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STRUCTURE, CONDUCT AND PERFORMANCE OF RICE MARKETING IN KEBBI STATE, NIGERIA

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ABSTRACT: *The Study examined the Structure, Conduct and Performance of rice marketing in Kebbi State, Nigeria. Data were generated from a sample of 240 rice marketers using a well structured and pretested questionnaire between January and August 2018. A multi-stage sampling technique was employed. Data were analysed using descriptive statistics, gross margin analysis, return on investment, Gini coefficient and Lorenz curve. Results of the study revealed that marketing of rice was highly concentrated having a Gini Coefficient value of 0.70 in terms of structural distribution of the commodity among rice traders in the study area. Strategies utilized by the traders in their market conduct include; selling long grain rice (92%), treating customers well (90.42%), selling non-adulterated rice (81.67%), distributing rice to customers location (78.80%), selling rice on credit (72.90%) among others. The findings further revealed that marketing of rice is profitable realizing an average of ₦ 316. 503.00 as profit. With an investment turnover of 1.17, the study indicates that rice marketing in the study area is efficient. This suggests that rice marketing is a viable business. It is recommended that investments should be tailored towards having more rice processing mills to ensure timely purchase and sales of rice.*

KEYWORDS: structure, conduct, profit, market efficiency

INTRODUCTION

Rice ranks second after wheat in cereal production the world over, but comes first as far as human consumption is concerned, as half of the world population depends entirely on rice (Grist, 1985; Lancon, Ereinstein, Akande, Titilola, Akpokodje, and Ogundele, 2003). Rice has become a food security crop as well as cash crop in Nigeria. Accordingly, Nigerian Agricultural Extension and Research Liaison Services (NAERLS) (2014) observed that in Nigeria, rice employs over 15 million people in its value chain. Rice bran oil is used for cooking, soap making, carrier for insecticides and anti-corrosive and rust resistance. It is also used in the brewing industries. Rice straw is used as a source of fuel, the manufacture of straw board, for thatching and for making hats and mats (NAERLS, 2014).

The demand for rice in Nigeria has soared over the years. It is consumed across all income groups and production has however not kept pace with consumption. Nigeria is one of the major importers of rice in the world. Nigeria consumes more rice than it produces leading to significant imports over the years. Nigeria's rice consumption is expected to jump to 35 million metric tons by 2050. The widening domestic rice deficit is being met by importation as Nigeria is both the largest producer and consumer of rice in the West African sub-region (NAERLS, 2014). The crop is predominantly produced by small-holders. The area put under its cultivation production in 2010 was estimated at 2, 012, 740 ha which increased to 3, 095,900 ha in 2014.

Similarly, the estimated output of rice increased from 4, 080, 940 metric tons in 2010 to 6, 734, 100 metric tons in 2014 (NAERLS, 2014).

Despite the many advantages of rice to consumers and producers, a major problem of rice production is the marketing system which is the link between production and consumption. Since Agricultural marketing involves all those legal, physical and economic services that make it possible for products to get to consumers in the form desired by consumers, at the place desired by the consumers and at the price agreeable to producers and consumers for effecting a change of ownership/possession. This then means that agricultural marketing involves the creation of utilities of form, place, time, and possession. At a time the federal government is working on diversifying the country's economy towards agriculture and other sustainable sectors due to dwindling prices of oil in the whole world, it is envisaged that with the twenty billion naira loan targeted to rice farmers across the country for rice production, it is hoped that the government would look in the direction of rice marketing in order to stimulate the value chain addition if the government is to get its policy of rice production on sound footing.

Marketing is one of the greatest restraints on Agricultural sector in Nigeria; some marketing problems have seriously hampered the efficiency of the marketing system. In a part of the world where malnutrition is a major problem, there is the need to seek ways of improving the marketing system for rice, thus making it available throughout the year with little variation in prices. The producers will be sure of selling all they can produce while the consumer is sure to get what he wants throughout the year.

The market for most agricultural products in developing countries particularly Nigeria are not specialized and their value chain is underdeveloped. The price of rice is cheapest at the time of harvest and increases during the periods of scarcity. Bearing in mind that small scale farmers in Nigeria are faced with the problem of little resource endowment, leading them to sale all their products during harvest and left with little or none reserved for future purposes. Since marketing agencies are a crop of powerful and organized wholesalers and or retailers who have formed themselves into a strong cartel, they thus dictate the price at farm gate and also create artificial glut by withdrawing from the purchase of rice for some time, thereby forcing farmers into panicking disposal of their products at ridiculously low prices. This affects the margin that accrues to the farmers, thus contemplating to withdraw from production with dire consequences to the nation's economy.

Faced with this kind of scenario, empirical analysis of rice marketing to ensure that the marketing system is made more efficient is a step in the right direction. The efficiency of the marketing system or lack of it has tremendous implications on the future of rice production. If the independent farmer does not have a competitive market price for his product after production or a method to manage his price risk, he will be forced into a contractual situation. This has a tendency to affect investment decisions in rice production especially now that the government is focusing on increasing rice production. Since structure and conduct of a market determines its performance, it is important therefore to seek for ways of improving the marketing system for rice in the study area through empirical analysis and answering the following research questions:

1. In what forms do traders market rice?

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2. What is the structure of rice marketing?
3. How is the conduct of rice marketing?
4. What are the marketing margins and efficiency of rice marketing?
5. What are the marketing channels for rice marketing?

Theoretical Framework

The structure, conduct and performance (SCP) framework was made popular by the industrial organization economists. The SCP approach was developed in the United States as a tool to analyze the market organization of industrial sector and it was later applied to assess the agricultural system and the framework was to evaluate the performance of industries then in the USA.

The basic assumption of this approach is that the performance of any market is the result of the conduct of participants which in turn is determined by the market structure. A structure-conduct- performance causal relationship is assumed to exist even though in the view of some analyst, the relationship could occur in the reverse direction. Performance- conduct- structure (Pickering, 1974; Olukosi *et al*., 2005).The performance of a certain market or industry depends on the conduct of its sellers and buyers which, in turn, is strongly influenced by the structure of the relevant markets (Scarborough and Kydd, 1992; Abbott and Makeham 1990; Olukosi *et al*., 2005). All the three parameters do not have unidirectional movement but rather have an interdependent relationship. Hence, market structure does not only influence market performance but also has an impact on market conduct. Furthermore, performance also affects the development of market structure and market conduct.

MATERIAL AND METHODS

Study Area and Location

The study was carried out in Kebbi State, Nigeria. The choice of Kebbi State was based on the fact that it is one of the major states involved in both rice production and marketing. Kebbi State is located in the north-western part of Nigeria and occupies a land area of about 36,229 square kilometers with a population of about 3,630,931 (NPC, 2006). Projecting this population to 2018 to be increasing at an annual population growth rate of 2.38%, the state has an estimated population of about 4,938,066 people. The State lies between latitudes 10° 05^1 and 13° 27^1N of the equator and between longitudes 3° 35^1 and 6° 03^1E of the Greenwich. This area is characteristic of Sudan savannah sub-ecological zone with distinct wet and dry seasons. Soils are ferruginous on sandy parent materials evolving from sedentary weathering of sandstones.
Over two- third of the population are engaged in agricultural production, mainly arable crop alongside cash crops with animal husbandry. The major crops cultivated include sorghum, millet, maize, cowpea, sweet potato, rice, vegetables and fruits. Cash crops grown here include soybeans, wheat, ginger, sugarcane, tobacco and gum-arabic.

Sampling Design and Data Collection

The sampling method used is the multi-stage sampling technique. The State was divided in to four according to Kebbi State Agricultural Development Project (ADP) zones, namely Argungu, Bunza, Yauri and Zuru Zones. In the first stage, two Local Government Areas (LGAs) were purposively selected from each of the ADP zones where rice production and marketing operates mainly in the state. Secondly, from each of the LGAs, two leading market

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locations noted for rice marketing was purposively selected giving a total of sixteen market locations and from each market location, fifteen retailers/ wholesalers/ rice farmers were randomly selected through snow ball technique. Thus, a total of 240 respondents were interviewed for the study.

Primary data was generated for this study through a farm marketing survey using cost route approach. The primary data was collected from both rice retailers/wholesalers and rice farmers through the use of pre- tested questionnaire and well trained ADP enumerators under the supervision of the researchers. The household socioeconomic characteristics, time of sale, how rice is sold, to whom is sold, size of purchase, marketing charges, handling charges, involvement of marketing associations, marketing strategies, marketing costs such as transport, storage etc., volume of sales and input- output data constitute the bulk of the data collected.

Data analysis

The following tools of analysis were used in the study; **Descriptive statistics** to measure frequencies, percentages, ranking etc., **Gini Coefficient and Lorenz curve,** G**ross margin analysis and returns on investment** was estimated per rice marketer.

The gross margin was computed using the formula:

The gross margin analysis and return on investment were employed to elicit the profitability of rice marketed. The cost components for the marketed rice include the Cost of transportation, Cost of buying rice, Cost of empty bags, Cost of loading and offloading, commission/tax. Return from the rice sales proceed constitutes the revenue. Marketing margin was calculated as the difference between total variable cost of rice sold and return from sales proceed. The total variable cost is the sum of cost of marketing services and the buying price of the rice. It is mathematically expressed as:

$$MM = TR - TVC \quad \ldots\ldots \quad (1)$$

$$TR = \sum PiQi \quad \ldots\ldots \quad (2)$$

$$TVC = Cp + CES \quad \ldots\ldots \quad (3)$$

Where

MM = Marketing margin (#/bag), TR = Total Revenue (#/bag), TVC = Total variable cost of marketing (#/bag), Pi = Unit cost of rice quantity (#/bag), Qi = quantity of rice (bag), CES = cost of marketing service (#/bag) and Cp = Cost price of rice commodity (#/bag).

Gini-Coefficient and Lorenz curve

The Gini coefficient was used along with Lorenz curve to measure the level of marketer's concentration. The Lorenz curve and Gini coefficient were used to examine the degree of concentration of commodity traded among the rice traders. The curve was obtained by plotting the cumulative percentage of rice traders from 0 – 100 on the horizontal axis against the corresponding cumulative percentage of the aggregate sales values (in naira) of rice on the vertical axis. The wider the gap of the observed curve from the origin, the more unequal is the distribution of sales.

Further analysis of structural distribution was carried out with Gini coefficient which is expressed in mathematical form as:

$$GC = 1 - \sum L^*CE \quad \ldots\ldots \quad (4)$$

Where:
GC = Gini coefficient, L= Cumulative percentage of traders, CE = Cumulative percentage of total sales, ∑ = Summation sign. The value of GC ranged from 0-1 and the higher the value of GC, the higher the level of market imperfection.
This determined the degree of competition or monopoly in the market.

$$\textbf{Marketing margin} = \frac{\textbf{Selling price – Supply Price}}{\textbf{Selling price}} \times 100 \quad \textbf{…… (5)}$$

Selling price = retail price of rice (consumers price level)
Supply price = produce price of rice (farmers price level)
Marketing efficiency is measured by relating the rice price differential (selling price – cost price) to the cost of all marketing functions performed**.**

$$\textbf{Marketing efficiency} = \frac{\textbf{Value Added by Marketing}}{\textbf{Cost of Marketing}} \times 100 \quad \textbf{…… (6)}$$

Where:
Value added by marketing refers to the retail price at consumer level less the (producers) farmers' price, less the cost of marketing

Return on Investment which measures the rate at which capital invested yield profit is expressed as:

$$\textbf{Return on investment} = \frac{\textbf{Total return}}{\textbf{Total capital invested}} \quad \textbf{…… (7)}$$

RESULTS

Market Structure

Market structure can be defined as those characteristics of the organization of the market which seem to influence strategically the nature of competition and pricing within the market These include – (a) the number and relative size of buyers and sellers in the market (b) the degree of product differentiation (c) the relative ease or difficulty with which buyers and sellers may enter in to or out of the market(Olukosi *et al*., 2005). Thus, from market structure perspective, in an efficient market there should be sufficient number of firms in an industry given the size of the overall market and the firms of appropriate size are needed to fully capture the economies of scale; there should be no barriers to entry to the market; and firms should have full market information. Competition plays a key role in harnessing the rivalry and the profit seeking of the market place in order that it may serve the public interest (Kohls and Uhl, 1985).

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Table 1: Analysis of Gini Coefficient for distribution of rice marketing

Sales Income (₦)	Midpoint	No of Traders	% of Traders (X)	Cumulative % of Traders	% of Total Sales (Y)	Cumulative % of Total Sales	XY	/XY/
50,000 - 100,000	75,000	21	8.75	8.75	1.16	1.16	10.15	0.00
101,000 - 200,000	150,500	33	13.75	22.50	2.32	3.48	47.85	0.00
201,000 - 300,000	250,500	18	7.50	30.00	3.86	7.34	55.05	0.00
301,000 - 400,000	350,500	36	15.00	45.00	5.40	12.74	191.10	0.02
401,000 - 500,000	450,500	31	12.92	57.92	6.94	19.68	254.26	0.03
501,000 - 600,000	550,500	10	4.16	62.08	8.48	28.16	117.14	0.01
601,000 - 700,000	650,500	25	10.42	72.50	10.02	38.18	397.83	0.04
701,000 - 800,000	750,500	17	7.08	79.58	11.56	49.74	331.48	0.03
801,000 - 900,000	850,500	16	6.67	86.25	13.11	62.85	419.20	0.04
901,000 - 1,000,000	950,500	11	4.58	90.83	14.65	77.50	354.95	0.04
Above 1,000,000	1,460,000	22	9.17	100.00	22.50	100.00	917.00	0.09
Total	**6,489,500**	**240**	**100.00**		**100.00**			**0.30**

Source:

$G = 1 - \sum L*CE$

$G = 1 - 0.30$

$G = 0.70$

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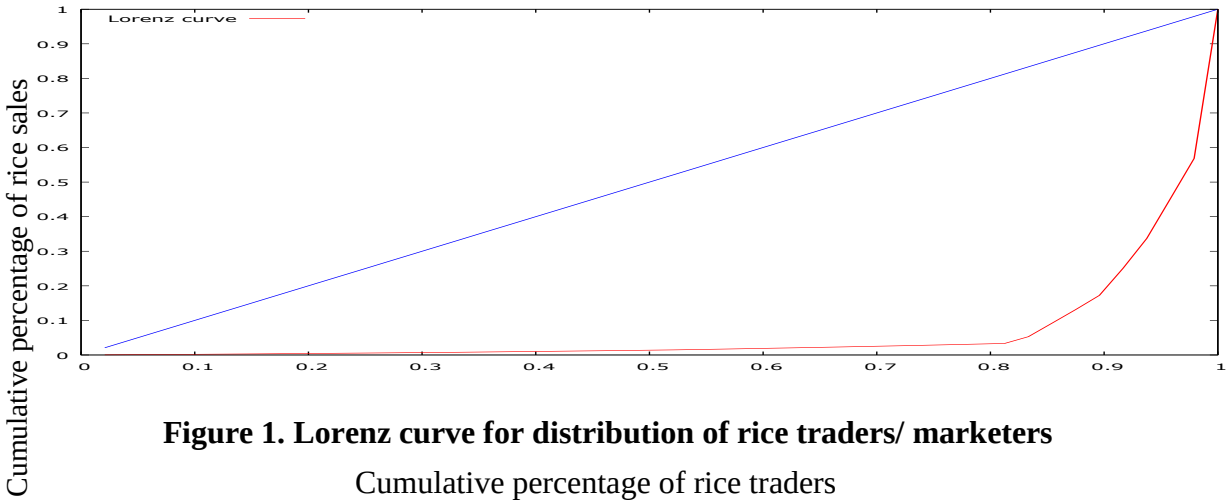

Figure 1. Lorenz curve for distribution of rice traders/ marketers

Market Conduct

Adekanye and Olayide (1988) defined Market conduct as the behavior of marketers with regard to their pricing and product policies, it refers to the behavior that firms pursue in adopting or adjusting the market in which they sell or buy, for example advertising, price fixing policies , predatory or exclusionary tactics etc. "Acceptable conduct" includes the aspects that there are enough firms in the market to create some uncertainty in the minds of firms' managers regarding whether price changes both up and down; firm manager will be followed by competitors; there is no unjustified price discrimination; there is no collusion among different firms, and there are no pricing or other matters(Wolday,1994). According to Abbott and Makeham (1990) conduct refers to the market behavior of all firms. In what way do they compete? Are they looking for new techniques and do they apply them as practicable? Are they looking for new investment opportunities, or are they disinvesting and transferring funds elsewhere? It means the strategies of the actors operating in the market. The specified structural features of atomistic numbers, homogeneous product, and free entry and exit require a form of conduct such that each firm must operate as if in isolation. The market behavior of firms will determine whether or not they compete and whether they are acting innovatively to improve market efficiency. Informal association between even a small numbers of firms (collusion) can cause price distortions and seemingly independent firms can have joint ownership (subsidiaries) (Staal, 1995).

Table 2: Distribution of rice marketers according to market conduct

Variables	*Frequency	Percentage	Ranking
Selling long grain rice (product)	221	92.00	1
Treating customer's well (promotion)	217	90.42	2
Selling non-adulterated rice (product)	196	81.67	3
Distributing rice to customers location (promotion)	189	78.80	4
Selling rice on credit (promotion)	175	72.90	5
Reducing the price while buying in bulk (price)	169	70.42	6

Source: Field survey, 2018

*Multiple responses were recorded

Marketing Channels

Marketing channels are the sequence of intermediaries through which goods pass from the producers to consumers. They are alternative routes of product flow from producers to consumers (Kohls and Uhl, 1985). Davar (1996) defined marketing channels of distribution as series of operations, which physically bring goods into the hands of the final consumer.

Most frequently, a physical product transfer is involved but sometimes an intermediate marketing institution may take title to goods without actually handling them. (Giles, 1974; Kohls and Uhl, 1985). Formally, a marketing channel is a business structure of interdependent organizations that stretches from the point of product origin to the consumer with the purpose of moving products to their final consumption destination (Olukosi *et al*., 2005).

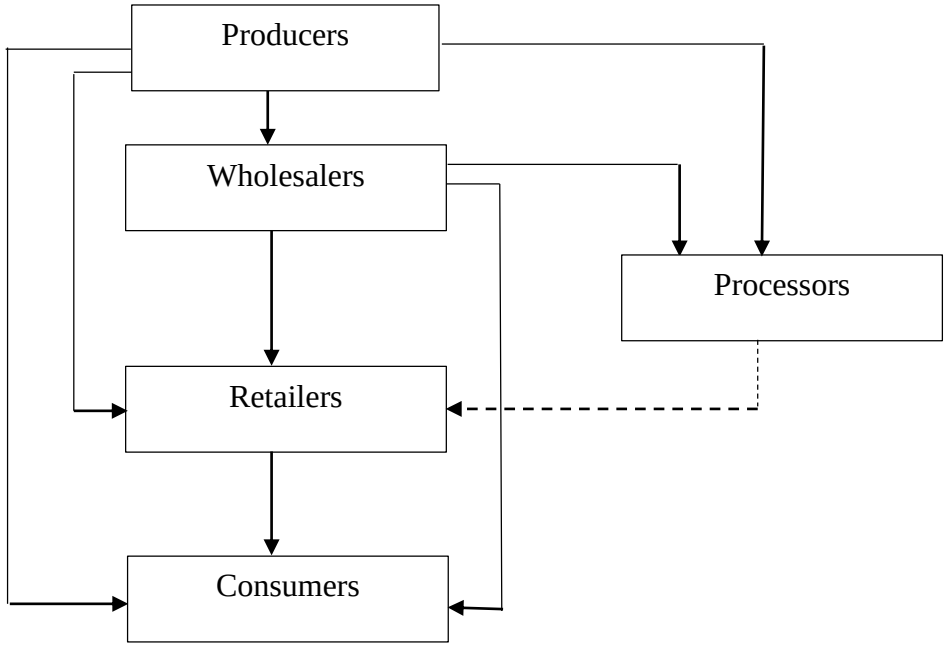

Figure 2: Showing marketing channels for rice in Kebbi State

Table 3: Average Gross margin for rice marketing

Variable Cost Items	**Mean Value(₦)**
Cost of Purchase	1,780.600.00
Transportation Cost	60,400.00
Cost of Empty Bags	23,750.00
Cost of Loading and Offloading	14,500.00
Commission/ Tax	5,800.00
Total Variable Cost	**1,885.050.00**
Gross Income	**2,201.553.00**
Gross Margin	**316,503.00**

Source; Field Survey, 2018

Table 4: Marketing margin and efficiency of rice in Kebbi State

Variables	Value
Marketing net income (profit in naira ₦)	**316,503.00**
Marketing Margin (%)	19.12%
Marketing Efficiency	1.67
Return on investment	1.17

Source: Field, Survey, 2018

DISCUSSION

Market Structure and Trade Concentration of Rice Marketers

The trade concentration of rice marketing was determined by means of Gini coefficient and Lorenz curve presented in Table 1 and figure 1, respectively. Figure 1 shows the Lorenz curve of the cumulative percentage of total sales of rice and the cumulative percentage of rice traders. It is evident from the analysis that there was high level of inequality in the distribution of commodity sales among the rice traders Also, the result of inequality in trade shares by Gini coefficient (GC) as depicted in Table 1 was 0.70. This implies that rice traders operate in a highly concentrated market since the obtained GC value was more than 0.5 and tends toward one. In other words, the market supply of rice was not competitive but rather oligopolistic as fewer numbers of the traders handled the bulk of the marketed rice. This may be attributed to the fact that majority of the traders who occupied less than ₦ 1,000,000 in terms of total sales of the distribution operate at relatively small scale levels while the major traders that occupied more than ₦ 1, 000,000 in terms of total sales operate at commercial level. Another reason could be attributed to the advent of automated rice mills in the state in recent years such as Wacot and Labana rice mills that depend largely on major traders supplying them with large quantity of paddy rice as raw material for processing.

Market conduct

The result in Table 2 revealed that selling long grain rice was ranked first by the marketers as indicated by 92% of the respondents as part of the strategies used in sustaining customers in rice marketing. Consumers and processors prefer to buy long grain rice in the market. This is probably due to its appeal to the eye when cooked. Treating customers well was ranked as the second by the 90.42% of the respondents. According to the marketers inability to be polite and friendly to the customers can deprive one from maintaining customers. Selling non-adulterated product was ranked as the third strategy employed by the marketers in influencing the market for rice in the study area. This was affirmed by 81.67% of the respondents. This is because customers are in the habit of avoiding rice that is adulterated with sand or grasses.

Distributing rice to customers' location was also a marketing strategy employed by 78.80% of the marketers. This they do in order to respond to the growth in competition in the sub sector. Selling rice on credit was ranked as the fifth marketing strategy as being reported by 72.90% of the respondents. By selling on credit to customers as a marketing strategy, it helps the traders to lure/attract more customers to their product. About 70.42% reported reducing the price of the product particularly for customers who buy in bulk as a marketing strategy. This they do in order to retain old and prospective customers in the business.

Market channel

Result in Figure 2 shows the pathways/route that rice is distributed from point of production to the consumers. The consumers can have direct or sometimes indirect access to rice in different market places. The figure contains five channels before reaching the final consumer. The figure indicates how the consumer accesses rice through the farm/ farm gate, primary market and secondary market. This means that in a condition where these channels are not accessible by the consumer at the time of need, there will be many channels to be involved before the consumer can get to buy rice. The more the channels, the higher the cost of paddy rice, so any rice that has to pass through all the five marketing channels namely farm/ farm gate, primary market, secondary market, wholesale market and urban market or processors will have a significant difference in price compared to the one that passes through only one or two channels. The channels have effects on the cost and price rice in the market at different market level. For consumer to buy rice, it means he/she has to reside close to the production zone. Farm/ farm gate and primary market has a good number of producers as the marketers. This means they mostly sell in bulk to the wholesaler/secondary market. The wholesale market has retailers as the main marketers with few consumers. While the urban market is purely retail market where rice is sold to the final consumers.

Profitability and marketing efficiency

Results in Table 3 indicates the gross margin for rice marketing in Kebbi State, Nigeria. The result reveal the total variable cost (TVC) which include the cost of purchase, transportation cost, cost of empty bags, cost of loading and offloading as ₦ 1, 885,050.00, and the average gross income as ₦ 2, 201. 553.00 The difference between the average gross income and total variable cost is ₦ 316,503.00 as the gross margin. This suggest that rice marketing is profitable in the study area. This is in consonance with the Studies by Oyewo *et al.*(2017) and Abah *et al.*(2015) who found that rice marketing is profitable and efficient in their various studies.

The result in Table 4 from the study revealed that rice marketers/ traders realized a gross margin of ₦ 316, 503.00 suggesting that rice marketing in the study area is quite profitable. The marketing efficiency results in the study area as presented in Table 4 revealed that marketing efficiency was 1.67, suggesting that for every ₦ 1,00 invested ₦1.67 is realized as return indicating that rice marketing in the study area is highly efficient. The return on investment reveals that for every ₦ 1.00 invested, ₦ 1.17 kobo is realized suggesting that rice marketing in the study area is a viable business.

CONCLUSION

This study has examined the Structure, Conduct and Performance of Rice marketing in Kebbi State, Nigeria. Based on the findings, it can be concluded that rice marketing was highly concentrated in terms of structural distribution of traded commodity among Kebbi State rice traders. In terms of strategies in their market conduct, rice traders in the study area are involved in selling long grain rice (92%), treating customers well (90.42%), selling non-adulterated rice (81.67%), distributing rice to customers location (78.80%), selling rice on credit (72.90%) among others. The results also revealed that rice marketing is both profitable and efficient realizing an average of ₦ 316. 503 and 1.67as net returns and market efficiency, respectively. The investment turnover is 1.17 suggesting that rice marketing is a viable business.

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