Majority of the respondent identified insufficient capital, high cost of transportation, poor storage facilities, poor demand for their product among other challenges.

## Conclusion

The following conclusions were drawn based on the findings that;

- i. There is high disparity in income distribution across the rice value chain actors in Kaduna state. This is observed by the profit margin of 18%, 41%, and 31% for farmers, millers and traders respectively.
- ii. Farmers are the most vulnerable and the poorest among the value chain actors.
- iii. Cost of inputs, poor accessibility to inputs, weather, pests control, diseases, poor soil fertility, cost of labour, lack of market, unstable price of paddy, insufficient rice, poor quality rice, high cost of diesel, high operating cost, poor infrastructures such as road, insufficient capital, high cost of transportation, poor storage facilities, poor demand for their product are the challenges faced by the rice value chain actors. This is in tandem with the findings of Jonas, Oliver & Genereuse, 2017.

## Recommendations

Based on the findings, the following recommendations were made;

- i. There should be synergy among the value chain actors in order to boost income level and fair distribution for all. This can be achieved through giving assistance to the farmers.
- ii. Farm inputs should highly subsidize and marketing boards should put in place in order to bridge the gap along the value chain actors.
- iii. Good market infrastructure should be put in place (good roads, constant and efficient power supply, good telecommunications network, and good irrigation dams).
- iv. Government and other donor agencies should make farm implements such as tractors, planters harvesters and sprayers available to farmers at affordable prices.

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