Rural Land Market and Commercialization Among Crop Farming Households In Southwestern Nigeria

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ABSTRACT
Nigeria is experiencing a gradual shift from subsistence to commercialized agriculture. However, land holding is becoming smaller and unable to sustain commercialization among farmers adequately. This study therefore assessed the potential of land markets to improve the access of crop farming households in southwestern Nigeria to land and the resultant effect on crop commercialization. Data were generated, with the aid of structured questionnaire, from a survey conducted on a sample of 350 crop farming households obtained from a multistage sampling technique. Descriptive statistics, land market index, crop commercialization index and tobit regression model were used for data analysis. Findings show that majority (74%) of the farmers acquired their farm plots through inheritance and was substantiated by a result of land market index of 0, while purchase (48.3%) and rent (48.3%) were the most patronized form of land acquisition through transaction. The crop driving commercialization in the study area is maize, with crop commercialization index of 72%. Results further show that participation in land market had significant positive effect on crop commercialization, with the crop commercialization index for farming households participating in land market expected to be 0.05 higher than that of the farming households which are not participating. It is concluded that crop commercialization increases with participation in land market and therefore, there should be formulation of policies which will give room for flexibility in land redistribution that will make farmers have better access to land.
Keywords: Commercialization index, Land market participation, Farming households, Land market index

1.0 INTRODUCTION
Agriculture in Nigeria, just like in other developing countries, has mainly been on the subsistence scale. However, Nigeria is experiencing a gradual shift from subsistence agriculture to commercialized agriculture (Dahiru *et al.,* 2011). There is agricultural commercialization when there is increase in the quantity of agricultural output sold by farmers (Pradhan *et al.,* 2010). Agricultural commercialization has long been considered an essential part of agricultural transformation in developing economies and an important means of ensuring food security and improved livelihood (Kurosaki, 2003).

Kunze (2003) explained that agricultural commercialization can take place in four dimensions, which could be production of marketable surplus of traditional crops and livestock, increase in post-harvest activities and transformation of produce at household level (adding value to traditional crops/livestock before selling them), production of new crops and livestock especially for the market, and introduction of new income generating enterprise. According to Jaleta *et al.* (2009), agricultural commercialization can broadly be viewed as a rise in the share of marketed output or of purchased inputs per unit of output. It can take place with output when there is increase in proportion of output offered for sale or with input when there is increased use of purchased inputs.

Manyong *et al.* (2002) explained agricultural commercialization to mean the scaling up agricultural production from subsistence level to become market based. According to them, commercialization is characterized by expansion in sales of output which raises cash earnings of small-scale agricultural

enterprises. To bring about commercialization, the unit of output can be increased, value addition can be raised, or both carried out, and there can be production for domestic and foreign markets. However, commercialization is dependent upon whether input and output markets are available. This builds on sectors linking together within the economy as the inputs needed for commercialization are obtained from the different sectors of the economy or from abroad while the outputs from commercialization are also distributed to the different sectors of the economy or to abroad.

Transition from subsistence to commercial agriculture is considered a crucial part of the transformation of agriculture in growing economies (Kurosaki, 2003). The commercialization of output from small-scale farming is closely associated with higher productivity, greater specialization, and higher income (Barrett, 2008). Commercialization could be seen as the strength of the link between crop farmers and the market at a particular period. This link between farmers and the market could relate to output or input markets either in selling, buying or both. Alternatively, commercialization could also be regarded as a dynamic process, addressing the velocity of change of the proportions of outputs sold and inputs purchased at household level (Moti *et al.,* 2009).

Land is one of the scarce resources that remain unequally distributed in Nigeria. With rapid population growth resulting in increased land fragmentation, land holding is becoming smaller and unable to sustain commercialization among farmers adequately. The per capital land holding is projected to decline from 0.64 hectare in 2006 to 0.45 hectare in 2020, while the number of persons per kilometer square is expected to increase from 1577 to 2243 within the same time frame (FAO, 2012). It is, therefore, expedient to study the potential of land markets to improve farmers' access to land and the resultant effect on crop commercialization.

According to Mahoney *et al.* (2007), any land transfer process that is done on transaction basis or in which money is exchanged can be referred to as land market. Land markets are generally regulated through land tenure and land administration systems. The basic role of any land market is to allow for permanent or temporary transfers of land between potential land users. Land market in developing countries are still characterized by the existence of significant transaction cost in the rural land market thereby constraining access to land for crop farmers willing to start up or enlarge their farm and reinforcing the persistence and dominance of large scale farms (Vranken, 2006).

On the background of the issues of land market and agricultural commercialization, this study examined the types of transaction carried out on agricultural land, assessed the extent of land market participation by crop farmers, assessed the extent of crop commercialization among the crop farmers and assessed the effects of extent of land market participation on crop commercialization in the study area.

2.0 MATERIALS AND METHODS
2.1 The Study Area and Sampling Procedure
The study was carried out in Southwestern Nigeria, comprising of six States; Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States. The region has a total population of about 38,257,260 and has a land area of 114,271 km^2 representing 12% of the country's land mass (National Bureau of Statistics, 2016). Agriculture is a major occupation in the region and the climate there highly favours crop cultivation. Primary data was collected using a structured questionnaire to elicit information on socioeconomic characteristics of farmers, crop commercialization and land acquisition by farming households.

A multi-stage sampling technique was employed in the study. The first stage was the random sampling of three states in Southwestern Nigeria; Ekiti, Ondo and Ogun states. The second stage was probability proportional to size sampling of Local Government Areas (LGAs) from the selected states. Six, five and four LGAs were proportionately selected from Ogun, Ondo and Ekiti states respectively. The third stage was the random selection of three villages in each of the LGAs selected. This gives a total of forty-five villages. The last stage was also probability proportional to size sampling of households in the selected villages. In all, a total number of 400 copies of questionnaire were administered, however, due to inadequate information given by some respondents, 350 copies of questionnaires were found useful for analysis.
2.2 Analytical Techniques and Models
The methods of analysis used in this study include descriptive statistics, land market index (LMI), crop commercialization index (CCI), and Tobit model.

2.2.1 Descriptive Statistics

Information on types of land acquisition and plots involved in land market were analyzed using descriptive statistics, production and sales value of crops among crop farmers, and socio-economic characteristics of farmers.

2.2.2 Land market index

Land market index (LMI) was used to assess the extent to which crop farmers participated in land market. LMI is defined as;

LMI_{cfi} = Area of land obtained through land market by crop farmer i

Total area of land size held by crop farmer i

LMI ranges between 0 to 1,

Where LMI = 1, if all plots of land held by crop farmers is acquired through transaction based method.

LMI = 0, if none of the plots of land is acquired through transaction based method.

2.2.3 Crop Commercialization Index (CCI)

The extent of crop commercialization among crop farmers in the study area was assessed using Crop Commercialization Index.

CCI for different crops is given as;

CCI_y = Gross value of yam sales $_{\text{in year } j}$ $\times 100$

Gross value of yam production $_{\text{in year } j}$

CCI_c = Gross value of cassava sales $_{\text{in year } j}$ $\times 100$

Gross value of cassava production $_{\text{in year } j}$

CCI_m = Gross value of maize sales $_{\text{in year } j}$ $\times 100$

Gross value of maize production $_{\text{in year } j}$

CCI_p = Gross value of plantain sales $_{\text{in year } j}$ $\times 100$

Gross value of plantain production $_{\text{in year } j}$

CCI_h = Gross value of crop sales $_{\text{in year } j}$ $\times 100$

Gross value of all crop production sales $_{\text{in year } j}$

CCI_y = crop commercialization index for yam sales

CCI_c = crop commercialization index for cassava sales

CCI_m = crop commercialization index for maize sales

CCI_p = crop commercialization index for plantain sales

CCI_h = Household crop commercialization index for all crop sales

CCI ranges between 0 and 100

Where CCI = 100 if farmer sells all its output.

CCI = 0 if farmer consumed all its output.

The index measures the ratio of the gross value of crop sales in year (j) to the gross value of all crops produced by the farmers in the same year (j) expressed as a percentage (Govereh *et al.,* 1999; Strasberg *et al.,* 1999).

2.2.4 Tobit model

Tobit model was used to assess the effects of extent of land market participation on crop commercialization. Tobit model is appropriate for this analysis because the dependent variable (crop commercialization) was censored at the lower and upper boundaries.

The standard Tobit is defined as;

$$Y_i = \beta_0 + \beta_i X_i + \varepsilon_i \qquad (1)$$

Such that Y can be observed to be

$Y_i = (Y_i \text{ if } Y_i > 0)$

$(0 \text{ if } Y_i \leq 0)$

Y is the response variable CCI which ranges between 0 and 100

Xi_i is the vector of explanatory variables

Ɛt is the error term

The model is explicitly defined as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon t$$

Y is the dependent variable = CCI ($0 \leq CCI \leq 100$)

X_1 = land market index ($0 \leq LMI \leq 1$)

X_2 = age (years)

X_3 = level of education (years of schooling)

X_4 = household size (number)

X_5 = farming experience (years)

X_6 = distance of farm from household (km)

X_7 = access to extension service (yes =1, otherwise = 0)

X_8 = access to credit (yes =1, otherwise = 0)

X_9 = nature of farming (part time = 1, full time = 0)

X_{10} = farm size in hectares

3.0 EMPIRICAL RESULTS AND DISCUSSIONS

This section describes the socioeconomic characteristics of crop farmers and explains farmers' participation in land market and output commercialization in the study area.

3.1 Socio-economic Characteristics of Farming Households

As shown in Table 1, majority of the respondents (70%) were male. About 47.5% of the respondents were in the economic active age range of 31 – 60 years, while 50% were older than 60 years. Majority of the respondents were married (96%) and had household consisting of 5 – 8 members (76.6%). A very high proportion (81.4%) of the respondents had one form of formal education or the other, with the highest percentage (65.4%) having primary education. Majority of the respondents were natives (77.1%) and had no access to credit (98%).

Results further show that the mean size of farmland owned by the households was 3.8 (±3.40) ha. Only 20% of the households owned above 5 ha of land. The mean years of farming experience of the respondents was 36.9 (±16.23), with 32% of the respondents of the respondents having more than 40 years of farming experience. There was a mean distance of 7.2km (±1.90) between respondents' homestead and their farms, with only 26.8% of the respondents covering less than or about 4km from their location of residence to their farms.

Table 1: Socio-economic Characteristics of Farming Households

Socio-economic characteristics of households	Frequency (n=350)	Percentage (%)	Mean
Gender			
Male	245	70.0	
Female	105	30.0	
Age (years)			
≤ 30	9	2.6	60.0
31 – 45	65	18.5	(±15.54)
46 – 60	101	28.9	
> 60	175	50.0	
Marital status			
Single	14	4.0	
Married	336	96.0	
Household size (number)			
1 – 4	36	10.3	6.6
5 – 8	268	76.6	(±1.23)
8 – 15	46	13.1	
Level of education			
Primary	229	65.4	
Secondary	44	12.5	
Tertiary	12	3.5	
No formal education	65	18.6	
Immigrant status			
Native	270	77.1	
Non-native	80	22.9	
Access to credit			
Yes	7	2.0	
No	343	98.0	
Total land size (hectares)			
≤ 2.0	52	14.9	3.8
2.1 – 4.9	228	65.1	(±3.40)
≥5.0	70	20.0	
Farming experience (years)			
≤ 10	7	2.0	36.9
11 – 20	73	20.9	(±16.23)
21 – 30	83	23.7	
31 – 40	75	21.4	
>40	112	32.0	
Distance (km)			
≤ 2.0	12	3.4	7.2
2.1 – 4.0	82	23.4	(±1.90)
4.1 – 6.0	65	18.6	
6.1 – 8.0	145	41.4	
>8.0	46	13.1	

Source: Field Survey, 2018

3.2 Land Acquisition and Transaction by Farming Households

Table 2 shows the five means of land acquisition found in the study area; inheritance, gift, purchase, rent and lease. These means of land acquisition can be divided into transaction based; purchase, rent and lease, and non-transaction based; inheritance and gift. The results show that majority (74%) of the farmers acquired their farm plots through inheritance, while 24.6% acquired theirs by purchase and rent. High level of land acquisition by inheritance could be attributed to the fact that 77.1% of the farmers were natives. On the other hand, acquisition through lease and gift were not common among respondents. Results on transaction based land acquisition show that 48.3% each of the farmers got land through purchase and rent, implying that purchase and rent were the main transaction based methods of land acquisition in the area.

Table 2: Land Acquisition and Transaction Methods

Acquisition method	Frequency	Percentage (%)
Inheritance	259	74.0
Gift	2	0.6
Purchase	43	12.3
Rent	43	12.3
Lease	3	0.8
Total	350	100.0
Transaction based methods		
Purchase	43	48.3
Rent	43	48.3
Lease	3	3.4
Total	89	100.0

Source: Field Survey, 2018.

3.3 Land Market Participation by Farming Households

The land market indices of crop farming households are presented in Table 3. Results show that majority (74.6%) of the crop farmers had land market index of 0, implying that 74.6% of the farmers acquired land through non-transaction based means (inheritance and gift). On the other hand, 25.4% of the farmers acquired land through transaction based methods (purchase, rent and lease). Availability of land for cultivation of crops is expected to lead to increased production, and thereby encourage increased commercialization.

Table 3: Land Market Index of Farming Households

Land market index	Frequency (n= 350)	Percentage (%)
0	261	74.6
0 < LMI ≤ 1	89	25.4

Source: Field Survey, 2018

3.4 Crop Commercialization among Farming Households

There were variations in the degree of crop commercialization among farmers. From Table 4, the degree of crop commercialization index indicates that mean for yam, cassava, maize and plantain were 42%, 46%, 72% and 13% respectively. Therefore, farmers sold 42% of yam, 46% of cassava, 72% of maize and 13% of plantain. This implies that the crop driving commercialization in the study area is maize. The household commercialization index was found to be 63%, implying that household sold 63% of their total crop produce in the area.

Table 4: Crop Commercialization Index (CCI)

	Yam (%)	Cassava (%)	Maize (%)	Plantain (%)
0.00	58.3	66.7	73.6	96.0
≤0.50	41.7	32.3	25.7	4.0
0.51 – 0.99	0.0	1.0	0.7	0.0
CCI (%)	42	46	72	13

Source: Field Survey, 2018

*$CCI_y = 42\%$, $CCI_c = 46\%$, $CCI_m = 72\%$, $CCI_p = 13\%$, $CCI_h = 63\%$

$$CCI_h = \frac{\text{Gross value of crop sales}}{\text{Gross value of all crop production sales}} \times 100 = 63\%$$

3.5 Effect of Land Market Participation on Crop Commercialization among Farming Households

Tobit regression analysis was used to assess the effect of land market participation on crop commercialization and the results are presented in Table 5. Results show that participation in land market by respondents had a significant positive effect on crop commercialization at 1%, implying an increased level of crop commercialization with participation in land market. Based on the results, the crop commercialization index for farming households participating in land market is expected to be 0.05 higher than that of the farming households who do not participate in land market. Participation in land market is expected to increase the rate at which farming households offer their output for sales.

Some other variables also had a significant influence on crop commercialization. Age was found to have a negative effect on crop commercialization at 10% level of significance. Results reveal that outputs offered for sale by farming households are expected to reduce with increase in age. A year increase in age decreases crop commercialization index by 0.001. The influence of size of farming households on crop commercialization was significant at 5% and was negative. Results show that an additional member to the household will decrease crop commercialization by 0.01, implying that the larger the size of the farming households, the lower the volume of sales of crop output that is expected from the farming households. This agrees with the results of the studies by Gani and Adeoti (2011) but is contrary to the findings of Aderemi *et al.* (2014).

Farming experience had positive effect on crop commercialization at 5% level of significance. A unit increase in farming experience will increase the crop commercialization index by 0.001, implying that increase in farming experience is expected to increase output commercialization (Aderemi *et al.,* 2014). Results further show that the nature of farming significantly affected crop commercialization at 10%. Based on the results, full time farmers are expected to turn out more volume of crop output for sales than part-time farmers. The crop commercialization index for part-time farmers is expected to be 0.03 lower than full-time farmers.

Farm size was significant at 1% and positively related to the level of output commercialization. A hectare increase in the size of farm is expected to increase crop commercialization index by 0.03. This implies that the larger the size of farmland a household uses, the higher the production levels are likely to be, and the higher the volume of output commercialization. This agrees with the findings of the studies by Randela *et al.* (2008) and Aderemi *et al.,* (2014).

Table 5: Effect of Land Market Participation on Crop Commercialization

Crop commercialization index	Coefficient	Std. Err.	t - value	P>t	dy/dx
Land market participation	0.0482385***	0.0152138	3.02	0.000	0.0327084
Age	-0.001309*	-0.0006732	-1.94	0.053	-0.000665
Level of education	-0.0018213	0.0047662	-0.38	0.703	-0.000926
Household size	-0.0085456**	0.0036465	-2.14	0.042	-0.008257
Farming experience	0.0013513**	0.0006214	2.17	0.031	0.0006871
Distance of farm from homestead	-0.0006233	0.002143	-0.29	0.771	-0.000316
Extension service	0.0119075	0.0778536	0.15	0.879	0.0060543
Access to credit	0.0233291	0.0390662	0.6	0.551	0.0118617
Nature of farming	-0.0261447*	0.0164497	-1.41	0.052	-0.003117
Farm size in hectares	0.0265937***	0.0053685	4.95	0.000	0.0135215
Constants	-0.1423644	0.1186382	-1.2	0.232	
/sigma	0.0757984	0.0015869			

Source: Data Analysis, 2018
Note: ***, **, * represent significance at 1%, 5% and 10% respectively.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the empirical evidence emanating from this study, it can be concluded that majority of the farming households in the study area acquired their farmland through inheritance while most of the farming households that acquired their farmland through transactions either purchased or rented it. Maize was found to be the major driver of crop commercialization in the study area. Crop commercialization increases with participation in land market. Also, as farming experience and farm size increase, crop commercialization increases.

It is recommended that government should formulate a policy which will give room for flexibility with land redistribution that will make farmers have access to more farmlands. Land owners with unengaged pieces of land should be encouraged to allow access to their land by land seekers, for agricultural production, through land market, to expand their levels of production, thereby increasing their level of commercialization.

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