FACTORS INFLUENCING MARKET SUPPLY OF PADDY RICE BY RETAILERS IN KONSHISHA LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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Abstract: This study assessed the factors influencing the market supply of paddy rice by retailers in Konshisha local government area of Benue state, Nigeria. Purposive and multistage random sampling was used to select 60 paddy rice retailers in the study area. Structured questionnaires were used to collect data for the study. Data was analyzed using descriptive statistics such as frequency, percentage and mean, marketing margin and multiple regression analysis. Result showed a mean revenue of ₦39,600, costs of production of ₦27,280 with a marketing margin of ₦12,320 per bag of paddy rice sold. The result showed an operating ratio of 0.69, a gross ratio of 1.45 and a return per naira invested of 0.45 implying that for every naira invested there was a return of 45 kobo. The regression analysis showed that seven factors had significant effect on rice marketing in the study area. welfare (-0.73), cost of transportation (-0.21), cost of loading and off-loading (0.21), cost of storage (0.21), years of marketing experience (0.57), and household size (-0.35) were factors influencing the supply of paddy rice in the study area. Constraints to rice marketing were found to include lack of capital, cost of transportation, and poor road networks. Overall, the results suggest that paddy rice marketing in the study area is a profitable, with potential for growth and investment. It was recommended, among others, that youth need to be empowered with training, credit facilities, and improved technology to enhance their productivity and efficiency.

Keywords: Konshisha, Market, Paddy-rice, Retail, Supply

Introduction

Rice is a seed of a monocot plant *Oryza sativa* (Asian rice) or *Oryza glaberrima* (African rice). As a cereal grain, it is the most widely consumed staple food for a large part of the world's human population. Rice is normally grown as an annual plant, although in tropical areas it can survive as a perennial plant. In Nigeria, the demand for rice, in general and local rice in particular, is growing quickly due to rapid population growth, urbanization and increased engagement of women, who were erstwhile unemployed, full housewives in formal sector job opportunities (Mafimisebi *et al*., 2014a). Although, Nigeria's fertile land and rich agro-climatic conditions can support production of sufficient rice to feed its teeming population and leave a marketable surplus for exports**,** the country's domestic production of rice accounts for less than half of its consumption need (United States Department of Agriculture [USDA], 2012).

Rice (*Oryza sativa*) is a staple crop with a wide acceptability in most families in Nigeria. Poverty alleviation, food self-sufficiency and food security have been the priority objectives since independence not only in Nigeria but also in other sub-Saharan African countries. However, these objectives have not been fully achieved due to a number of factors such as political and economic instability, inadequate infrastructural facilities, and inadequate credit facilities at both household and national levels, over population, unfavorable micro and macroeconomic policies, inadequate agricultural inputs, poor agricultural technologies, inappropriate agricultural knowledge, rural-urban migration and lack of employment opportunities (Kidane *et al*., 2005 as cited by Abdulazeez *et al*, 2018). Rice production in Nigeria has increased over time because of increasing demand for rice, however, the increase in supply is not sufficient to match the increasing demand (Familusi and Oranu, 2020). With the growing population in Nigeria, tending towards 230 million people and ranking sixth in the list of countries, rice production will be critical as it plays a key role in the provision of food and employment, as well as

in enhancing farmers' income and food security (Okpe *et al*., 2018). Official sources have indicated that there is some increased production of local rice in Nigeria's five major rice growing states, namely, Nassarawa, Cross River, Benue, Ekiti and Kebbi following the Rice Transformation Agenda which commenced in 2011. However, it is indicated that facilities are inadequate to expand the cultivation of rice competitively beyond 20 percent of current production capacity by 2015 (USDA, 2012). Hence, importation has become inevitable in order to make for the shortfall.

There is need for an efficient rice marketing system to sustain and accelerate its production and supply. This will promote economic growth in the study area and in the country by encouraging specialization and output enhancement. The involvement of many intermediaries has also constrained the development of the sector and deprived the farmers of equitable returns from their investments. The processing and marketing of rice in Nigeria is still having some challenges that need to be addressed so that the production, price, supply and consumption of the local rice can be encouraged. Whereas the introduction of modern machines capable of removing small stones in the local rice processing industries has given improvement in the pricing, marketing and demand for the local rice in Nigeria (Ajala and Gana, 2015). Increasing production without a corresponding efficient marketing strategy being put in place to ensure its accessibility would not stimulate farmers to enhance production since the excess would be wasted through post-harvest losses. However, the majority of smallholder rice farmers in the country are located in remote areas with numerous market challenges such as poor road infrastructures and limited market information as a result, they often fail to access markets.

Marketing being the process of getting products from the point of production to the final consumer meeting the utility of form, place and time requires that those involved get some satisfaction from engaging in such activities. The motive may be to earn a living by the income generated in the

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process, make profits or as a means of livelihood. The supply of rice through marketing may be determined by a number of factors which may significantly influence the supply of the product in the market. It is for this reason that the study was carried out to determine those factors that influence the market supply of rice in Koshisha local government area of Benue state as well as to find out whether marketing of rice was profitable or not.

Methodology
Study Area

This study was conducted in Konshisha Local Government Area of Benue State. It is one of the local government areas in the state. Konshisha local government was created out of the former Vandeikya Local Government Area of Benue State on the 28th February, 1983 with its headquarters in Tse-Agberagba. Konshisha Local Government Area is located on a leveled land in the Northeast of Benue State lying between longitude 8° 400' East and Latitude 6°551' and 7° 231 North. Konshisha Local Government has a population of about 225,672 (2006 census figures). It has a land mass of 10.089 square kilometers. It is one of the largest local governments in the state. The local government is bounded by Gboko Local Government Area in the North, Gwer Local Government Area in the west, Ushongo Local Government Area and Vandeikya Local Government Areas in the East and, Cross River in the South. Konshisha Local Government has eleven (11) Council Wards/Districts, which includes Mbaiwarnyam, Mbatsen, Ikyurav/Mbatwer, Mbayegh/Mbaikyer, Tse-Agberagba, Mbavaa, Mbanor, Mbatser/Mbagusa, Mbake, Mbawar and Mbaikyase Council Wards. The people of Konshisha Local Government are predominantly farmers and produce different varieties of crops such as: Rice, Yams, Cassava, Soya beans, Guinea corn, Groundnuts, Oranges etc. Similarly, the people also do raise livestock. Some of the livestock reared in the area are: goats, pigs, birds, cattle and host of other domestic animals.
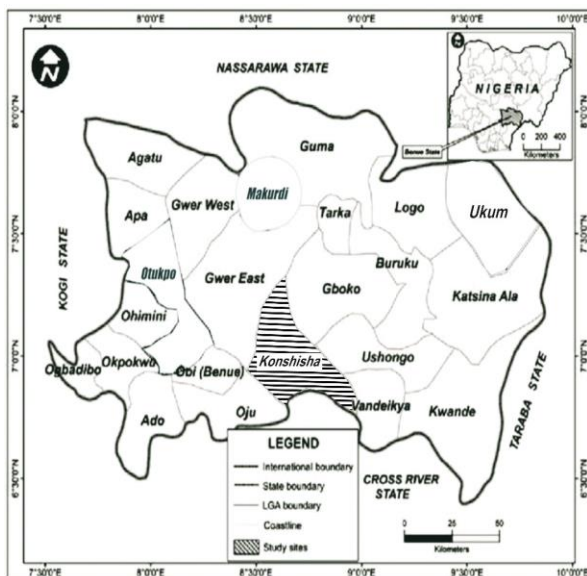

Figure 1: Benue state map showing location of the study area
Source: Research gate

Sampling Procedure
A multistage sampling method was used to select the respondents. In the first stage, the local government was selected based on its relative concentration of rice marketing. Secondly, from the eleven (11) council wards in the local government, five (5) were randomly selected. Thirdly, from each of the selected council ward, five (5) communities were randomly selected. The fourth stage was the random selection of twelve (12) paddy rice retailers from each of the selected communities giving a total of sixty (60) respondents for the study.

Data Collection
Primary data were used for this study. The data was collected from individual rice retailers through the use of a well-structured questionnaires to which respondents provided information on the socioeconomic characteristics, revenue and costs associated with paddy rice marketing, factors influencing market supply of paddy rice, as well as the challenges they encounter in the cause of their marketing activities.

Data Analysis Techniques
To achieve the stated objectives, data were analyzed using descriptive statistics such as means, percentage and frequency distribution, Gross Margin analysis and multiple regression. Means, frequencies, and percentages were used to achieve the objectives of describing the socioeconomic characteristics of rice marketers and identify the challenges to paddy rice supply, gross margin was used to determine the profitability of rice marketing and multiple regression was used to determine the factors influencing the supply of paddy rice in the study area.

Model Specification
Marketing margin analysis
This was used to determine the profitability of rice marketing in the study area. The model was specified as follows:
The formula was given follows.
GM = TR – TVC

$$(1)$$

Where:
GM = Marketing margin (Naira); TR = Total revenue (Naira); TVC = Total variable cost (Naira).

2.5.2   Regression model
The model specified for this study was multiple regression model. The regression analysis was used for determining the factors influencing market supply of paddy rice in the study area.
The function was explicitly represented thus:
$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e)$
$Y = a + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + U$ ………………… (2)
Y = Marketing margin (₦)
X_1 = Welfare (₦)
X_2 = Cost of loading and off-loading rice (₦)
X_3 = Levies paid (₦)
X_4 = Cost of transportation (₦)
X_5 = Cost of storage (₦)
X_6 = Age (years);
X_7 = Marketing experience (years);
X_8 = Educational level (0 = Never school, 1 = Primary, 2 = Secondary, 3 = Tertiary)
X_9 = household size (in numbers of persons)
e = error term

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Results and Discussion
Socio-economic Characteristics of Paddy-rice Retail Marketers

The result in Table 1 shows the mean age of rice marketers as 36.8 with a standard deviation of 7.3. This implies that farmers in the study area were youth within active stage. The age range of 36.8 ± 7.3 years suggests that the marketers have the physical strength and energy required for the demanding task of marketing, which is essential for their participation and performance in socioeconomic activities. This conformed with the findings of Zalkuwi (2019), who reported that majority of rice marketers were between 35-50 years.

A mean household size of 6 persons per household was indicated by the result. This implies that the farmers in the study area had responsibility enough to push them into engaging in an economic activity in order to provide for their families and might have been taking advantage of family labor availability by involving household members participate in marketing activities. This agrees with the study of Abah *et al* (2015) that large household size can be a source of cheap family labor. One implication of a large household size is that a huge proportion of income may be spent on consumption which may restrict farm business expansion and reduce the extent of market participation, as opined by Mafimisebi, *et al.,* (2018).

The result shows a mean rice marketing experience of 7.4 year, implying that retailers in the study area have years of marketing experience in paddy rice. The implication of this marketing experience is that it is likely to help promote efficiency and profitability in the business. This finding is also in line with Banmeke (2013), who reported that marketing experience influence marketing and supply of rice.

Rice marketing was found to be dominated by males in the study area as male retailers constituted 63.3% of the retailers involved in marketing of rice whereas females were 36.7% of the retailers in the study area. Marketing is a time and energy demanding activity that female may not be able cope easily. This, perhaps, explains why there were more males in the business than females. This is corroborated by Emodi and Agwu (2018), that the dominance of males over females in the rice marketing activities implies that rice marketing could be tedious and energy sapping for females. Furthermore, females have domestic chores to contend with, which may be too numerous and demanding to allow them time to participate effectively in rice marketing activities.

The result for marital status shows that while 55% of the paddy rice retailers were married, 6.7% and 5% were widowed or divorced, respectively, bringing the total to 66.7% of the respondents that were married or have experienced marriage. This suggests that being married or having experience marriage comes with the responsibility of providing for one's family and therefore this informs the reason for their involvement in rice marketing. The dominance those who were married or have experience marriage implied that there could be high income yield from rice marketing to carter for their, household needs (Emodi and Agwu, 2018)

The result on educational status indicated that 80% of the marketers had one form of education or the other and are therefore literate enough to find the technicalities of rice marketing easy to understand and apply for greater performance. This is in line with Zalkuwi (2019) which shows that the level of education of a trader is of significant importance in his decision-making process. Rice marketers who are fairly educated would find it relatively easier in their dealing with consumers with respect to communication.

Table 1: Socio-economic Characteristics of Paddy-Rice Retail Marketers

Variable	Min.	Max.	Mean	Std. dev.
Age (years)	20	50	36.8	7.3
Household size (number)	1	15	6	3.0
Years of experience in marketing (years)	1	20	7.4	4.4
	Frequency		**Percentage**	
Sex				
Male	38		63.3	
Female	22		36.7	
Marital Status				
Single	20		33.3	
Married	33		55.0	
Widowed	4		6.7	
Divorced	3		5.0	
Level of education				
None	12		20	
Primary	15		25	
Secondary	18		30	
Tertiary	15		25	

Source: Field survey, 2022

Marketing Margin Analysis

Table 2 present the result for the marketing margin per bag of paddy rice sold in the study area. The result shows that a mean total revenue of ₦39, 600 was generated from paddy rice marketing with a mean total variable cost incurred of ₦27, 280 by the respondents. Out of the total cost incurred, purchase price accounted for 61.7% followed by transportation which accounted for 11.6%. The result indicated a mean marketing margin of ₦12,320. The

operating ratio of 0.69 indicates that the revenue generated is higher than the total variable cost incurred in marketing a bag of paddy rice. The gross ratio of 1.45 shows that the total revenue is greater than the total variable cost, further indicating profitability. The return per naira invested of 0.45 suggests that for every naira invested in paddy rice marketing in the study area, there is a return of 45 kobo, indicating economic viability. This findings align with those of Okoye *et al.* (2009), who also found rice marketing to be

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profitable in Anambra State.. Overall, the results suggest that paddy rice marketing in the study area is a profitable business, with potentials for growth and investment.

Table 2: Marketing Margin Analysis

Variable	Quantity		Value (₦)	Percentage
Revenue	**1Bag**			
Selling price	"	"	39,600	
Costs	"	"		
Purchase price	"	"	15,680	61.7
Loading/offloading	"	"	2,700	8.9
Levies	"	"	1,700	5.6
Transportation	"	"	3,500	11.6
Storage	"	"	2,300	7.6
Feeding	"	"	1,400	4.6
Total cost	"	"	**27,280**	**100**
GM(TR-TC)	"	"	**12,320**	
OR(TVC/TR)	"	"	**0.69**	
GR(TR/TC)	"	"	**1.45**	
RNI(GM/TC)	"	"	**0.45**	

Source: Field survey, 2022

Factors Influencing the Supply of Paddy-Rice by Retail Marketers

Table 3 Provides the probability estimation for the likelihood of market participation of a retailer given the statistically significant variables. The result shows an Adjusted R Square value of 0.85, implying that 85% of the market supply of paddy rice in the study area are explained by the variables included in the model. The estimated coefficient of welfare (-0.727) and household size (-0.353) were negative and statistically significant at 1%. Cost of transportation also had a negative coefficient (-0.684) that was significant at 5%. The result, however disagrees with the result of Dayyabu (2021) who reported that household size negatively influences the supply of paddy rice. This shows that the inputs welfare, household size, and transportation cost were at stage III of the production function where any one more unit addition of welfare, household size and transportation cost will result in a decrease in the market supply of paddy rice by the corresponding coefficient. The estimated coefficient for cost of loading and off-loading (2.089) cost of storage (0.206) and marketing experience (0.573) were positive and statistically significant at 1% level. While loading and off-loading was at stage I of the production function, cost of storage and marketing experience were at stage II. It therefore means that any one more unit addition of the said variables will result in increased market supply of paddy rice by the corresponding value of their coefficients. Cost of loading and off-loading and storage were highly significant, probably because it results in increased demand as buyers will not have to worry about settling these costs and result in a high turnover on the part of the supplier hence stimulating increased supply. This is in agreement with the report of Shehu *et al.,* (2010) who observed significant positive coefficient for transportation, implies that the more the transportation cost the better the marketing efficiency. Levies paid in the cost of marketing also had a positive coefficient (0.837) that was significant at 5%, implying that the more the levies paid the greater the supply of paddy rice to the market in the study area.

Table 3: Factors Influencing Supply of Paddy-Rice by Retailers

Variable	Coefficient	Std. Error	T	Prob.
Welfare (₦)	-0.727	1.426	-0.510	0.003***
Col & Offl(₦)	2.089	0.422	4.955	0.000***
Levies paid (₦)	0.837	0.373	2.244	0.031**
Cost of Trans. (₦)	-0.684	0.331	-2.065	0.046**
Cost of storage (₦)	0.206	0.137	1.506	0.000***
Age (years)	-0.129	0.218	-0.593	0.557
Mark Exp. (years)	0.573	0.196	2.919	0.006***
Educational level	0.280	0.224	1.250	0.219
Household size	-0.353	0.219	-1.610	0.002***
C	-2.067	0.11	0.21	0.000***
R-squared	0.925			
Adjusted R-squared	0.848			
Durbin-Watson	1.00			

***1%, **5% and *10%
Source: Field survey, 2022

Constraints to Paddy-Rice Supply by Retail Marketers in the Study Area
Table 4 revealed that of the constraints to rice marketing lack of capital ranked first with 86.7% of the respondents affected by it, low price of produce had 85% responses in its favour ranking second among constraints to rice marketing. This was followed by

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high levies charged in the course of marketing the product which ranked third at 83.3%. The least were insufficient storage space, poor market information and low quality of the rice traded ranking 6th, 7th, and 8th, respectively.

Table 4: Constraints to Paddy-rice Supply Supply by Retailer in the Study Area

Constraint	Frequency	Percentage	Rank
Lack of capital	52	86.7	1st
Low price for produce	51	85	2nd
High levies	50	83.3	3rd
Poor road network	49	81.7	4th
Transportation cost	40	66.7	5th
Insufficient storage space	39	65.0	6th
Poor market information	30	50	7th
Problem of quality	27	45.0	8th

Multiple response table
Source: Field Survey, 2022

Conclusion and Recommendation
Conclusion
Generally, the demographic characteristics of the rice marketers in the study area suggest that they are young, energetic, and motivated to engage in marketing activities to support their families and take advantage of available labor resources.

Overall, the results suggest that paddy rice marketing in the study area is a profitable business, with potential for growth and investment.

On factors determining the supply of paddy rice in the study area, the model explains 85% of the market supply of paddy rice in the study area, indicating a strong fit. Welfare, household size, and transportation cost negatively impact market participation, suggesting that increases in these variables will decrease market supply. Loading and off-loading costs, storage costs, marketing experience, and levies paid positively impact market participation, suggesting that increases in these variables will increase market supply.

These conclusions provide insights for stakeholders to enhance market supply and improve marketing efficiency in the paddy rice market.

Recommendations
Based on the results of this study, the following recommendations are made that;

i. . Retailers need to be empowered with training, credit facilities, and technology to enhance their productivity and efficiency.

.ii. The dominance of males (63.3%) in rice marketing suggests a need to encourage female participation. Training and empowerment programs targeting women can help address the gender gap.

iii.. The high literacy rate (80%) is an asset. Educating marketers on modern marketing techniques, entrepreneurship, and business management can further improve their performance.

iv.. Since purchase price and transportation costs account for a significant portion of total costs (61.7% and 11.6%, respectively), efforts should be made to negotiate better prices and explore cost-effective transportation options.

5. Optimizing loading and off-loading infrastructure, storage capacity, marketing experience, and levies paid can increase market supply.

6. Reducing welfare and household size can also increase market supply, but requires careful consideration.

These recommendations can help improve the efficiency and productivity of rice marketers in the study area, ultimately enhancing their socioeconomic status and contributing to the growth of the agricultural sector.

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