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SPATIAL ANALYSIS OF PADDY RICE PRICE VARIABILITY IN DASS AND TAFAWA BALEWA LGAS OF BAUCHI STATE, NIGERIA

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ABSTRACT

The study was conducted on the spatial analysis of paddy rice (Oryza sativa) price variability in Dass and Tafawa Balewa LGAs of Bauchi State, Nigeria. Data were collected using questionnaires administered to 120 respondents sampled through random sampling technique. Secondary data were also collected from BSADP Bauchi on monthly prices of paddy rice. Data were analyzed using descriptive statistics (mean, frequency, ranking and likert scale), pearson product correlation, T-test and ratio to moving average model. It was revealed that the leading causes of spatial rice price variability were spatial variation in supply, high cost of transportation and inadequate market information. There was existence of price integration or perfect price transmission between and among the urban and rural markets during the period of study. The magnitude of paddy rice price variability in the rural markets were higher, and the t-test shows that there was a significant ($P < 0.05$) difference in price of paddy rice between rural and urban markets. Spatial variation in supply, bad road condition, seasonal variation in supply, inadequate contact with extension agents and low capital outlay were the major constraints militating against paddy rice marketing in the study area. Therefore, it is recommended that Rural feeder roads should be constructed by government, NGOs or individuals to enable easy movement of produce as well as all year round production/supply of rice should be encouraged through provision of fund and inputs by relevant stakeholders to farmers for dry season farming in order to curtail the problem of price variation due to seasonality in production.

Keywords: Spatial, Markets, Paddy Rice, Price Variability.

INTRODUCTION

Over the past decade, the rice consumption rates have risen rapidly. According to Terwase and Madu (2018) only in the last decade, the consumption rate has risen to 7 million Metric Tons per annum. Still, only 2.7 million metric tons are produced by Nigerian farmers. This means that even the increase in rice production in Nigeria still leaves a significant gap of 4.2-4.3 million metric tons. Therefore, Nigeria is only able to supply 49% of the domestic demand. Nigeria's per capita consumption of rice has grown significantly at about 7.3% (Akande, 2019). To bridge the gap, the federal government of Nigeria over the years has embarked on policies and incentives for the farmers to increase production. The most recent among them is the presidential initiative on rice inaugurated by the Buhari's administration in 2018. The objective of the initiative was to increase rice production, improve milling quality, and promote marketing to provide domestic rice for consumption and to reduce/band national rice importation as well as to achieve 15 million metric tons of rice production from the 3 million hecters of the consolidated farm land by 2025. (USAID, 2019). As beautiful as this may be, such may not be fully realizable without proper marketing and pricing system

Agricultural marketing is bedeviled by a lot of problems. Some of the problems arise because of the basic characteristics and problem of Nigeria's agriculture. Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of the products, lack of storage facilities, low educational level of farmers/marketers, poor agricultural extension services, lack of financial support and most recently poor price control/system (Antwi & Seahlodi, 2011). Matungul et al. (2012) added that inadequate market infrastructure, lack of adequate access to finance, lack of good roads, risks and uncertainty, poor communication of information regarding prices, lack of bargaining power and excesses of intermediaries bedeviled agricultural marketing. According to Xaba and Masuku, (2012) socio-economic factors of the marketers for example: training, marketing experience, age, level of education, household size, and gender all contributed to problems of agricultural marketing and pricing.

These marketing constraints constitute the greatest barrier for small-scale farmers when it comes to access high value markets (Baloyi, 2010), and these factors restrain farmers and marketers from making decisions to participate in the markets (Uchezuba et al., 2009). Therefore, overcoming marketing constraints is critical for small-scale farmers to access lucrative markets (Baloyi, 2010). He added that Shifting the focus from production-oriented programmes to more market-oriented interventions will place a renew attention on institutions of collective action, such as farmer groups, as an efficient mechanism for enhancing market performance.

Much research work has been done on agricultural commodity marketing and specifically on price analysis. Majority of these studies have concluded that price variation which is a common phenomenon in agricultural commodity marketing is caused by temporal and spatial production as well as constraints that marketers face such as cost of transportation and inadequate market information. Other marketing studies such as the ones carried out by Madre and Pieter (2018), Taru (2012), Emokaro and Ayantoyinbo (2014) and Debaniyu et al. (2011) all lend credence to the fact that inefficiency in marketing and pricing information transmission is one of the major causes of price variation. Few or no studies have been conducted on the effect of spatial price variability on the part of marketers, consumers and the farmers

Hence, this study which is aimed at analysing the effect of spatial price variability on the

part of rice marketers, consumers and the farmers in Dass and Tafawa Balewa LGAs, Bauchi State. Consequently, the broad objective of this research is to analyse the effect of spatial price variability of paddy rice in Dass and Tafawa Balewa LGAs of Bauchi state. The specific objectives of the study are-:

- To identify the causes of spatial price variation of paddy rice in the study area.
- To determine the market integration of paddy rice in the selected markets.
- To determine the effect and magnitude of rice price variability in the study area.

METHODOLOGY

The Study Area

This study was carried out in Dass and Tafawa Balewa LGAs of Bauchi State. The study area has an estimated population of 532,210. Its coordinates are: latitude 10.15N and 12.3N, and longitude 8.45E and 9.00E with a land mass of 22, 852 km2 (BSADP, 2015). This means that it lies in the guinea savanna region. The state is located in the North-East geopolitical region of the country bounded in the south by Plateau state, in the north by Jigawa and Yobe states and in the east by Gombe state. Agriculture is the traditional occupation of the people in the study area. The tropical nature of the climate favors the growth of a variety of food crops such as cereals and legumes which include rice, maize, millet, acha, cowpea, groundnut etc. The vegetation consist of guinea savanna and derived sahel savanna towards the north. The climate is tropical with two distinct seasons. Usually, the wet season last between May and October, while the dry season comes between November and April. Mean annual rainfall is 1300mm per annum. Maximum temperature is 40^{o}C in April/May while Minimum is 9^{o}-10^{o}C in Dec/Jan.

Source and Method of Data Collection

Both primary and secondary source of data were used as follows:

Primary Source

Semi structured questionnaire consisting of both open and closed ended questions and verbal interview were used to gather information on the socio economic characteristics of rice marketers. These characteristics include age, sex, marital status, years of marketing experience, level of education attained, level of capital outlay and source of initial capital. Other information collected were causes of price changes and problems rice marketers face in the study area.

Secondary Source

Data on monthly mean price of paddy rice were obtained from Planning, Monitoring and Evaluation Unit of BSADP, Bauchi, covering prices in both urban and rural markets of Dass and Tafawa Balewa Local Government Areas. As seen in the Table 1 below, two local government areas purposively selected were Dass and Tafawa Balewa LGAs based on the relatively high level of rice production in the state. In each local government, 2 urban and 2 rural markets were selected through simple random sampling. Urban markets selected in Dass Local Government were Dass and Baraza markets while the selected rural markets from the area were Wandi and Bazali markets. In the same vein, Tafawa Balewa and Bununu urban markets were selected; and Marti and Zwal rural markets were selected from Tafawa Balewa Local Government area. Based on the markets size and the number of rice marketers, 20% of the population were sampled. In total, 120 questionnaires were distributed and retrieved.

Table 1. Sample Size Selection Plan

Local Government	**Market**	**Sample Frame**	**Sample Size (20%)**
Tafawa Balewa	Tafawa Balewa	102	20
Tafawa Balewa	Bununu	81	16
Tafawa Balewa	Zwal	69	14
Tafawa Balewa	Marti	51	10
Dass	Dass	95	19
Dass	Baraza	86	17
Dass	Wandi	55	11
Dass	Bazali	64	13
	Total	**603**	**120**

Source: Field Survey, 2018

DATA ANALYSIS

The data collected were analysed using the following statistical tools: Objective (i and iv) were achieved using descriptive statistics such as mean, percentage, ranking, frequency and likert scale. Objective (ii) was achieved using pearson product correlation analysis. Objective (iii) was achieved using Ratio to Moving Average Model and independent t-test.

Independent T-test

T-Test for Difference of Means between Markets. The formula for computing a t-test which was used to compare the mean prices between urban markets and rural market in the two local government areas is given as:

$$T\text{-cal} = \frac{X1 - X2}{\frac{S1^2 + S2^2}{\sqrt{n1+n2}}} \quad \ldots\ldots (1)$$

Where;
T-cal = calculated value of t-distribution
X1 = mean of rice prices for rural markets.
X2 = mean of rice prices for the urban markets.
$S1^2$ = Standard deviation of rice prices for rural market.
$S2^2$ = Standard deviation of rice prices for urban market.

Correlation Analysis

Pearson Product Correlation coefficient was computed for the urban and rural markets in line with the method of Oladapo et al. (2007) to determine the market integration. The formula used was:

$$rij = \frac{(Pit - \bar{P}it)(Pjt - \bar{P}jt)}{\sum \sqrt{(Pit - \bar{P}it)} \sum \sqrt{(Pjt - \bar{P}jt)}} \quad \ldots(2)$$

Where;
i = rural markets.
j = Urban market.

Pit and Pjt are the prices of rice in the rural (i) and urban (j) markets measured at time t.
Pit and Pjt = Mean of rural and urban rice prices respectively.
n = Number of respondents
rij = Correlation between rural and urban markets.

Ratio to Moving Average Model

The ratio to moving average model was used to estimate the magnitude of rice price variability (Kilima *et al.,* 2013). The method is commonly used since it eliminates the trend cyclical and irregular components from the original data. Venture (2005) defined magnitude of variability as the percentage change of the difference between the highest and the lowest seasonal price of a commodity among the months of a year or a given term period under study as shown in the equation below:

$$\mathbf{M} = \frac{\mathbf{max} - min}{min} \mathbf{x\ 100} \quad \ldots (3)$$

Where;
M = magnitude of rice price variability.
Max = maximum price recorded during the season
Min = minimum price recorded during the season

Likert Scale

Likert scale was adopted to analyse the respondents' views on the causes of spatial and temporal price variation as well as constraints of paddy rice marketing in the study area. Various kind of rating scales have been developed to measure attitudes directly. (i.e. the person knows their attitude being studied). The most widely used is the Likert scale. In its final form, the Likert scale is a five (or seven) point scale which is used to allow the individual to express how much they agree or disagree with a particular statement. Jamieson (2004). A Likert scale assumes that the strength/intensity of an attitude is linear, i.e. on a continuum from strongly agree to strongly disagree and make the assumption that attitudes can be measured. Each of the five or seven responses would have a numerical value which would be used to measure the attitude under investigation. For example,

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
(1)	(2)	(3)	(4)	(5)

RESULTS AND DISCUSSION

Causes of Spatial Price Variation

According to Taru (2012) Spatial price variability refers to likelihood of fluctuation in price levels over space, i.e, between two or more locations that are separated by distance. The infrastructural factors influencing spatial price of paddy rice are; the cost of transportation and availability of storage facilities. Again, the economic factors that influence spatial price of paddy rice are; the number of paddy buyers, market information, market organization and individual price fixing. The need for spatial price analysis arises because agricultural commodity's production and consumption point are spatially dispersed, bulky and seasonally produced (Nwibo et al., 2013).

Thus, the result of Table 2 revealed that the leading causes of spatial rice price variability

were spatial variation in supply, high cost of transportation and inadequate market information, among the major causes of spatial price variation of rice which accounted for 95.83%, 93.33% and 59.93% of the marketers, respectively. Other important causes as indicated by the marketers were inadequate supply of the produce (4th) and lack of standard unit of measurement (5th) which accounted for 46.67% and 21.67%, respectively.

Table 2. Causes of Spatial Price Changes in Rice Marketing

Causes	**SA**	**A**	**U**	**D**	**SD**	**R**
Spatial variation in supply	96(80)	19(15.83)	2(1.67)	2 (1.67)	1(0.83)	1st
High cost of transportation	73(60.83)	39(32.5)	5(4.1)	3 (2.5)	0	2nd
Inadequate market information	5(4.1)	67(55.83)	36(30.0)	11 (9.17)	1 (0.83)	3rd
Inadequate supply of the produ	15(12.5)	41(34.17)	21(17.5)	37 (30.83)	6 (5)	4th
Lack of standard unit of meas	0	26(21.67)	36(30.0)	52 (43.33)	6(5)	5th
Unfriendly activities of T/unio	3(2.5)	18(15)8	31(25.83)	64 (53.33)	4 (3.33)	6th
Seasonal variation in supply	0	8(6.67)	6(5)	23 (19.17)	83(69.17)	7th
High cost of storage chemicals	5(4.1)	2(1.67)	9(7.5)	57 (47.5)	47(39.17)	8th

SA = Strongly Agreed, A = Agreed, U = Undecided, D = Disagreed, SD = Strongly Disagreed and R = Rank

NOTE: Values in brackets are in percentages

Source: Field Survey, 2018

However, Fraudulent activities of trade union (6th), seasonal variation in supply (7th) and high cost of storage chemicals (8th) accounted for 17.50%, 6.67% and 5.77% of the marketers respectively were the least significant causes of spatial price variation in the study area. This means that a considerable number of the factors considered in Table 2 contributed greatly to spatial price variation with much emphasis on spatial variation in supply (1st), transportation cost (2nd) and inadequate market information (3rd). This agrees with the work of Taru (2012) who reported that infrastructural factors influencing spatial price of paddy rice are; the cost of transportation and availability of storage facilities. Again, the economic factors that influence spatial price of paddy rice are; the number of paddy buyers, market information, market organization and individual price fixing. Similarly, Minot (2017) posited that spatial/scattered production and cost of transportation are the major causes of spatial price variability. The implication of this result is that unless these factors are mitigated, price of paddy rice will continue to differ between markets in the study area

Paddy Rice Price Integration

Price integration refers to a situation in which prices of a commodity in separate markets move together, thereby offering smooth transmission of price signals and information. The study of market integration is important in determining the co-movements of prices and the transmission of price signals and information across spatially separated markets. The high and significant correlation of price is an indication of co-movement in the prices. The positive correlation shows that an increase in the retail price in one market would follow the price increase in the other market. Emokaro and Ayntoyinbo (2014). Without spatial price integration of market, price signals will not be transmitted from food deficit to food surplus areas; prices will be more volatile; agricultural producers will fail to specialize according to long-term comparative

advantage, and the gains from trade will not be realized.

To further determine the extent to which prices move together in the study area, pearson correlation analysis was applied to average monthly market prices of paddy rice in rural and urban markets of Dass and Tafawa Balewa LGAs (Table 3). The result revealed that in all the market pairs both urban-urban, urban-rural and rural-rural, there was strong linear relationship among the prices of paddy rice during the period of study as t-values range between 0.801 – 0.998. This implies that there was existence of price integration or perfect price transmission between and among the urban and rural markets in the study area. This agrees with Emokaro and Ayintoyinbo (2014) who reported that the strong linear relationship among the prices of paddy rice during the period of their study was possible due to the transmission of market information by marketers through various means, particularly via the use of mobile phones and short distance between the markets. It could also be deduced from the result that, factors that influence price of paddy in the rural markets are similar to those in the urban markets in the study area.

Table 3. Pearson Correlation Matrix of Average Monthly Price of Paddy Rice in the Study Area

	T/Balewa (U)	**Bununu (U)**	**Zwal (R)**	**Marti (R)**	**Dass (U)**	**Baraza(U)**	**Wandi (R)**	**Bazali (R)**
T/Balewa (U)	1	0.993**	0.819**	0.857**	0.951**	0.942**	0.830**	0.844**
Bununu(U)		1	0.864**	0.895**	0.943**	0.937**	0.874**	0.888**
Zwal(R)			1	0.992**	0.801**	0.813**	0.994**	0.993**
Marti (R)				1	0.858	0.869	0.989**	0.993**
Dass (U)					1	0.993	0.816**	0.834**
Baraza (U)						1	0.828**	0.844**
Wandi (R)							1	0.998**
Bazali (R)								1

It was also revealed from the Table 3 that correlation coefficient between the urban market pairs were higher (above 0.93) than those between urban and rural market pairs (below 0.89) which implies that the flow of information on rice price was faster among the urban markets than between rural and urban markets and so, a deficit/surplus in one urban market may have been promptly transmitted to the other.

This findings was corroborated by Bassey et al. (2013) who found out that correlation coefficient between the urban market pair was higher (0.81) than those between the rural and urban market pairs which ranged from 0.41 to 0.46 in Akwa Ibom State rice traders. Similarly, these arguments collaborate with the findings of Ojiako et al. (2012) in their analysis of the spatial integration of cassava product market price in Nigeria, where it was reported that the mean price value of Lafun in the urban market was higher than prices in the rural markets. The high and significant correlation of price is an indication of co-movement in the prices. The positive correlation shows that an increase in the retail price in one market would follow the price increase in the other market (Emokaro & Ayntoyinbo, 2014). This could be possible due to the transmission of market information by marketers through various means, particularly via the use of mobile phones.

Effect of Paddy Rice Price Variation

The magnitude of price variability is the percentage change of the difference between the highest and the lowest seasonal price of a commodity among the months of a year or a given term period. The magnitude and frequency of price movement in both temporal and spatial directions have effects on farmers, traders as well as consumers. Generally, the greater the magnitude of variability, the larger is the effect especially on the farmers' income, consumers' purchasing power and traders' income and welfare. Large increase in price may exacerbate poverty as poor consumers will not be able to afford basic food leading to poor nutrition (Mustapha & Richard, 2013; Camara, 2013). The information presented in Table 4 revealed that the magnitude of price variability for Bazali (rural), Marti (rural), Wandi (rural) and Zwal (rural) are about 58.89%, 54.81%, 54.72% and 53.11%, respectively. This high level of variability is highly associated with the drastic fall in rice prices from September to November.

Table 4. Effect of Rice Price Variation

Market	Max	Min	Annual Average	Variability (%)	Seasonal Differential	t-Value
T/Balewa(U)	145	105	127.22	38.10	40.00	
Bununu(U)	145	107	127.89	35.51	38.00	
Zwal (R)	139.33	91	118.60	53.11	48.33	39.18**
Marti (R)	139.33	90	118.11	54.81	49.33	
Dass (U)	150	105	124.44	42.86	45	
Baraza (U)	146	100	123.52	46.00	46	37.42**
Wandi (R)	139.25	90	118.09	54.72	49.25	
Bazali (R)	143	90	118.81	58.89	53.00	

** = significant (P≤0.05)U=Urban Market, R=Rural Market

Source: Computed from BSADP, 2018

The magnitude of variability is relatively low in urban markets (Baraza 46%, Dass 42.86%, Tafawa Balewa 38.10% and Bununu 35.51%) than in the rural markets (in Bazali 58.89%, Marti 54.81%, Wandi 54.72% and Zwal 53.11%

These findings suggest that farmers located near rural areas (Bazali, Marti, Wandi and Zwal) are likely to have unstable earnings from the sales of their rice than those located near urban markets (Baraza, Dass, Tafawa Balewa and Bununu). This findings agrees with Emokaro and Ayantoyinbo (2014) who says the retail price for rice in the urban markets were more stable than what is obtained in the rural markets. They added that farmers located near urban markets benefit from higher prices than those in more remote areas.

Also, the t-test analysis in Table 4 shows that there was a significant ($p \leq 0.05$) difference in price of rice between at least two or more rural and urban markets in the study area during the period of study. It indicates that mean price in the urban markets were significantly higher than those in the rural markets. This result agreed with Oladapo et al. (2007) who reported that prices in the urban markets were higher than those in the rural markets in their study area on marketing margin and spatial pricing efficiency of pineapple in Nigeria. They further confirm that prices of agricultural commodities depicts wide differences between zones and markets within same region. Taru (2012) added that prices for same product varies greatly between areas and this may be due to the cost of transportation, production area and communication difficulties. Such price

variation among markets in Nigeria is necessary for the existence of market, as it create incentives that attract market actors to engage in trade.

The implication for this urban – rural price differential as indicated in Table 4 is that it is economical to buy paddy rice from rural market as their price is significantly lower than those in the urban market so long as the marketing margin is less than the transport cost.

Constraints of Paddy Rice Marketing in the Study Area

Agricultural marketing is bedeviled by a lot of problems. Some of the problems arise because of the basic characteristics and problem of Nigeria's agriculture. Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of the products, lack of storage facilities, low educational level of farmers/marketers, poor agricultural extension services, lack of financial support (Antwi and Seahlodi, 2011).

Table 5. Constraints of Paddy Rice Marketing

Constraints	**SA**	**A**	**U**	**D**	**SD**	**R**
Spatial variation in supply	99(82.5)	20(16.67)	0	1(0.83)	0	1st
Bad road condition	68(56.67)	47(39.16)	0	4(3.33)	1(0.83)	2nd
Seasonal variation in supply	86(71.67)	27(22.5)	1(0.83)	5(4.16)	1(0.83)	3rd
Inadequate contact with extension agents	49(40.83)	62(51.67)	1(0.83)	6(5)	2(1.67)	4th
Unfriendly activities of brokers/agt	3(2.5)	89(74.17)	21(17.5)	7(5.83)	0	5th
Unfriendly activities of middlemen	3(2.5)	81(67.5)	11(9.17)	19(15.83)	6(5)	6th
Inadequate supply of produce	8(6.67)	76(63.33)	20(16.67)	16(13.33)	0	7th
Lack of standard unit of measurement	3(2.5)	76(63.33)	34(28.33)	40(33.33)	6(5)	8th
Poor quality control measures	5(4.16)	42(35.0)	33(27.5)	34(28.33)	6(5.0)	9th
Unfriendly market information	5(4.16)	37(30.83)	56(46.67)	19(15.83)	2(1.67)	10th
Unfriendly acts of trade union	0	41(34.17)	7(30.83)	41(34.17)	2(1.67)	11th
High cost of storage chemicals	8(6.67)	3(2.5)	12(10.0)	40(33.33)	57(47.5)	12th

SA = Strongly Agreed, A = Agreed, U = Undecided, D = Disagreed and SD = Strongly Disagreed

NOTE: Values in brackets are in percentage

Source: Field Survey, 2018

Table 5 shows that rice marketing in the study area was faced with constraints such as bad road conditions, inadequate market information, seasonal variability in rice supply and so on. It is likely that the same constraints are responsible for price fluctuation among locations and between time periods. Of all these problems, spatial variation in supply was ranked first (99.17%), this was followed closely by bad road condition, seasonal variation in supply and inadequate contact with extension agents with 95.83%, 94.17% and 92.40% respectively. Other important problems of rice marketing as indicated by the marketers were Unfriendly activities of brokers/agents (5th), unfriendly activities of middlemen (6th), inadequate supply of produce (6th)

and lack of standard unit of measurement (8^{th}) which accounted for 76.67%, 70.00%, 70.00% and 65.8% of the total marketers, respectively.

However, the least significant problems of rice marketing in the study area as indicated in the table were poor quality control measures (9^{th}), inadequate market information (10^{th}), Unfriendly activities of trade union (11^{th}) and high cost of storage chemical (12^{th}) which accounted for 39.16%, 34.99%, 34.12% and 9.17% of the marketers, respectively. This finding is in line with Nwibo et al. (2013) "the functioning of the rice markets is constrained by various problems and obstacles such as seasonal rice supply, imperfect market information for buying and selling rice, lack of credit and cash to finance the business, insufficient facilities for storage and transportation cost. This was also supported by Antwi and Seahlodi (2011) who stated that agricultural marketing is bedeviled by a lot of problems. Some of the problems arise because of the basic characteristics and problem of Nigeria's agriculture. Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of the products, lack of storage facilities, low educational level of farmers/marketers, poor agricultural extension services, lack of financial support. Matungul et al. (2012) added that inadequate market infrastructure, lack of adequate access to finance, lack of good roads, risks and uncertainty, poor communication of information regarding prices, lack of bargaining power and excesses of intermediaries bedeviled agricultural marketing. According to Xaba and Masuku (2012) socio-economic factors of the marketers for example: training, marketing experience, age, level of education, household size, and gender all contributed to problems of agricultural marketing. The implication is that, rice marketers would continue to gain little or no profit from the business so long as these constraints continue to linger in the study area. And this would also boil down to farmers and consumers

CONCLUSSION

It can be concluded that the leading causes of spatial rice price variability were spatial variation in supply, high cost of transportation and inadequate market information.

There was existence of price integration or perfect price transmission between and among the urban and rural markets during the study.

The magnitude of paddy rice price variability is relatively high in rural markets than in the urban markets and that farmers located near rural areas are likely to have unstable earnings from the sales of their rice than those located near urban markets.

Paddy rice marketing in the study area was faced with constraints such as spatial variation in supply, bad road condition, and seasonal variation in supply and inadequate contact with extension agents.

RECOMMENDATIONS

Based on the findings of the research, the following recommendations were made:

- Rural feeder roads should be constructed by government, NGOs or individuals to enable easy movement of produce.
- Marketers should improve their savings and investment strategies in order to generate more capital to expand their business
- All year round production/supply of rice should be encouraged through provision of fund and inputs by relevant stakeholders to farmers for dry season farming in order to curtail the problem of price variation due to seasonality in production.

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