MARKETING AND MARKET INTEGRATION OF RICE IN ABIA STATE, NIGERIA

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Abstract
This study analyzed the marketing and market integration of rice in Abia State. Specifically, the study examined the co-movement of prices and the transmission of price signals and information across spatially separated markets, determine the magnitude of rice integration and its profitability in the market, examine the factors influencing profit of rice marketers and identify the constraints faced by the rice marketers. Multi-stage sampling technique was used in selecting the respondents. Primary data was obtained using a well-structured questionnaire administered to sixty (60) respondents (rice marketers) were analyzed using descriptive statistics and multiple regression analysis and Bivariate correlation. The result shows that rice marketing was profitable by returning a profit of ₦43292.99k per month. Marketing experience, age, level of educational attainment, quantity of rice purchased, purchased price, selling price, storage cost and other charges like the toll fees, phone calls are the significant variables influencing profit. From the result gotten also, it shows that there is high price integration between the urban and rural markets. Also, from the result, it shows that there was a constant rise in the price of rice due to the government policy on the ban of the importation of rice. The greatest problems encountered by the rice marketers were government policy on the ban of importation of rice in the country, inadequate finance, high transportation costs/bad roads, high cost of rice per bag, high rate of taxation. Consequently, to improve the level of market integration of rice in Abia State, transportation, processing, storage, communication and credit facilities should be provided.

Keywords: Marketing, Market, Integration and Rice

Introduction
Of all the staple crops, rice has raised to a position of prominence with high and ever increasing rate of consumption in Nigeria and other countries countries (FAO, 2003; Iheke and Nwaru, 2010). Rice consumption is of interest to the Nigerian economy because of the huge amount of foreign exchange being spent on its importation and the consequent depletion of scarce resources on which the level of economic activities and productivity are based (Adeyeye *et al.,* 2010). According to the Food and Agricultural Organization of the United Nations (FAO) (2003), the average Nigerian now consumes 21Kg of rice per year, representing 9 percent of total calorie intake and 23 percent of total cereal consumption. Since the mid1980s, rice consumption has increased at an average annual rate of 11 percent of which only 3 percent can be explained by population growth; the remainder represents a shift in diet towards rice at the expense of the coarse grains (millet and sorghum) and wheat (WARDA, 2003). Erenstein and Lancon (2002) noted that the most important factor contributing to the shift being consumers' preferences away from the traditional staples towards rice is rapid urbanization and associated changes in family occupational structures. They noted that as women enter the work force, the opportunity cost of their time increases and convenience foods such as rice, which can be prepared quickly, rise in importance. Similarly, as men work at greater distances from their homes in the urban settlements, more meals are consumed from the market, where the ease of

rice preparation has given a distinct advantage, the trend meaning that rice is no longer a luxury food but has become a major source of caloric intake for even the urban poor. A sound and efficient marketing system plays great role in achieving economic growth and prosperous agriculture (Kohls and Uhl, 1990). Marketing as an activity for development stimulates technological innovation, specialization, resource use as well as increase in supply of and demand for commodities (Scarborough and Kydd, 1992). The marketing system generates price incentives and rewards. Thus 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 (Kohls and Uhl, 1985, 1990).

The market integration of rice is an important issue in the effective supply of this staple food due to increasing demand as a result of population growth in developing countries, especially Nigeria. To satisfy the growing rice consumption and reduce rice import has been a top priority for every West Africa government, which have devoted significant resources towards that goal in the past years (Pearson, 1994). In achieving this, the rice marketing system has to be liberalized and diversified to meet the demand in developed and remote areas with the involvement of large-scale and small-scale marketers. West Africa has become a significant player in world rice markets precisely because of its increasing significant share of world rice imports, which stands now at 84% (FAO, 2000). The poor performance of agricultural marketing in most nations like Nigeria was as a result of the type of public policy structure that did not provide the right incentive for growth. The question why is there a continuous quest for external supply of rice (i.e. the importation of rice) to Nigeria, while there is the potential for efficiency in production and distribution from local supplies even for exportation is still glaring. Despite abundant human and natural resources, Nigeria is still unable to feed her citizens. The projected national demand for rice in the country is put at 4.64 million metric tonnes annually, while the current rate of consumption is put at 2.3 million metric tonnes (WARDA, 2003). Current local production of the commodity is a meager 525,000 metric tonnes per annum (Ifejirika *et al*., 2013). High population growth rate has fueled increased demand for rice, leading to reliance on imports to meet the consumption needs of the populace (Iheke and Nwaru, 2008). It follows that the country will have to import the shortfall which is projected to cost \$267million (Ashaka, 2008). Nigeria current spends about a billion Naira daily importing rice, a development which is helping to put farmers to work in countries like the United States, India and Thailand, while putting farmers out of work in Nigeria (Akinwumi, 2015).

The study of market integration is important in determining the co-movement of prices and the transmission of price signals and information across separated markets (Samuelson, 1952; Takayama and Judge, 1964). Baulch (1997) noted that the issue of markets integration is critical in many contemporary debates concerning market liberalization, price policy and parastatals reforms in developing countries. Without spatial price integration of market, price signals will not be transmitted smoothly from food deficit to food surplus areas. Also agricultural producers will fail to specialize according to long-term comparative advantage, and the gains from trade will not realized. The study of market integration can suggest to the producer as to where, when and how much to sell, which in turn will have a bearing on their production strategies and hence resource allocation. Integrated markets are those where prices are determined interdependently (Yogisha, 2006). Fulton *et al.,* (2003) observed that, the examination of the extent of how markets were integrated was an important way of understanding whether sufficient market information was available to the market participants.

Akpan *et al.* (2014) price transmission and market integration of local and foreign rice in rural and urban markets of Akwa Ibom State in Southern region of Nigeria. The findings show that, prices of local and foreign rice in rural and urban markets has constant exponential growth rate of 0.59% which suggests perfect co-movement for rural and urban prices of local and foreign rice in the study area. Also, the Pearson correlation coefficient matrix revealed that, the rural price of local and foreign rice has linear symmetrical relationships with their corresponding urban prices. The result connotes the existence of symmetric market information flows between the rural and urban rice markets in the state. Debaniyu (2013) investigated grain (cowpea) market integration in Niger State, northern Nigeria. He employed time series methodology and discovered that some markets in the study area were integrated in the long run. This study therefore, examined the marketing and market integration of rice in Abia State. Specifically, it examined the trend in the price of rice, determined the rate of rice market integration, determined the profit made and the factors influencing profit of rice marketers, and identified the constraints faced by the rice marketers in the study area.

Methodology
This study was conducted in Abia State of Nigeria. Abia State was created on the 27th August, 1991 out the old Imo State. It is one of the five states in the South East Geo-Political Zone of Nigeria. Abia State comprises 17 Local Government Areas (LGAs), grouped into three Agricultural Zones. The Zones are Aba, Ohafia and Umuahia. The State lies approximately within latitude $4^0 41^{'}$ and $6^0 14^{'}$N and longitude $7^0 10^{'}$ and 8^0E. The geographic location makes it a land locked state. It occupies a land area of about 5243.775Sq.km which is approximately 5.85% of the total land area of Nigeria with less than half of this land being economically utilized (ABSEEDS, 2005). Abia State has a total population of 2,833,999 from the 2006 population census, with a population density of 448.4/km2 (NPC, 2006). This population consists of people in all walks of life with about 65 percent of them engaged in agriculture. Purposive and random sampling techniques were used in selecting the various markets for the study. The first stage involved a purposive sampling of 2 urban and rural markets respectively, given a total of 4 markets. The next stage involved a random selection of 15 rice marketers from each of the 4 markets, making a total of 60 respondents. The list of rice marketers formed the sampling frame from which sample units were drawn from. Data collected by the use of structured questionnaire administered to the respondents and by oral interviews and observations were analyzed using descriptive statistics such as frequency tables, chart, correlation analysis, net profit equation and ordinary least squares regression analysis. Of the 60 questionnaire administered to the respondents, 57 were found useful and used for the analysis. For the trend analysis, monthly price of rice for a period of 12 months was sourced from the respondents. Price transmission of rice market in in the study area was analyzed using the correlation coefficienct, specified as:

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2 \sum(Y - \bar{Y})^2}}$$ ………………………………………………………………….. (1)

Where: = r = correlation coefficient, X and Y are the prices of rice in the urban and rural markets respectively, and $\bar{X}$ and $\bar{Y}$ are the price of rice in the urban and rural market respectively. The size of this coefficient and its significance shows the level of inter market dependence. Correlation coefficient (r) greater than 0.8 signifies strong correlation, when r falls between 0.6-0.8, it is regarded as moderate correlation while correlation coefficient (r) less than 0.6 is regarded as weak correlation (Asumgha *et al.,* 2007).

The net profit made by the marketers was calculated as follows:

$$\prod = TMR - TMC$$ …………………………………………………………………………… (2)

Where: $\prod$ = Marketing profit, TMR = Total marketing revenue (or returns) from sales, and TMC = Total marketing cost.

For the factors influencing profit of rice marketers in the study area, the regression model is specified implicitly as:

$$\prod = f(X_1\ X_2,\ X_3,\ X_4,\ X_5,\ X_6,\ X_7,\ X_8,\ X_9,\ X_{10},\ X_{11},\ e_1) \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(3)}$$

Where: $\prod$ = Marketing profit, X_1 = Age of marketers (years), X_2 = Level of education (years), X_3 = Marketing experience (years), X_4 = Members of marketing association (dummy: 1 = member and 0 = non-member), X_5 = Quantity of rice purchase for sale (in kg), X_6 = Purchase price (in naira), X_7 = Selling price (in naira), X_8 = Cost of loading/offloading (in naira), X_9 = Transportation cost (in naira), X_{10} = Storage cost (in naira), X_{11} = Other charges in naira (toll fees, phone calls, supply shock etc), e_1 = error term assumed to fulfill all the assumption of the classical linear regression model.

Four functional forms of the above model were tried viz- linear, semi-log, double log and exponential forms.

Results and Discussion

Price trend of rice

The price trend of rice is presented in Figure 1. The Figure shows an incremental rise in price of rice during the period under review (June 2015 – May 2016). The rise in price could be attributed the ban on rice importation by the government and the increased level of inflation in the economy currently being witnessed. This calls for policies aimed at boosting domestic rice production such as timely provision of improved inputs (seeds, fertilizer, herbicides, etc.) and at affordable prices.
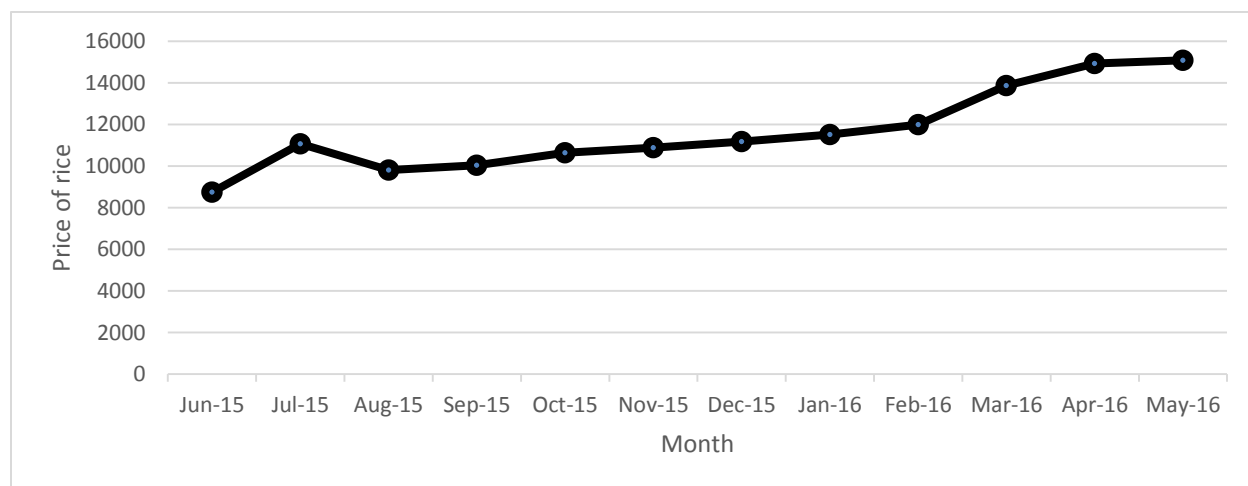

Figure 1: Price trend of rice (June 2015 – May 2016)

Magnitude of market integration between urban and rural rice markets

The magnitude of integration between urban and rural rice markets is presented in Table 1. The correlation coefficient was 0.7248, significant at 5% level and positive. This implies strong association between prices in the two markets, as they move in the same direction. There is high rate of integration in price between urban and rural rice markets. This result shows that whatever marketing policy implemented in the urban areas directly affects the rural markets as well. Government should therefore take cognizance of the rural dwellers while implementing especially formulating and implementing marketing policies.

Table 1: Magnitude of market integration between urban market and rural markets

	Urban	Rural
Urban	1.0000	
Rural	0.7248*	1.0000

Source: Computed from survey data, 2016.

Profit made by the rice marketers

The profit accruing from the marketing of rice is presented in Table 2. The result showed that a profit of ₦43292.99 was made. Also, it showed that on the average the marketers made a profit of ₦43293.99 per month. This result shows that rice marketing is profitable. Therefore people should be encouraged to take up rice production and marketing of rice as a means of livelihood given the positive net returns from it. This will help in stemming the ever escalating rate of unemployment.

Table 2: Profit from rice marketing

S/No.	Items	Amount (₦)
1.	**Revenue from sales**	**779331.58**
2.	**Costs**	
a)	Purchase cost	686287.72
b)	Loading/offloading	20569.12
c)	Transportation	18281.75
d)	Storage rent	6408.77
e)	Union dues	382.46
f)	Government charges	1022.81
g)	Utility bills	2533.33
h)	Tolls	552.63
	Total cost	**736038.59**
3.	**Profit**	**43292.99**

Source: Survey data, 2016

Factors influencing profit from rice marketing

The regression estimate of the factors influencing profit made by the marketers is presented in Table 3. The double log functional form was chosen as the lead equation based on statistical and econometric reasons such as high magnitude of the coefficient of determination, the number of significant variables, and the agreement of the signs borne by the coefficient of the variables to *a priori* expectation, as well as the significance of the F ratio. The coefficient of multiple determination (R^2) was 0.9537 which implies that 95.37% of variation in profit was explained by the variable included in the model. The F-ratio was significant at 1% level of significance indicating the goodness-of-fit of the model. The significant variables influencing profit were age of the marketers, level of education attainment, marketing experiencing, quantity purchased, purchased price, selling price, storage cost and other charges. The co-efficient of age was significance at 1% significance level and negatively related to profit. This implies that profit decreases as the marketer gets older. This could be as a result of the inability of the marketer to cope with the daily challenges associated with rice marketing due to old age. The results agree with a prior expectations and Wongnaa *et al.* (2014) and Nwaru and Iwuji (2005), who reported a negative, although insignificant, relationship between the age and gross margins in plantain marketing in Imo State, Nigeria. Nwaru et al (2011) also had similar results. Nwaru (2004 and 2005) indicated that entrepreneurship dwindles as the age of the entrepreneur increases.

Table 3: Factors influencing profit of the marketers

Variable	Linear	Exponential	Double log+	Semi log
Intercept	835323.9 (1.92)*	13.830 (3.53)***	-60.737 (-4.12)***	-1.05e-07 (-2.17)**
Age (X_1)	-1565.195 (-1.02)	-0.009 (-0.61)	-0.223 (-10.14)***	-52532.43 (-0.79)
Education (X_2)	-4316.611 (-1.07)	-0.008 (-0.23)	0.098 (4.38)***	8660.709 (0.42)
Marketing experience (X_3)	872.743 (0.36)	0.018 (0.80)	0.330 (4.10)***	36925.72 (1.39)
Membership of marketing association (X_4)	27877.91 (0.93)	0.483 (1.79)*	-0.107 (-1.08)	-91541.19 (-2.82)**
Quantity purchased (X_5)	244.164 (11.52)***	0.001 (5.63)***	1.266 (22.33)***	203401.3 (10.89)***
Purchase price (X_6)	-169.197 (-4.68)***	-0.00 (-4.50)***	-19.785 (-11.82)***	-184.235 (-3.34)***
Selling price (X_7)	119.493 (2.90)***	0.001 (3.31)***	26.738 (12.16)***	2853.392 (3.94)***
Cost of loading and loading (X_8)	0.404 (0.69)	6.85e-06 (1.30)	0.006 (0.15)	-11550.76 (-0.85)
Transportation cost (X_9)	-1.075 (-1.41)	765e-06 (1.11)	0.003 (0.20)	-22160.05 (-3.67)
Storage cost (X_{10})	-3.698 (-1.73)	466e-05 (-2.42)	-0.024 (-2.01)**	945.911 (0.24)
Other charges (X_{11})	-3.192 (-1.57)	5.32e-05 (-2.90)	-0.327 (-5.82)***	21571.38 (1.16)
R^2	0..8379	0..6665	0.9537	0.8014
R^{-2}	0.7983	0.5850	0.9424	0.7528
F – ratio	21.15	8.18	84.24***	16.51

Source: Computed from Survey Data, 2016
*** = significant at 1%, **=significant at 5%, * = significant at 10%, (…) = t-ratios, + = lead equation

The coefficient of level of educational attainment was significance at 1% level of significance and positively related to profit. This implies that profit increases with increase in educational attainment. The more educated a marketer, the more his ability to analyze and synthesize market information leading to enhance efficiency and increase in profit. This result conforms to the findings of Wongnaa *et al.* (2014) and Obasi (2008). Obasi (2008) observed that better education of the marketers has advantages as it enlightens them on how best to strategize and to adapt to better marketing conditions; making them more skilled and amenable to risk taking and change than the non-educated people (Wongnaa *et al.*,2014). The coefficient of marketing experience was significance at 1% significance level and positively related to profit. This implies that profit increases with increase in marketing experience. The more experienced one becomes a business, the more his ability to handle and cope with inherent challenges associated with the business leading to increased productivity and efficiency. The co-efficient of quantity of rice purchased was significance at 1% significance and is positively related to profit. The implication is that profit increases as the quantity purchased increased. And the more quantity of bags of rice purchased the more profit. This could be as a result of economies of scale and discount associated with bulk purchases. The purchased cost, storage costs, and other charges coefficients were significance at 1%, 5% and 1% level of significance respectively and is negatively related to profit. These imply that as profit made by the marketers decrease as the cost of purchase increases, while the higher the storage cost, the lower will be the profit of the rice marketer. Also, increase in other charges incurred in marketing of rice, will result to a decrease in the profit of the rice marketers. These conform to *a priori* expectation. This result is in line with Nwaiwu *et al.* (2012) who reported that

purchasing cost was negatively related to profit and net return respectively. Thus an increase in marketing cost would lead to decrease in profit.

Problems encountered by the marketers
The distribution of respondents according to problems encountered in rice marketing is presented in Table 4.

Table 4:   Problems of marketing

Problem	Frequency	Percentage (%)
Government policy (ban on rice import)	57	100.00
High cost of transportation	10	17.544
Lack of capital	5	8.772
High cost of rice per bag	10	17.544
High level of taxation	2	3.509
Total	57	100.00

Source: Field Survey Data, 2016.

Table 4 shows that all rice marketers identified government policy on banning the importation of rice as the major problem associated with the marketing of rice. 17.5% identified high cost of transportation as a problem facing rice marketers encountered and lastly, 3.5% identified high level of taxation as another problem of rice marketing. All the problems mentioned were major factors that negatively affected price and profit of rice marketing, as they contributed in increasing the cost of performing various marketing functions by the respective rice marketers in the study area.

Conclusion
It could be concluded from this study that rice marketing is a profitable business. Therefore people should be encouraged to undertake in the marketing of rice as a means of livelihood as this would also help in reducing the ever escalating rate of unemployment. Also, there was high rate of price integration between the urban and rural rice markets in Abia State, Nigeria. Consequently, to improve the level of market integration of rice in Abia State, transportation, processing, storage, communication and credit facilities should be provided.

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