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## Rural Transport and Marketing of Agricultural Produce in Oyo State, Nigeria

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### **Abstract**

*Transport system efficiency is critical to agricultural marketing. Inadequate supply and high cost of food item is as a result of inefficient transportation. Rural farmers as well as agricultural marketers employ various means to commute their produce, hence a need to ascertain the influence of rural transport means on marketing of agricultural produce. Multi-stage sampling procedure was used to select 120 agricultural marketers across the rural Local Government Areas in Oyo State. Data on socioeconomic characteristics, enterprise characteristics, means of transport, constraints associated with rural transport and influence; were collected using interview schedule. Descriptive statistics, Pearson Product Moment Correlation (PPMC) and linear regression were used to analyse data. Results revealed influence of transportation on agricultural marketing was high, pick-up van was the preferred means of transporting agricultural produce and lack of motor-able road was the most severe constraint to transportation of agricultural produce. Constraints had significant correlation ( $r=-0.01$ ,) to agricultural marketing, the contribution of transport means to agricultural marketing was 58% with a significant negative contribution ( $\beta=-0.339$ ). The negative influence of poor transport system suggest there is an urgent need to repairs roads linking farm to markets and reinstating agricultural marketing boards in farm settlements.*

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**Key Words:** *Transport services, Agricultural Marketing, Production, Rural*

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### **INTRODUCTION**

Transport plays an important role in the political, economic and social development of any society, both in rural or urban societies (Aderamo and Magaji, 2010). Its efficiency is critical to agricultural marketing and development. Rural transport service is the only means by which food produced at farm sites which are often in the rural areas is moved to the market. Inefficient transportation in terms of rarity, poor quality or expensive are often to the disadvantage to the farmer as it leads to lower quality of produce and increase cost of production and losses due to spoilage that occur during transportation to market.

Markets are necessary because people are not capable of producing all the things they need for survival (Daramola, 1999). Marketing is an integral part of the agricultural production; it involves storage, transportation and delivery of agricultural produce. In developing countries like Nigeria, distance to markets, the lack of accessible roads and high transport cost are central concern for rural farmers. These rural farmers need access to competitive markets not just for their produce but also for inputs, assets, technology, consumer goods, credit and labour. Although, there are various forms of transportation such as rail, water, air and road; road transportation has been the most viable for agriculture in Nigeria, because it is highly flexible, operationally suitable and readily available for the movement of goods and passengers over short, medium and long distances. According to World Bank (2007), road improvements in Nigeria have been associated with increased productivity and improvement in quality of life; given that it aids the movement of agricultural and non-agricultural commodities as well as ensuring the personal mobility of rural household members. Yunusa *et al* (2002) established that road improvement in rural part of Kaduna State, led to significant increase in agricultural production; farm and non-farm employment and revitalization of economic activities in the area. According to Vachal (1999) transportation and agriculture have always co-existed because the value of any agricultural products can be realized only when commodities are transported to the buyer in good condition. However, road transport which is the most relied on for transportation of agricultural goods has been in deplorable state and grossly inadequate. In fact as at 1996, survey reports showed that majority of the Nigerian populace still had no access to road, while 90% of the rural roads which was estimated at between 130,000 and 160,600Km nationwide were in poor condition FERMA (2003). The state of rural transport services has the potential to influence the marketing of agricultural produce in terms of the cost of commodity and the purchasing power of the consumers among others. Ajiboye (1995) observed that inadequate supply and high cost of food stuff is as a result of inefficient transportation and distribution, hence a need to ascertain the level of influence rural transport means has in the marketing of agricultural produce.

Recent study relating to rural transport in agriculture are Ikejiofor and Ali (2014); Kassali, et al (2012); Tunde and Adeniyi (2012) These studies have been examined in the light of its influence on farmers' production and productivity without perspective of the marketers. It is against this backdrop that this study seeks to assess the influence of rural transport on marketing of agricultural produce in Oyo state, Nigeria which to the best of our knowledge no study has directly assessed. This paper highlights marketers' socioeconomic characteristics, enterprise characteristics, means of transporting agricultural produce and constraints associated with rural transport of agricultural produce, relationship between means of transportation; constraint and influence on agricultural marketing were tested

## **MATERIALS AND METHODS**

### **Study Area**

The study was carried out in Oyo State of Nigeria. It is one of the 36 states, in Nigeria, located in South-western Nigeria. Geographically, Oyo State lies between latitude 7° 21' and 9° 11' North and longitude 2° 41' and 4° 31' East. It is bounded in the North by Kwara State, in the South by Ogun State, in the West by Republic of Benin and in the East by Osun State. It covers an area of approximately 35,743 square kilometres. Its vegetation is dictated by the rainfall pattern which ranges from rainforest to derived savannah interspersed with tree cover in the northern part of the state. The feature is common to states found in southwest Nigeria. The land in the state is well drained and dissected by Ogun, Osun, Oya and Ofiki rivers. The people of Oyo State are mostly Yoruba. There are a substantial proportion of people from other parts of the country and other countries present in the state. Farming and trading are

their principal occupation. Oyo State has a population of 5,591,589 people (National Population Census, 2006)

### **Population of the Study**

The target population for this study comprised of all agricultural produce marketers in the Oyo state, Nigeria.

### **Sampling Procedure and Sample Size**

Multi-stage sampling procedure was used to select respondents for this study. Oyo state has 33 Local Government Areas (LGAs). In the first stage the state was stratified based on urbanization. There are 12 urban, 12 rural and 9 semi-urban Local Government Areas in Oyo state Adebayo and Onadeko (2015). Using purpose sampling the 12 rural LGAs were selected these are, Ido, Ibarapa central, Ibarapa North, Irepo, Surulere, Itesiwaju, Iwajawo, Ona Ara, Saki East, Orelope, Ogo-Oluwa and Iseyin. Simple random sampling was used to select 3 (40%) of the 12 rural LGAs which are, Ido, Ibarapa central and Iseyin and 20 marketers (wholesalers and retailers) were randomly sampled to make a total of 120 respondents

### **Method of Data Collection and Analysis**

Primary data were collected with the use of a pre-tested open-ended questionnaire which was administered through interview schedule. The data collected include socioeconomic characteristics, enterprise characteristics, means of transportation, constraints in transportation of agricultural products and influence of rural transport on agricultural marketing. Data collected were analyzed with the aid of descriptive and inferential statistics. Descriptive tools such as frequency, distribution, mean, percentages and inferential statistics used was chi-square, Pearson Product Moment Correlation (PPMC) and Linear regression model was used to determine the contribution of various means of transportation in the marketing of agricultural produce.

### **Measurement of Variables**

#### **Dependent Variable**

##### **Influence of transportation on marketing agricultural produce**

Influence of rural transport on agricultural marketing. This was measured by construction of statement relating transport of agricultural produce, on a dichotomous scale of influenced and not influenced. This was scored 0 and 1 respectively; the minimum score was 0, while the maximum score was 11.

#### **Independent Variables**

##### **Socioeconomic characteristics of Respondents**

Age and household size were measured in interval level. While, sex, marital status, level of education and religion were measured at nominal level

##### **Enterprise characteristics of Respondents**

Years of experience, quantity of produce marketed and income from agricultural marketing were measured in interval level. While, type of produce, level of marketing, where the produce are bought were measured at nominal level

### **Means of transport used in transporting agricultural produce**

Lists of several means of rural transport were presented and respondents were asked to indicate the how often they used these means of transportation. This was measured on as 3 point scale of “Never=0”, “Sometimes=1” and “Always=2”. The mean scores were used to rank the transportation means in order of use.

### Constraints in transportation of agricultural produce

Ten (10) possible constraints faced by respondents in transportation of agricultural produce to were presented and respondents were asked to indicate the level of severity. This was measured on a 3 point scale of Not severe constraint= 0, severe constraint= 1, very severe constraint= 2. The mean scores were used to rank the constraints in order of severity

### Model Specifications of the influence of rural transportation means on agricultural marketing

In order to assess the influence of rural transportation on agricultural marketing, a Multiple Linear Regression Model was run using the Ordinary Least Squares (OLS) method. The level of significance of the variables was tested using a t-test at a 5% level of significance. A constant ( $\alpha$ ) indicates the rate of influence agricultural marketing holding other factors constant. The error term ( $\mu$ ) was included to account for the other factors other than the tested variables.

A Multiple Linear Regression Model of the influence of rural transportation means on agricultural marketing was specified as below:

$$AM = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \mu$$

Where: AM = Agricultural Marketing (dependent Variable),  $\alpha$  = Constant (intercept), X1 = foot, X2 = bicycle, X3 = use of animal, X4 = wheel barrow, X5 = motor cycle, X6 = tricycle, X7 = pick-up van, X8 = Truck, X9 = head carriage, X10 = Lorry,  $\mu$  = Random error term

The influence of agricultural marketing is expected to change by a certain factor,  $\beta$  (coefficient) if any of the above variables increases by one unit.

## RESULTS

### Socioeconomic characteristics of respondents

Results on Table 1 presents the socioeconomic characteristics of respondents, it reveals that the mean age of respondents was 44 years. One-third (33.3%) of the respondents were between 41 and 48 years, 23.3% of respondents were between 49 and 56 years and between 33 and 40 years, 11.3% were between 25 and 32 years, while only 8.3% were above 57 years of age. Majorities (76.7%) of the respondents were females and 85.8% were married. The mean household size was 5 persons, 54.2% of respondents had household size between 3 and 5 persons, while 41.7% of respondents had household size between 6 and 8 persons. A higher percentage (31.7%) of the respondents had only primary education; respondents having adult education and without formal education was 21.7% each, while only and had 19.2% of the respondents had secondary education, while only 5.8% of respondents had tertiary education. In terms of religious affiliation 45% were Christians, while 52.5% were Muslims.

**Table 1: Distribution of respondents by socioeconomic characteristics**

Variables	Categories	Frequency	Percentage (%)	Mean
Age (years)	25-32	14	11.7	44 years
	33-40	28	23.3	
	41-48	40	33.3	
	49-56	28	23.3	
	57-64	10	8.3	

<b>Sex</b>	Male	28	23.3	
	Female	92	76.7	
<b>Marital status</b>	Single	6	5.1	
	Married	103	85.8	
	Divorced	4	3.3	
	Widowed	7	5.8	
<b>Household size (Persons)</b>	3-5	65	54.2	5 persons
	6-8	50	41.7	
	9-10	5	4.2	
<b>Education</b>	No formal education	26	21.7	
	Adult education	26	21.7	
	Primary education	38	31.7	
	Secondary education	23	19.2	
	Tertiary education	7	5.8	
<b>Religion</b>	Christianity	54	45.0	
	Islam	63	52.5	
	Traditionalist	3	2.5	

### Enterprise characteristics of respondent

Table 2 presents the enterprise characteristics of respondents. It reveals that the mean year of experience was 12 years, over half (53.3%) of the respondents had been marketing agricultural produce between 9 and 15 years. The major agricultural produce sold were fruit and vegetables, grains such as rice, beans, maize and guinea corn, root and tubers crops like yam, cassava and potatoes as well as other processed food like garri and *elubor* (yam and cassava flour). Majority (89.2%) of the respondents sold above 20 kilogram or basket of agricultural produce, 56.7% of were wholesalers, 26.6% were middlemen, while 16.7% were retailers. Thirty three point three percent of the respondent got their initial capital from personal saving, while 19.2% and 24.2% was through loans and cooperative society respectively. About one-third (32.5%) estimated they earned above ₦300,000 annually from agricultural produce marketing, 28.3% earned between 100,000 and 200,000 annually. Farm settlements where these agricultural products are produce are around Ipapa, Okaka, Itesiwaju. These are sold to consumers and some retailers from their nearby towns and cities such as Ibadan and Iseyin.

**Table 2: Distribution of respondents by agricultural marketing enterprise**

Variable	Categories	Frequency	Percentage (%)
<b>Years of marketing (years)</b>	2-8	35	29.2
	9-15	64	53.3
	16-22	14	11.7
	23-29	4	3.3

	30 and above	3	2.5
<b>Type of produce</b>	Fruits and vegetables	28	23.3
	Grains	38	31.7
	Roots and tubers	31	25.8
	Processed products	23	19.2
<b>Quantity of produce (kg/baskets)</b>	1-10	5	4.1
	11-20	8	6.7
	Above 20	107	89.2
<b>Marketing level</b>	Retailers	20	16.7
	Wholesalers	68	56.7
	Middlemen	32	26.6
<b>Source of capital</b>	Personal savings	40	33.3
	Family and friends	28	23.3
	Loan	23	19.2
	Co-operative society	29	24.2
<b>Income (Naira)</b>	<100,000	22	18.3
	100,000-200,000	34	28.3
	200,100- 300,000	25	20.8
	.>300,000	39	32.5

### Means of transport used in transporting agricultural produce

Results on Table 3 shows the use of various means of rural transport used in transporting agricultural produce. It reveals that the use of pick up van (1.77) and use of lorry (0.93) ranked first and second respectively. The use of foot-Head pan/ head carriage (0.78) and use of wheelbarrow (0.78) was ranked third, while the least used were bicycle (0.07) and animal (0.03) respectively.

**Table 3: Respondents' means of Transportation agricultural produce**

Means of transport	Never F (%)	Sometimes F (%)	Always F (%)	Mean	Ran k
Pick up van	7 (5.8)	14 (11.7)	99 (82.5)	1.77	1 <sup>st</sup>
Lorry	32 (26.7)	65 (54.2)	23 (19.2)	0.93	2 <sup>nd</sup>
Foot (Head pan/ head carriage)	54 (45)	39 (32.5)	27 (22.5)	0.78	3 <sup>rd</sup>
Wheel barrow	29 (24.2)	89 (74.2)	2 (1.7)	0.78	3 <sup>rd</sup>
Truck	51 (42.5)	63 (54.2)	23 (19.2)	0.63	5 <sup>th</sup>
Tricycle	51 (42.5)	64 (53.3)	5 (4.2)	0.62	6 <sup>th</sup>
Motorcycles	57 (47.5)	56 (46.7)	7 (5.8)	0.58	7 <sup>th</sup>
Head carriage	57 (47.5)	57 (47.5)	6 (5.0)	0.58	7 <sup>th</sup>
Bicycles	112 (93.3)	8 (6.7)	0(0)	0.07	9 <sup>th</sup>
The Use of animals	117 (97.5)	2 (1.7)	1 (0.8)	0.03	10 <sup>th</sup>

### Constraints in transportation of agricultural produce

Table 4 presents the constraints faced by respondents in transportation of agricultural produce for marketing. It reveals that, lack of motor-able road ranked highest in order of severity (1.89), constrained of by high cost of transportation (1.68) ranked second in order of severity. The poor state of transportation facilities (1.60) was ranked third, while too long distance (1.37) and bad drivers causing road accident (1.05) were the 4<sup>th</sup> and 5<sup>th</sup> constraints in order

that limited transportation of agricultural produce. Expectedly adverse weather condition (0.91) was the least constraints; probable because most respondent anticipate the weather condition and prepare and package their goods such that the effect is minimal.

**Table 4: Constraints to transportation of agricultural produce**

Constraints items	Not a constraint F (%)	Mild constraint F (%)	Severe constraint F (%)	Mean	Rank
Lack of motor-able road	3 (2.5)	7 (5.8)	110 (91.7)	1.89	1 <sup>st</sup>
High cost of transportation	4 (3.3)	30 (25)	86 (71.7)	1.68	2 <sup>nd</sup>
Poor state of transport facilities	5 (4.2)	37 (30.8)	78 (65)	1.60	3 <sup>rd</sup>
Too long distance	7 (5.8)	61 (50.8)	52 (43.3)	1.37	4 <sup>th</sup>
Poor transporters (road accident)	16 (13.3)	84 (70)	20 (16.7)	1.03	5 <sup>th</sup>
Bulkiness of goods	21 (17.5)	77 (64.2)	22 (18.3)	1.01	6 <sup>th</sup>
Poor loading/packaging of agricultural produce	26 (21.7)	75 (62.5)	19 (15.8)	0.94	7 <sup>th</sup>
Adverse weather conditions	29 (24.2)	73 (60.8)	18 (15)	0.91	8 <sup>th</sup>

**Grand mean: 0.85**

**Influence of transportation on marketing agricultural produce**

Information on Table 5 shows the Influence of transportation on marketing agricultural produce, the grand mean of all the statements was 0.85. Statements with mean score same and above the grand mean had high access, while information with mean score below the grand mean had low influence. Poor rural transport leads to high cost of my agricultural produce (0.98); inadequate transport means delays my supply of produce (0.96), good/poor transportation system causes price fluctuation of agricultural produce (0.96), bad roads cause delay in transporting agricultural products to the market (0.96), and poor rural transport facility and services reduces the quality of agricultural produce. (0.90), The means of transport are inadequate to the size of my produce (0.87) had high influence, while, large quantity of my produce is lost yearly due to road accident (0.47), the state of market transportation system make me fatigue and sick (0.76) and poor transporting of my agricultural produce makes them perish and decay (0.81) had low influence.

The table also shows that poor rural transport leading to high cost agricultural produce had the strongest influence on agricultural marketing, inadequate transport means causes delays in supply of produce, good or poor transportation system causes price fluctuation of agricultural produce and bad roads cause delay in transporting agricultural products to the market also were second in order of influence on agricultural produce.

**Table 5: Influence of transportation on marketing agricultural produce**

Items	Yes F (%)	No F (%)	Mean	Rank
Poor rural transport leads to high cost of my agricultural produce	118 (98.3)	2 (1.7)	0.98	1 <sup>st</sup>

Inadequate transport may delay supply of produce	115 (95.8)	5 (4.2)	0.96	2 <sup>nd</sup>
Good/poor transportation system causes price fluctuation of agricultural produce	115 (95.8)	5 (4.2)	0.96	2 <sup>nd</sup>
Bad roads cause delay in transporting agricultural products to the market	115 (95.8)	5 (4.2)	0.96	2 <sup>nd</sup>
Poor rural transport facility and services reduces the quality of agricultural produce.	108 (90)	12 (10)	0.90	5 <sup>th</sup>
The means of transport are inadequate to the size of my produce	104 (86.7)	16 (13.3)	0.87	6 <sup>th</sup>
Inexperience /poor transporters cause damage to agricultural produce	101 (84.2)	19 (15.8)	0.84	7 <sup>th</sup>
There is reduction in market value of my produce due to packing and loading	98 (81.7)	22 (18.3)	0.82	8 <sup>th</sup>
Poor transporting of my agricultural produce makes them perish and decay	97 (80.8)	23 (19.2)	0.81	9 <sup>th</sup>
The state of market transportation system make me fatigue and sick	93 (22.5)	27 (22.5)	0.76	10 <sup>th</sup>
Large quantity of my produce is lost yearly due to road accident	56 (46.7)	64 (53.3)	0.47	11 <sup>th</sup>

### **Categorization of respondents based on influence of transport on agricultural marketing**

Information on Table 6 reveals that 52.5% of respondents had high level of influence of transport on marketing of agricultural produce, while 47.5% had low influence of transport on marketing of agricultural produce. This implies that the influence of transport on marketing of agricultural produce is high.

**Table 6: Categorization of respondents based on influence of transport on marketing of agricultural produce**

Level of influence	Frequency	%	Min.	Max.	Mean	SD
Low	57	47.5	0.0	11.00	9.33	1.69
High	63	52.5				
<b>Total</b>	120	100				

### **Test of hypotheses**

This hypothesis tested for significant relationship between means of rural transporting and marketing of agricultural produce. Table 7 reveals that there was significant correlation ( $r=0.010$ ,  $p=0.016$ ) between means of transporting agricultural produce and its influence on marketing of agricultural produce.

**Table 7: PPMC Analysis of means of rural transporting and agricultural marketing**

Variable	N	r-value	p-value	Decision	Remark
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<b>Constraints</b>	120	0.010	0.016	Significant	Reject H <sub>0</sub>
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**Significant@p≤0.05. r=correlation coefficient, p= probability**

**Contribution of means of rural transport to agricultural marketing**

Result on table 8 revealed that R-square value was 0.58. This implies that rural transport contributes 58% to agricultural marketing, while other factors other than means of rural transport influenced 42% of agricultural marketing

**Table 8: Linear regression showing contribution of transport mean to agricultural marketing**

Explanatory variable	Standardized error	β- value	T	Sig-value
(Constant)	0.868		19.036	.000
Transport means	.000	0.339	5.358	.000*

R<sup>2</sup> = 0.58 F = 4.78 R = 0.240 Adjusted R<sup>2</sup> = -.029 Std. Error of the estimate = 1.716

\* Significant at 5% level of significance

**DISCUSSION**

Agricultural marketing is a lucrative business and many people who venture into the business are unwilling to quit. They often spend reasonable years in the enterprise with an average of 10-12 years (Oladejo and ladipo (2012). The use of pick up van and use of lorry were preferred in transporting agricultural produce, Agricultural marketers uses different types of large vehicles such as pick up and buses in the transportation of farm products (Ikejiofor and Ali, 2013). This could be due to the bulkiness, size of some agricultural produce and sometimes the long distance covered when transporting agricultural produce. Lack of motorable road linking farm to market and rural to urban areas, high cost of transportation and the poor state of transportation facilities constrained transportation of agricultural produce, this directly led to high cost of transport fares resulting in higher cost of agricultural produce to consumers. Bad road and poor transport facilities, gave rise to high transport cost (Tunde and Adeniyi, 2012). Poor rural transport leading to high cost agricultural produce, inadequate transport means causing delays in supply of produce, poor transportation system causing price fluctuation of agricultural produce and bad roads cause delay in transporting agricultural products to the market implied that there is high influence of transport on marketing of agricultural produce. Transport plays a significant role in the structure of food marketing and that easy transport to market can add value to their products, reduce spoilage and wastage of agricultural produce (Ajiboye and Afolayan, 2009). The means of rural transport affects the marketing of agricultural produce, it is rated as the second most severe problem of agricultural products marketing (Musa *et al*, 2003).

**CONCLUSIONS AND RECOMMENDATIONS**

This study examined the influence of rural transport on marketing agricultural produce in Oyo State Nigeria. It found that the influence level of transportation on agricultural produce is high. Majority had several years of marketing experience, transported above 20 kilogram of agricultural produce and earned above 300,000 annually from agricultural produce marketing. The use of pick up van and use of lorry were the preferred means of transporting

agricultural produce while lack of motor-able road and high cost of transportation respectively were the most severe constraint. Finally, means of rural transport affected marketing of agricultural produce. It is recommended that government at all levels to repair roads linking farm to markets and reinstate agricultural marketing boards in farm settlements.

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